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CRITERIA FOR RECYCLING VACANT URBAN LANDS TO ACHIEVE SUSTAINABLE DEVELOPMENT DIMENSIONS

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ABSTRACT

Due to the increase in the world's population, cities are growing and changing rapidly and without coordinated planning. The consequences of this growth can be observed in what is known as urban sprawl, which is characterized by scattered and chaotic growth and large numbers of unused vacant lands in downtown areas. People have negative impressions of these areas and use different terms to describe them, such as "abandoned spaces," "deserted areas," and "vacant urban lands". Recycling, in its literal meaning, is the procedure of making unserviceable products in into new remanufactured products. Applied to the vacant urban land recycling context this concept is not only inaccurate but also, sometimes contributes to the deterioration of cities. However, recycling these vacant urban lands can provide opportunities to reshape the urban fabric of the city. There is no doubt that recycling vacant urban lands is essential to achieving sustainable development in urban communities. It represents a spiritual, social, and cultural transformation of urban areas, buildings, and entire cities. In some cases, it is the driving force behind improving the urban culture. It is also a commitment to transform these urban lands aligning with new cultural, economic, and environmental uses. This commitment is achieved through reusing these lands for new purposes, such as creating public parks, developing low-cost housing: (social housing) and establishing commercial and recreational facilities that enhance the quality of urban life. Therefore, this research presents a set of criteria for recycling vacant urban lands within the city fabric to achieve sustainable development dimensions.

Keywords: Land Recycling, Vacant Urban Lands, Urban Communities, Dimensions of Sustainable Development.

معاييرإعادة تدويرالاراضي الحضرية الشاغرة لتحقيق أبعاد التنمية المستدامة

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الملخص

نظراً لزيادة عدد سكان العالم تنمو المدن وتتغير بسرعة وبدون تخطيط منسق يمكن ملاحظة عواقب هذا النمو في مايسمى بالامتداد الحضري الذي يتميز بنمو مشتت ومضطرب وأعداد كبيرة من الأراضي الشاغرة غير المستعملة في مناطق وسط المدينة، والتي يمكن وصفها بعدة طرق مختلفة (مساحات مفقودة، مساحات مهجورة، واراضي حضرية شاغرة) تولد لدى الناس انطباعات سلبية ويستعملون مصطلحات مختلفة لوصفها مثل (الهجر والانحلال والفراغ وحتى الخطرفي بعض الحالات).

والجدير بالذكر أن إعادة تدوير الاراضي بمعناها الحرفي هي إجراء تصنيع منتجات غير صالحة للاستعمال لم تكن قبيحة فحسب بل تساهم في بعض الاحيان في زيادة تدهور المدن، ويمكن أن توفر إعادة تدوير تلك الاراضي الحضرية الشاغرة فرصاً لاعادة الشكل الحضري للمدينة. ومما لاشك فيه فأن إعادة تدوير الأراضي الحضرية الشاغرة يعد أمر لاغنى عنه في تحقيق أبعاد التنمية المستدامة في المجتمعات الحضرية حيث أنها تعتبرعملية تحول روحي واجتماعي وثقافي للمناطق الحضرية والمباني والمدن بأكملها، وفي بعض الحالات تكون هي الدافع في تحسين مستوى ثقافتها الحضرية. وهو يمثل التزاماً بتحويل تلك الاراضي إلى استعمالات ثقافية واقتصادية وبيئية جديدة، ويتحقق ذلك اللاتزام من خلال إعادة استخدام تلك الاراضي لأغراض جديدة مثل إنشاء حدائق عامة، وتطويرمساكن منخفضة التكلفة (اسكان اجتماعي)، وإقامة مرافق تجارية وترفيهية

تعززجودة الحياة الحضرية، ومن هنا يقدم البحث في غرضه الاساسي مجموعة من المعايير لاعادة تدوير الاراضي الحضرية الشاغرة ضمن نسيج المدينة لتحقيق أبعاد التنمية المستدامة.
الكلمات الدالة: تدويرالاراضي، الاراضي الحضرية الشاغرة، المجتمعات الحضرية، أبعاد التنمية المستدامة.

1- INTRODUCTION

The research aims to set criteria for recycling vacant urban lands based on previously implemented projects within the same context regarding the achievement of sustainable development dimensions

1-1 Research Problem

Vacant urban lands represent a challenge for cities, as they often include abandoned buildings and are frequently used as dumpster (dumping grounds for waste) or become fertile ground for criminal activities that endanger the residents and visitors, which gives a highly frustrating and negative image of their community. Hence, the research problem addressed in this study is “The Lack of Clear Criteria for Recycling Vacant Urban Lands to Achieve Sustainable Development Dimensions”.

1-2 Research Methodology

The main research methodology is to find criteria for recycling vacant urban lands, in order to adopt a new function for those lands to make them useful and thus achieve the successful interaction and integration between the main dimensions of sustainable development (economic, social, and environmental dimensions), resulting in the construction of a life-compatible community that meets basic needs according to**" Maslow's Model".** This can be achieved through the following research methodology:

1. Study of land recycling in terms of concept, objectives, and types.
2. Study of vacant urban lands in terms of concept, reasons for emergence, and classification.
3. Study of the relationship between dimensions of sustainable development and vacant urban lands.
4. Analysis of global projects in recycling vacant urban lands.
5. Laying down criteria for recycling vacant urban lands.
6. Formulating recommendations based on the research.

2- Recycling of Lands (Vacant Urban Lands)

2-1 Land Recycling

2-1-1 Concept of Land Recycling

Land recycling is an innovation developed by countries in response to urban policies that already encourage the abandonment of contaminated properties. It is worth mentioning that recycling lands and making them free from pollutants not only has clear environmental benefits but also has economic benefits. Land recycling can become a key factor in reducing urban sprawl and preserving open spaces and agricultural lands. Many lands used in development often have a history of previous uses that are relied upon during proposed development[1].

2-1-2 Objectives of land recycling

1. Economic and social revitalization[2]

Promoting business growth and services in such areas, **helps in:**

- Disassembling poverty clusters.
- Creating employment opportunities and stimulating more private investment and local tax revenues.

2. Alternative to urban sprawl[3]

Land recycling provides an alternative to urban sprawl, the thing that **helps in,**

- Utilizing existing infrastructure and public resources.
- Creating integrated, service-oriented neighborhoods that reduce vehicle use and reliance on carbon.
- Reinvesting in vital economic and cultural centers.
- Reducing daily commuting times due to proximity to urban centers.
- Improving quality of life.

2-1-3 Types of land recycling

There are three main types of land recycling, as shown in **Table (1).**

Table (1): Types of land recycling [4]

Type	Description
Adaptive Reuse	It is one of the most common forms of land recycling, which involves repurposing an old, abandoned building for a new design or purpose. Preserving old buildings and reusing materials within them is environmentally more sustainable than completely constructing a new structure with new materials.
Reinvestment of contaminated land	The Environmental Protection Agency categorizes contaminated land as follows: Contaminated land refers to a property that may be complex to expand, reuse, or invest in due to the presence or possibility of hazardous, polluted, or contaminated substances.
Reinvestment without infrastructure	Agricultural reuse is a vital part of land recycling, where a previously abandoned field, due to nutrient depletion, can be reinvested and transformed into something else.
Recently, the term "**Vacant Lands**" has emerged as a **" The Research Study "** to be associated with **Land Recycling.**	

2-2 Vacant urban lands

2-2-1 Concept of vacant urban lands

In the past decades, multiple conflicting concepts have been formulated for vacant lands, but they are usually defined as unused lands such as bare soil, abandoned lands and structures, brownfields, Greenfields, uncultivated or marginal agricultural lands, which have recently been excavated[5].

The National Land Use Database (NLUD), United Kingdom, defines vacant lands as previously recycled lands that are now vacant and can be developed without special treatments, such as demolition, remediation, and settlement. According to the **American Planning Association (APA)**, there are two definitions for vacant lands[6]:

- The first definition: Urban lands that are not actively used for any purpose.
- The second definition: It is a piece of land that has not been improved or has no constructed buildings.

Based on the above, vacant urban lands can be more accurately defined as "lands that have been severely damaged due to being unused and have become incapable of beneficial use without rehabilitation, because they have been used for purposes other than those that resulted in their reention or acceptable use in the local plan[7].

2-2-2 Reasons for the emergence of vacant urban lands

Vacant urban lands are a widespread phenomenon in cities worldwide. Every city has a significant amount of vacant and unused lands in its midst. This phenomenon has spread due to the disappearance of original users, social development processes, and continuous urban expansion for cities[8].

2-2-3 Classification of vacant urban lands

Vacant urban lands have been classified as a tool to be used in urban areas[9] - as shown in **Fig.1.**

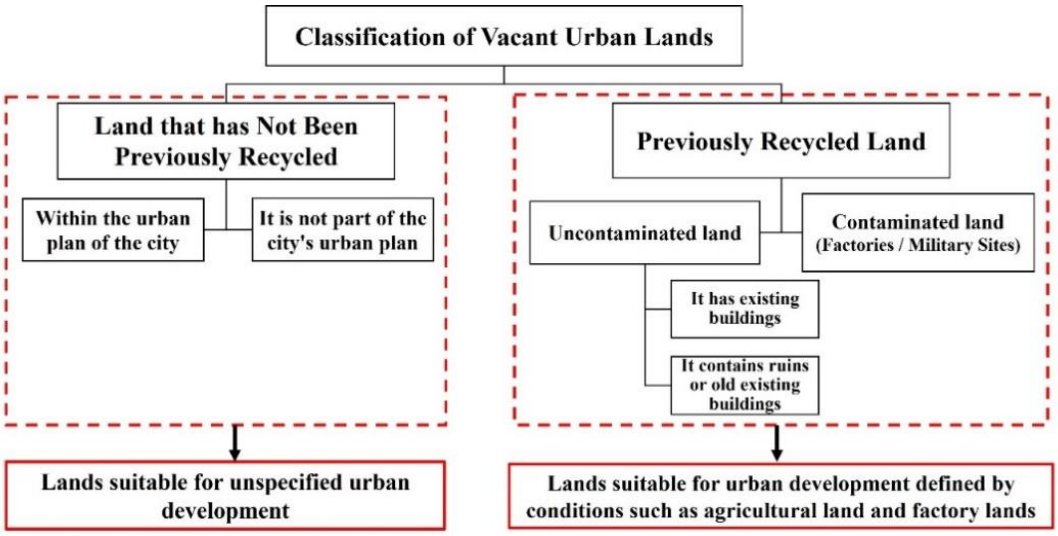

Fig.1. Classification of vacant urban lands

3- Sustainable Development

3-1 Concept of Sustainability

The word "sustainable" in the language means continuity. The term sustainability is a concept that expresses a combination of social, economic, and environmental goals achieved together. These three socials, economic, and environmental goals intersect in a complex and unexpected manner, and therefore they cannot be separated or dealt with individually while neglecting the others. Sustainable development is associated with the term "sustainable development".

3-2 Definition of Sustainable Development

Sustainable development, as defined by the Brundtland Report in 1987, is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs and live with dignity in the same capacity available to the current generation. **This definition focuses on two main issues**[10].

1. Human needs, particularly the needs of the poor, which should be given priority.
2. The constraints imposed by technology and social organization on the ability to meet the needs of the present and future.

Sustainable development includes two fundamental concepts that are achieved through:

1. The first concept **(Needs)**: the need to improve the situation in order to maintain a satisfactory living standard for all.
2. The second concept **(Limits)**: the maximum limits of the environment's capacity to meet the needs of the present and future, according to the level of technology and social systems. These needs range from basic needs such as food, drink, and clothing to sub-needs according to Maslow's Model, as shown in **Fig.2.**

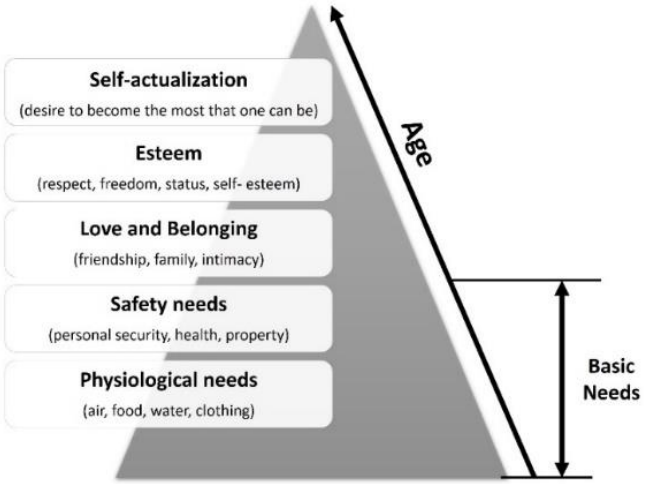

Fig.2. Maslow's Hierarchy of Needs [11]

3-3 The relationship between the dimensions of sustainable development and vacant urban lands

Sustainable development focuses on several dimensions, including primary dimensions and secondary dimensions. The environmental dimension, which relates to environmental protection, the economic dimension, which relates to economic growth, and the social dimension, which relates to achieving social justice, are primary dimensions that can be expressed as follows: **Economic growth + Environmental protection + Social justice = Sustainable development**[12]. Some also add the technological and administrative dimensions as secondary dimensions in order to use minimal energy and resources. **Fig.3.** illustrates the overlap and interaction between the dimensions of sustainable development.

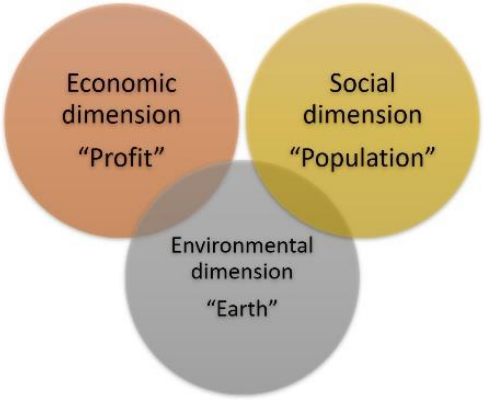

Fig.3. Overlap and interaction between the dimensions of sustainable development

Therefore, when developing new strategies for reusing vacant urban lands, it is important to consider the primary dimensions of sustainable development (economic, social, and cultural dimensions). So that, these strategies align with the definition of sustainable development.

Table (2) demonstrates the relationship between the dimensions of sustainable development and vacant urban lands as follows:

Table (2): The relationship between the dimensions of sustainable development and vacant urban lands

The Vacant Urban Lands		Dimensions of Sustainable Development		Dimension Description
Features of vacant urban lands	• Unique view. • Easy access to the location. • Large area. • Close to important points. • Infrastructure capacity.	**Main Dimensions**	**Economic Dimension (ECOD)**	• **Economic development is based on three main elements:** **(Eco.D_1)** Making changes in the economic structure and infrastructure. **(Eco.D_2)** Redistributing income in favor of the poor class. **(Eco.D_3)** Focusing on the quality of goods and services produced and prioritizing the essentials.
Classification of vacant urban lands	• Previously Recycled Lands. • Lands that have not been previously recycled.		**Social Dimension (SOCD)**	**(Soc.D_1)** Social development means increasing individuals' ability to utilize available resources to the fullest extent possible in order to achieve freedom and well-being. • The social dimension is what distinguishes sustainable development, as it represents the human dimension. **Social development includes several aspects:** **(Soc.D_2)** Equality in distribution. **(Soc.D_3)** People's participation. **(Soc.D_4)** Cultural diversity.
			Environmental Dimension (ENVD)	Caring for the environment is a fundamental pillar in development, in order to preserve natural resources from depletion and deterioration for the sake of future generations. Therefore, **environmental development is based on:** **(Env.D_1)** Concern for issuing legislation to protect the environment and energy sources. **(Env.D_2)** Rationalizing the use of non-renewable resources. **(Env.D_3)** Not exceeding the ecosystem's capacity to absorb waste.
		Secondary Dimensions	**Technological Dimension**	• **Telecommunications technology plays a major role in promoting the concept of sustainable development through:** **1.** Developing institutions and their work. **2.** Significantly stimulating economic growth.
			Administrative Dimension	• **The administrative dimension aims to:** **1.** Divide work into specific groups and functions and define communication lines between them. **2.** Clearly define competencies and responsibilities for the administrative units and the functions they comprise. **3.** Define the necessary responsibilities and authorities to achieve control.

Meeting the needs of future generations	• Limiting land consumption and preserving resources for future generations. • Avoiding leaving a legacy filled with vacant lands.

4- Analysis of global projects in recycling vacant urban land

Before reaching the conclusions regarding the criteria necessary for recycling vacant urban land, it was necessary to analyze some successful global project models in this field. Undoubtedly, at the beginning of the recycling process, it is important to test the compatibility between the existing elements and the proposed new function by studying the space requirements and ease of access to the site. Industrial and commercial buildings in vacant land are usually suitable for reuse, as their large and organized spaces allow for a variety of uses and easy conversion. Therefore, the following recycling projects for vacant urban lands will be analyzed and presented as follows:

4-1 Beloit Powerhouse, Beloit, Wisconsin, USA Recycling Project

Location

Beloit, Wisconsin, United States of America, and the project site and the abandoned building are located between the campus of Beloit College and Rock River.

The Original Use

The Blackhawk Power Generating Station, which was built in 1913 and expanded in 1927. The building and land have been vacant since 2010.

The Classification

land that has not been previously recycled, falls within the city's urban.

The Initial Evaluation of The Project

Evaluation	Social dimension	Economic dimension	Environmental dimension
Strengths	• Adding a swimming pool, running track, and pedestrian bridge connecting the college to the city and the River Rock.	• It is a redevelopment process that almost preserves the entire historical power station, including some equipment's and wide-ranging infrastructure that made the power station operational.	**• The power station building has been transformed into a modern and sustainable design. • The added services and plazas have become vibrant gathering points that encourage interaction among students, their community, and the city of Beloit.**
Weaknesses	• Students' inability to communicate with each other and with their community in the Beloit College campus due to the presence of the massive building of the station.	• The building's long-standing appearance has been unattractive to both the campus and the city.	**• Difficulty for students to be present in the college building until 2010, due to its proximity to the power station building and its harmful gas emissions. • Represents a significant and disruptive barrier between Beloit College campus and the scenic Rock River.**
Opportunities	• Connecting the college to the wider community through the project.	• The building's location overlooking the Rock River.	**• Converting the worn-out power station building into Beloit College. student union building • Preserving the exposed historic brick appearance inside the building.**
Threats	• Some residents fear the loss of the old historical character of the station building.	• The building has been abandoned since 2010.	**• The building represents (40%) of the city's harmful gas emissions.**

Fig.4. The Initial Evaluation of The Project

Project Funding Sources

Beloit College students' Donations.

Original Area and Cost	120.000 hectares, with a development project cost of $35.70 million.
Post-Rehabilitation Use	A comprehensive building for Beloit College Student Union Building.
Rehabilitation Design Firm	Studio Gang.
Project Description[13]**:**	• A new area of 1579m2 has been added to the project. • The original red bricks and existing concrete structures were retained upon site handover, as shown in **Fig.5.** • The project includes three main facilities: - A swimming pool divided into eight lanes. - Sports halls, accompanied by a running track. - A conference center, lecture hall, and theater. • A pedestrian bridge has been constructed to connect the college, the city, and the Rock River, as shown in **Fig.7.**

Fig.5. Retention of the old components **of the building** [14]

Fig.6. Perspective view of the project[14]

Fig.7. Construction of a pedestrian bridge among the building, the city, and the river[14]

Fig.8. Interior view of the sports halls[14]

4-2 Waterfront Toronto, Canada Recycling Project

Location	Toronto, Ontario, Canada, and the project site overlooks the Delaware River.

The Original Use

A port for the city of Toronto was built in 1912, and in 2000, the port was evacuated and the surrounding buildings and lands remained vacant.

The Classification

Previously recycled lands, in 1996, to become a naval military base for the United States of America.

The Initial Evaluation of The Project

Evaluation	Social dimension	Economic dimension	Environmental dimension
Strengths	• waterfront has a historical significance for the residents.	• It has a strategic location that is easily accessible. • The area has investment development potential.	**• The site has a unique ecosystem.**
Weaknesses	• Some residents are concerned about not being compensated with new housing after the development is completed.	• lack of some facilities is and the weakness of infrastructure.	**• Some residents and users have a lack of awareness in dealing with river cleanliness.**
Opportunities	• Linking the waterfront with the city's residents.	• Business opportunities for the local community. • Integrated economic. development in the city. • Increasing the city's income.	**• Development in the environmental sector in the area.**
Threats	• Developers faced problems due to residents' lack of understanding of waterfront development concept.	• Insufficient promotion of the newly developed areas around the waterfront.	**• Presence of contaminants in the river due to the site's long-abandonment** **• Some residents do not care about the cleanliness of the river.**

Fig.9. The Initial Evaluation of The Project

Project Funding Sources

The Canadian government with some real estate developers.

Original Area and Cost

2000 acres, 630 million dollars.

Post-Rehabilitation Use

A waterfront gateway to the city of Toronto, and the port was divided into six main areas.

Rehabilitation Design Firm

Studio Michael Van Valkenburgh Associates.

Project Description[15]**:**

In 2022, The Canadian government has enlisted the services of Michael Van Valkenburg Associates to initiate the revitalization of the seaport and its surrounding vacant lands.

The port has been divided into six main areas as follows:

1.**Gateway District:** This area serves as a welcoming space, either at the main entrance for most users of the **Navy Yard** or its visitors along **Broad Street**, with open views of the reserve basin and numerous historical elements.

2. **Corporate center**: This area encompasses several first-class office buildings and world-class public spaces. It has been intensively developed with office buildings, laboratories, and shared parking facilities.

3.**Shipyard District:** This area is located on the western edge of the port; this area is characterized by maritime and industrial uses.

4.**Historic Core:** This area contains most of the existing elements in the **Navy Yard**, such as significant historical buildings.

5.**Greenway Area:** This area is a new eastern extension of the port. It combines green areas, a number of light industries and some recreational areas.

6.**Waterfront:** This area is a new dense and Mixed-Use neighborhood overlooking the Delaware River, (extending along its coast), and green spaces

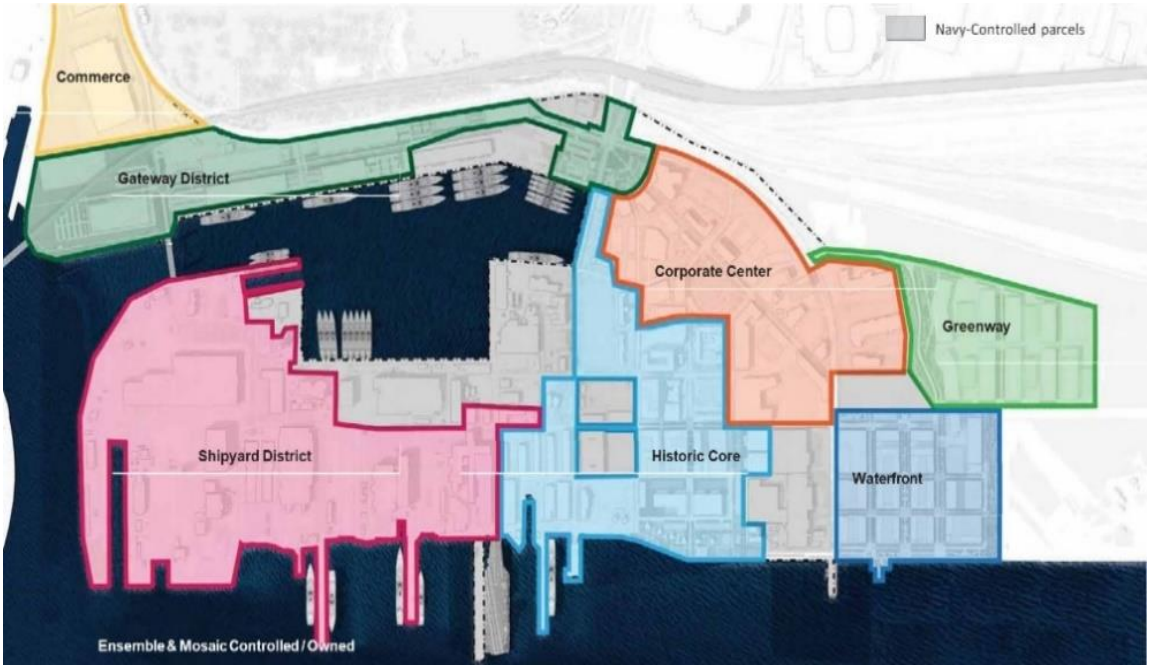

Fig.10. The general location of the Toronto Waterfront Revitalization Project[15]

4-3 Battersea Power Station, UK, Recycling Project

Location

Battersea Power Station is located on the south bank of the River Thames, Nine Elms area, Battersea neighborhood, downtown London, UK

The Original Use [16]

a coal-fired power station which was built in 1929, decommissioned in 1975, and has been completely ceasing operation and becoming vacant land since1983.

The Classification

land that has not been previously recycled falls within the city's urban plan.

The Initial Evaluation of The Project

Evaluation	Social dimension	Economic dimension	Environmental dimension
Strengths	• The London community is interested in that area due to its international cultural significance in the 20th century.	•The station building is located in one of London's most iconic worldwide.	**• 2014, The historical chimneys began to be dismantled and reconstructed in 2015 to suit the development**
Weaknesses	• Some residents have migrated from the area despite its prime location.	• The long abandonment of the building led to withholding a significant portion of the project funding being except for the building's rehabilitation.	**• The station building overlooks the River Thames and has been one of the main contributors to carbon emissions in London.**
Opportunities	• Meeting modern social needs and benefiting the community without compromising the historical and architectural value of the station building.	• Considering the project as the first large-scale urban development and a global model for placemaking.	**• Transforming the building into a carbon-free building in Europe.**
Threats	• Concerns from many London residents about the future of the site and the historical building.	• Previous attempts to revive the site have failed.	**• The unrepairable chimneys in the station building.**

Fig.11. The Initial Evaluation of The Project

Project Funding Sources

Global companies under government supervision.

Original Area and Cost

42 acres, 8 billion pounds sterling.

Post-Rehabilitation Use	Prominent tourist landmark in the United Kingdom.
Rehabilitation Design Firm	(Battersea Power Station Development) & (Skanska UK) company.
Project Description:	The recycling project relied on converting the station and its surrounding area into a large collection of luxury apartments, hotel apartments, commercial centers, and open spaces. The project will be implemented in three stages[17]: **First stage:** • 866 housing units have been constructed. • High-rise gardens (Vertical gardens) have been created. **Second stage:** • Redevelopment of the power station building itself and restoration of its historic structure, including the famous chimneys that are 100 meters high. In addition to, the rehabilitation of the building costs 600 million pounds sterling. • **Apple INC**, company has leased a space of 470,000 square feet in the building to serve as its headquarters. **Third stage:** • It is a main part of the Battersea site recycling, including new housing units and a new main street known as **The Electric Boulevard**, located south of the historic Battersea Power Station. It is the main gateway to the development, connecting the new Northern Line extension station to the power station.

Fig.12. A perspective shot of Battersea Power Station and land recycling [16]

Through the above analysis, it is possible to quantify the correlation between the dimensions of sustainable development and the previously analyzed projects (vacant urban lands) as outlined in **Table No. (2)**. Each axis will be calculated as a percentage **(10%)** to determine the success rate of each project in achieving the dimensions of sustainable development. **Figs No. (13, 14, 15)** illustrate this relationship.

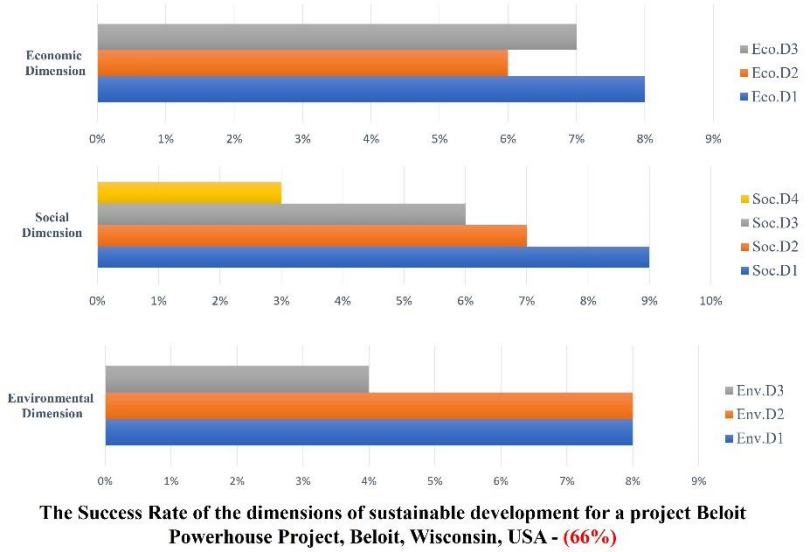

Fig.13. The Success Rate of the dimensions of sustainable development for a project Beloit Powerhouse Project, Beloit, Wisconsin, USA

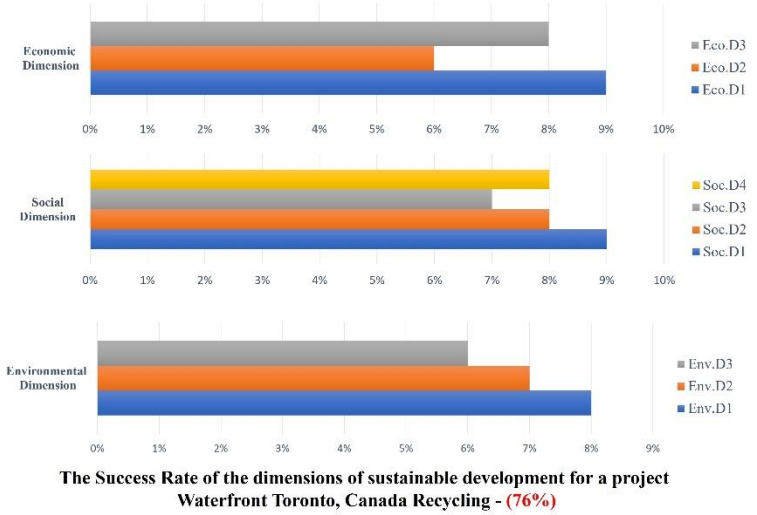

Fig.14. The Success Rate of the dimensions of sustainable development for a project Waterfront Toronto, Canada Recycling

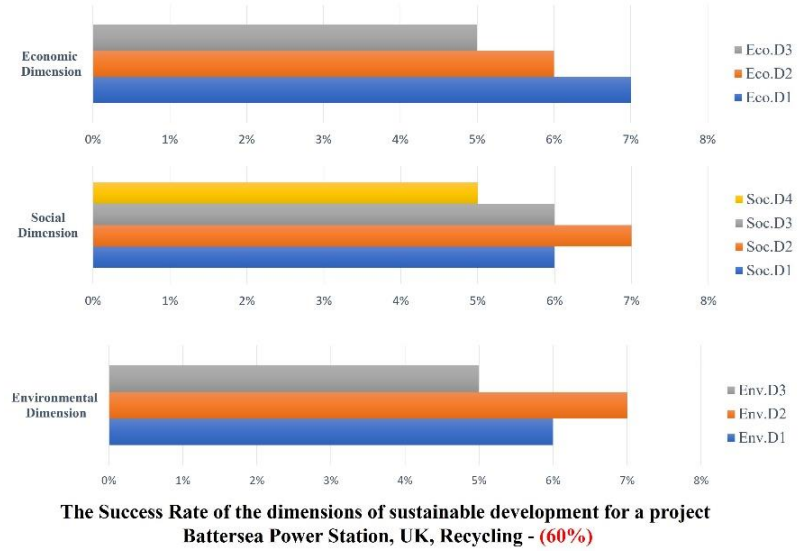

Fig.15. The Success Rate of the dimensions of sustainable development for a project Battersea Power Station, UK, Recycling

5- Key insights gained from the analysis of vacant urban land recycling projects

In this section of the research, the lessons learned from each experience analyzed and evaluated in an attempt to meet criteria for recycling vacant urban land are illustrated in Table 3.

Table (3): Key insights gained from the analysis of vacant urban land recycling projects

Participation	**1.** Identifying the roles of participating parties, such as the government, beneficiaries, and non-governmental organizations. **2.** Identifying the levels of participation at each stage of the recycling process. **3.** The significance of media campaigns in motivating participants to get involved.
Establishing an integrated administrative system	**1.** Transitioning from centralization to decentralization. **2.** Implementing an on-site administrative system to identify problems and requirements. **3.** Establishing procedures and policies to address the concerns of individuals at the site.
Work teams	**1.** Dividing work teams according to each stage of the project. **2.** Developing a work team to align with each stage.
Data Collection	**1.** Conducting a comprehensive survey of the land to identify its social and economic characteristics. **2.** Involving citizens in this process fosters trust between the government and the community.
Evaluation and monitoring of the system	**1.** Developing an administrative system that aligns with each stage of the vacant land recycling process. **2.** Establishing a well-structured administrative framework with robust capabilities.

6- Conclusion of criteria for recycling vacant urban lands

Five main criteria have been identified for recycling vacant urban lands based on the research as follows:

1. Determine Location and Access Methods to Vacant Urban Land is crucial for developers. This involves gathering land data regarding, area, shape, and the status of properties, as well as their historical significance. Studying the surrounding infrastructure helps developers assess the need for additional infrastructure services or determine if the existing ones are adequate.

2. Initial Evaluation of The Vacant Urban Land, by carrying out a **SWOT Analysis,** (determining strengths, weaknesses, opportunities, and threats.), based on the three main dimensions of sustainable development.

3. Determine Rehabilitation Firm and Funding Sources, by presenting reports to investors, project partners, property owners, and the local community, outlining the previous steps taken.

4. Preparing a Detailed Plan for The Vacant Urban Land Recycling (Rehabilitation) Project, which is typically prepared by project implementation firm

5. The Implementation of Vacant Urban Land Recycling Plan, including the Consequences of Removal, Demolition, and Re-Use) to align with the new purpose.

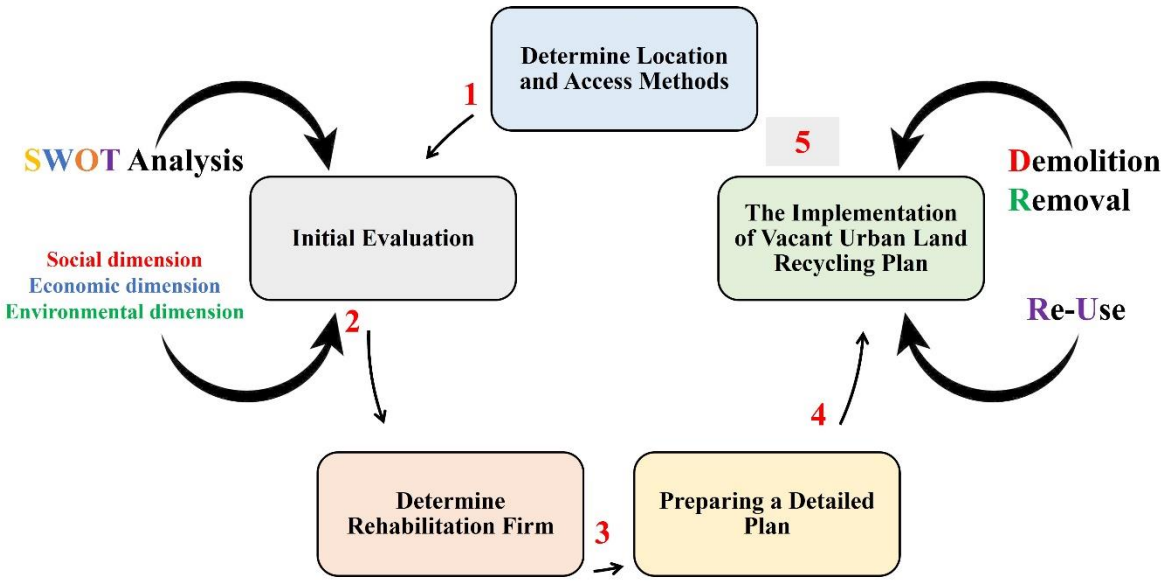

Fig.16. Criteria for recycling vacant urban lands

7- The Results

1. The reintegration of vacant urban lands in the city has positive consequences beyond making land more sustainable in a civilized world. It alleviates problems that concern society, **such as:**

- Safety needs such as: open spaces, housing (properties) and services.
- Creating new job opportunities.
- Health risks due to the environmental status of the site.

The future identity of the site associated with the culture or historical heritage of its previous use of vacant urban land.

2. The criteria for rehabilitating vacant urban land should be analyzed based on the dimensions of sustainable development, along with comprehensive information about these lands. **Therefore, the following results can be presented**

- One of the most significant benefits of recycling vacant urban land is the reduction of unplanned urban sprawl.
- Urban development through recycling vacant urban land is essential for sustainable development, which is fundamental in managing rapid population growth.
- Vacant urban lands are part of the urban fabric.
- Financing is a major obstacle in recycling vacant urban lands. As, most cities lack sufficient economic incentives for it.
- **Vacant urban areas (**vacant land and abandoned structures) **(VUAs)**, which had not been maintained, negatively affect the value of local properties and the quality of life in the surrounding neighborhoods.

3. There are several options that enhance the utilization of vacant urban land, **including the following:**

- passing legislations to rescue vacant urban land with provisions concerning: vacant properties, maintenance requirements, and registration fees for those properties to encourage owners to improve their properties.
- Relying on citizens and state-affiliated institutions taxes or donations to successfully fund vacant urban land recycling projects.
- Conducting a comprehensive classification to urban land vacancy facilitate planners' and decision makers' ability to set and effective planning for land utilization.

4. Understanding the complexities of land value is crucial because it can have far-reaching effects on economic growth, social justice, and the achievement of sustainable development dimensions. This can be illustrated through the following points:

1. **Economic Impacts:**
   - Land value directly impacts the cost of housing, commercial real estate, and industrial spaces, thereby influencing cost affordability and investment opportunities.
   - Rising land values in prime locations can draw in companies, creating more job opportunities and fostering economic growth.
   - Increased land values generate more property tax revenues, which can be used to finance public services and infrastructure development.
2. **Social Impacts:**
   - Disparities in land values lead to inequality in accessing housing, facilities, and opportunities.
   - Understanding land values can assist policymakers in identifying areas with high potential for renewal or displacement, enabling them to implement targeted policies to mitigate negative social impacts.
   - Areas with high land values attract wealthier populations, leading to demographic shifts and changes in neighborhood social fabric.
3. **Environmental Impacts:**
   - Reduced land values in environmentally valuable areas may incentivize unsustainable development, resulting in biodiversity loss and increased pollution.
   - Understanding the environmental impacts of land value can guide policymakers through: identifying protected areas, implementing green infrastructure, and promoting sustainable land management practices

Recommendations

1. Countries should prioritize putting an urban plan to classify and reintegrate vacant lands within urban fabric.
2. Selecting projects should be compatible in terms of space and characteristics with the nature of vacant urban lands. Besides paying attention to the social, environmental, and economic dimensions of the region while fulfilling the needs of the city to avoid land vacancy and building abandonment.
3. Conducting a comprehensive study of urban land vacancy reasons (social, economic, environmental, building damage, poor design), to avoid it in the future.

4. Ensuring the completion of infrastructure services and facilities on vacant urban lands before putting forth the recycling process is crucial, as it poses one of the biggest challenges in land recycling.
5. Prohibiting encroachments and the conversion of land and green spaces into buildings.

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