



GRAND GREEN OSAKA Becomes Japan's First*¹ Mixed-Use Development Including an Urban Park to Simultaneously Attain LEED-ND Plan Certification and SITES Preliminary Certification (Gold Ratings for Both)

TOKYO, Japan – July 17, 2024 – The joint venture of nine companies (“JV9”)^{*2} in charge of the GRAND GREEN OSAKA project (“the project”), led by Mitsubishi Estate Co., Ltd., announced that the project, based on the concept Creation of “Osaka MIDORI LIFE” ~Combining “MIDORI” and “Innovation”~, is the first mixed-use development project including an urban park in Japan to simultaneously receive Gold ratings for plan certification under the Neighborhood Development (ND) category of the Leadership in Energy and Environmental Design (LEED®), and for preliminary certification under the Sustainable SITES Initiative (SITES®). LEED is an international environmental performance certification system operated by the U.S. Green Building Council (USGBC®) and SITES mainly evaluates the sustainability of landscapes.

Under the project, efforts are being undertaken toward the realization of sustainability and urban development that achieves well-being, including comprehensively evaluating and visualizing the environmental value brought about by greenery using five indices. Besides the aforementioned certifications, the project has also attained DBJ Green Building Certification, Association for Business Innovation in harmony with Nature and Community (ABINC) ADVANCE certification, ZEB Oriented certification (for the office areas), and Comprehensive Assessment System for Built Environment Efficiency (CASBEE) Smart Wellness Office certification.

In addition, the project uses virtually renewable energy-derived electricity (“renewable electricity”) complying with RE100 and carbon-neutral city gas to further efforts toward the realization of a decarbonized society. In recognition of such initiatives, the project received a special award at the first award ceremony of the Decarbonized Urban Design and Development Awards—an award system launched in fiscal 2023 by Japan's Ministry of Land, Infrastructure, Transport and Tourism and Ministry of the Environment—and was also selected as one of the Sustainable Building Leadership Projects (CO₂ Reduction Leadership).

■ Six Environmental Certifications Attained by the Project



*1 Confirmed by Woonerf Inc. (certification consulting company) based on information provided by USGBC and Green Business Certification Inc. (GBCI)

*2 One member of JV9, Umekita Kaihatsu Tokutei Mokuteki Kaisha, is an SPC funded by Obayashi Corporation.

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Certifications Attained

■ LEED-ND Plan Certification (Gold Rating)

LEED is a certification system developed by USGBC for evaluating built environments (buildings and urban environments), with review being undertaken by GBCI®. LEED ND is a LEED certification system that seeks to evaluate the environmental performance of an area instead of a single building. Factors evaluated include walkability, distance between workplaces and residences, diversity in applications, compact development, and protection of natural resources.

■ SITES Preliminary Certification (Gold Rating)

This is a U.S. certification system that evaluates the sustainability of landscapes, with review being undertaken by GBCI. Besides looking at plans and designs, the evaluation scope includes site selection, planning processes, and the management of operations and maintenance during and after construction. Multiple aspects are evaluated, such as biodiversity conservation, water resource conservation, energy conservation, resource circulation, heat island effect reduction, health promotion, and education.

Comment from Andy To, Managing Director, North Asia, GBCI

We are very proud to know that this project has simultaneously attained both LEED ND plan certification and SITES preliminary certification, and we wish to express our heartfelt praise for its outstanding achievements. Besides establishing precedents in the field of sustainable development, these achievements also serve as a model for inspiring future projects. We commend the entire team for the vision, dedication, and effort needed to achieve these prestigious certifications. The commitment to sustainability shown by the developers of GRAND GREEN OSAKA opens a path toward a sustainable future that is greener and healthier.

■ ABINC ADVANCE Certification

This certification system was developed to create mechanisms that allow people to coexist with other living things through corporate activities. The Association for Business Innovation in harmony with Nature and Community (ABINC) evaluates and certifies corporate initiatives—such as those for the development, management, and use of green areas with consideration for biodiversity—using standards that include guidelines developed by Japan Business Initiative for Biodiversity.

■ DBJ Green Building Certification

This is a certification system established in April 2011 by the Development Bank of Japan Inc. (DBJ) to support environmentally and socially conscious real estate. Besides the environmental performance of the property in question, real estate required by the society and economy are evaluated and certified based on a comprehensive evaluation that includes responses to various stakeholders, such as disaster prevention and consideration to the community.

■ CASBEE Smart Wellness Office (S Rank)

CASBEE-Wellness Office is a tool that evaluates the specifications, performance, and initiatives of buildings that support the maintenance and enhance of users' health and comfort. Besides factors that directly affect the health and comfort of workers working in the buildings, it also evaluates factors that help improve intellectual productivity and performance related to safety and security.

■ ZEB Oriented Certification (for Office Areas)

ZEB refers to net zero energy building, which is a building that adopts advanced technologies to significantly conserve energy while maintaining the quality of indoor environments, and goes on to seek net zero annual primary energy consumption by maximizing energy self-sufficiency through the introduction of renewable energy. ZEB Oriented targets buildings with a total floor area of 10,000 m² or above, in which measures are taken to achieve further energy conservation in addition to the use of high-performance building envelopes and high-efficiency energy-saving facilities.

Specific Initiatives



1. Initiatives for sustainability through the formation of rich landscapes

Coming from the approach of contributing to the global environment using the concept of net positive, approximately 45,000 m² of land is allocated as urban park land. This is around half of the approximately 91,000 m² of the area of this project located at the site of the former Umeda Freight Station, which was a rail logistics hub for 85 years. In addition, approximately 30,000 m² of land, or around one-third of the project's land area, will be turned into a diverse green area with more than 1,600 trees from approximately 320 species (including approximately 270 native species) to create an impressive green space in front of the largest terminal station in western Japan.

Through the mixed-use development that is being undertaken together with this green space, the project seeks the realization of sustainability and urban development that achieves well-being.

In the project, the environmental value of greenery, which was difficult to perceive in the past, was comprehensively quantified and visualized in detail using five indices^{*3} for visualization of its contribution to the environment.

^{*3} Refer to the following for details about the environmental performance evaluation of the project (in Japanese):

https://www.nikken.jp/ja/news/press_release/2024_07_17.html

(1) Reduction of greenhouse gases

When calculating the annual amount of CO₂ fixation using the species, number, and diameter at breast height of the more than 1,600 trees being planted in the entire area of the development, including UMEKITA PARK, the result is an annual total CO₂ fixation of 35.9 tons. This is equivalent to the amount of CO₂ reduced when generating electricity using approximately 190 solar panels with an output of 370 W.



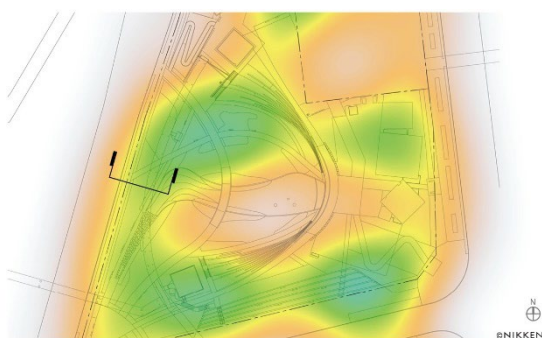
樹木の密度とCO₂固定量イメージ

樹種 学名	クスノキ <i>Crataegus cuneata</i>	シラカシ <i>Quercus myrsinifolia</i>	マテバシイ <i>Lithocarpus edulis</i>	ケヤキ <i>Zelkova serrata</i>	イチヨウ <i>Ginkgo biloba</i>	プラタナス <i>Platanus</i>	その他 Others
算定式 Y: 年間CO ₂ 固定量 X: 胸高直径 (cm)	$Y = 0.0691 \times [(X+1.4)^{2.64} \times X^{2.64}]$	$Y = 0.218 \times [(X+1.3)^{2.45} \times X^{2.45}]$	$Y = 0.0666 \times [(X+0.7)^{2.86} \times X^{2.86}]$	$Y = 0.127 \times [(X+1.4)^{2.99} \times X^{2.99}]$	$Y = 0.0667 \times [(X+1.9)^{2.92} \times X^{2.92}]$	$Y = 0.0796 \times [(X+1.2)^{2.72} \times X^{2.72}]$	$Y = 0.111 \times [(X+1.7)^{2.67} \times X^{2.67}]$
X=25 の場合の 年間CO ₂ 固定量 / 本	36.78 kg	63.70 kg	39.59 kg	58.92 kg	31.88 kg	57.40 kg	42.45 kg

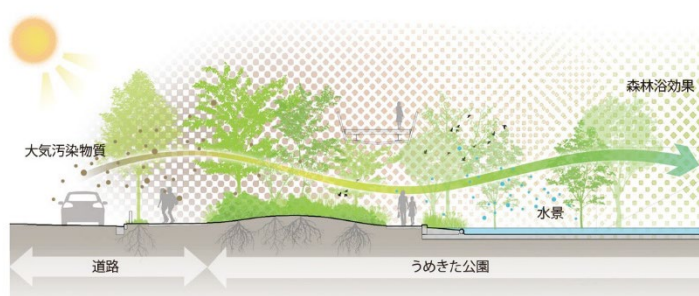
樹木別のCO₂固定量

(2) Air purification

The amount of air pollutants (SO₂, NO₂, and O₃) that is absorbed by the trees each year is estimated to calculate the air purification effect. Through planting high trees, the amounts of SO₂, NO₂, and O₃ absorbed each year are 4.2 kg, 10.7 kg, and 16.6 kg respectively. When converted to exhaust gas from vehicle driving, the amounts of NO₂ absorbed is equivalent to the emissions from driving 3.1 times around the earth. Urban areas tend to have more air pollution sources compared to the suburbs. The trees in this project will absorb SO₂, NO₂, and O₃—including the absorption of air pollutants generated from the around trunk roads and such—to contribute toward the formation of comfortable living environments in the area.



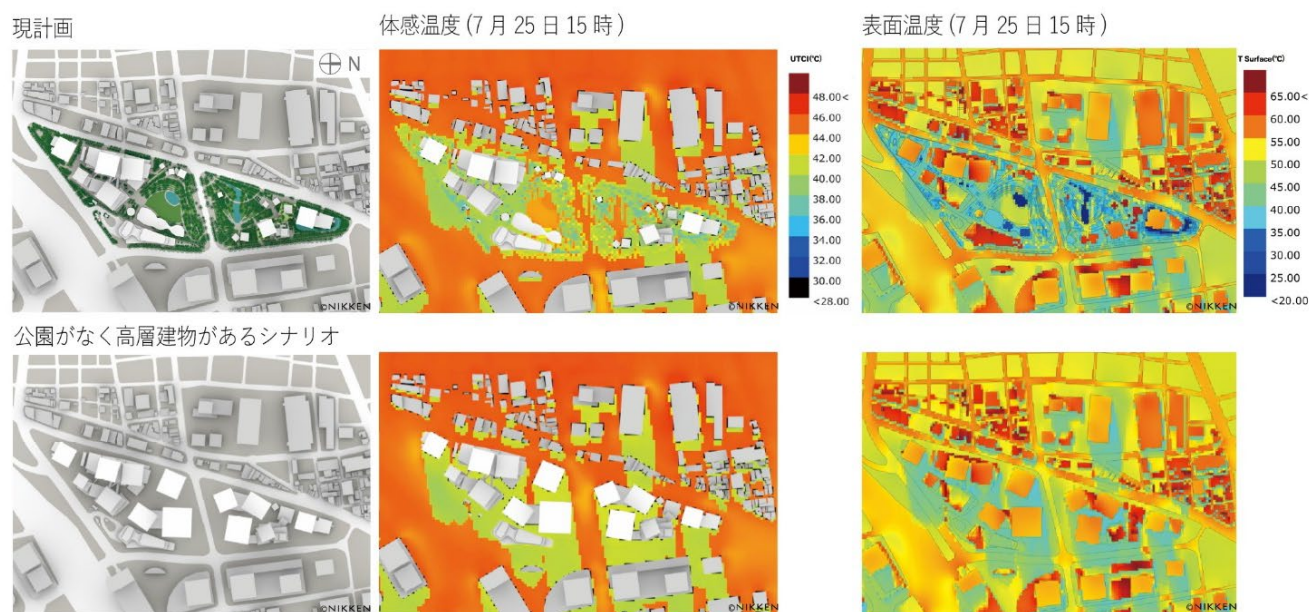
北公園における樹木の密度とNO₂吸収量イメージ



北公園における樹木のフィルター効果と空気浄化のイメージ

(3) Improvement of thermal environments (creation of cool spots)

The apparent and surface temperatures during summer in Osaka were simulated based on weather conditions. It was confirmed that, during the time range of intense summer sun (3 p.m.), shade from trees reduces apparent temperatures by 4°C to 6°C, and surface temperatures by 13°C to 16°C. The shade from high trees reduces both surface and apparent temperatures, and at the same time, can generate cool air in the vicinity at night. The project is expected to become a rare cool spot in the urban center that also contributes toward heat island effect reduction.



*グラングリーン大阪の敷地内の緑を評価しており、周縁部の緑化等の状況は考慮していません。

(4) Promotion of biodiversity

Based on data of tree-covered land obtained through satellite image analysis, the expected ecological network before and after the project's completion was visualized. It is expected that GRAND GREEN OSAKA will increase the rate of tree-covered land^{*4} to 12%, and the increase in the rate of tree-covered land will contribute toward the formation of ecological networks in Osaka and have a net positive impact that includes flora and fauna in the vicinity. By creating habitats for diverse life-forms on prime land in an urban center, opportunities are provided for visitors to interact with these life-forms, producing an environmental education effect. At the same time, it is expected that the chirping of birds and diverse sounds of life-forms will alleviate people's stress and enhance their brain functions.

^{*4} Using a geographic information system (GIS), the proportion of tree-covered land in cities is visualized as contour lines based on satellite image data. It is used as an index for the network (ease of mobility) of arboreal birds—such as the Japanese tit—in cities.



グラングリーン大阪完成前

※コンターは樹林率の等値線、%は樹林率を示す

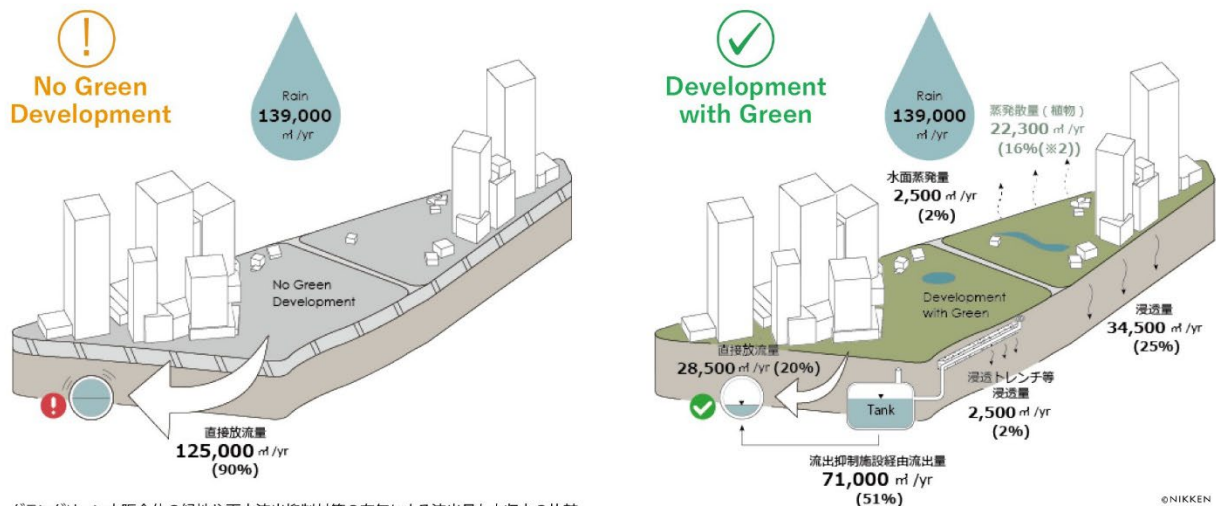


グラングリーン大阪完成後



(5) Suppression of rainwater outflow

The effect of rainwater outflow suppression facilities—such as rainwater storage facilities, percolation trenches, and crushed stone storage tanks—as well as the percolation of green land were visualized. Besides controlling the storage of approximately half of the annual rainfall (approximately 73,500 m³ per year) using outflow suppression facilities and such, a portion of the rainwater is used effectively as irrigation water for plants. Rainwater percolation reached approximately 34,500 m³ per year, and the percolation and evapotranspiration via green land contributes to a healthy water cycle and hints at an improvement to the soil and air environment.



グランゲリーン大阪全体の緑地や雨水流出抑制対策の有無による流出量と水収支の比較

※1年降水量は大阪平年値1,338mm/yr (1991～2020年の30年間平均値)を使用

※2 蒸発散量は一旦浸透した雨のうち植物等を介して蒸発散する水量を示す

2. Initiatives toward achieving carbon neutrality

For electricity, the project plans to introduce renewable electricity with tracking non-fossil certificates, which comply with RE100, procured by the Kansai Electric Power Group in the renewable energy value trading market, and for gas, carbon-neutral city gas provided by the Daigas Group.

In addition, the project sets a 35% or more reduction in CO₂ emissions compared to a standard building as its target, and adopts the following environmental impact reduction technologies.

- District heating and cooling

Heat exchange between zones will be undertaken through the introduction of district heating and cooling to improve the overall energy efficiency of the area.

- Aquifer thermal energy storage

Hot exhaust heat generated from the use of air-conditioning for cooling in summer is stored in the aquifer near 40 m to 50 m below the surface. This heat is used as thermal energy for heating in winter. Cold exhaust heat generated from the use of air-conditioning for heating in winter is stored in the aquifer and used as thermal energy for cooling in summer. By using the exhaust heat that was stored, effectively cooling and heating can be achieved to help reduce heat islands.

- Biogas and biodiesel power generation

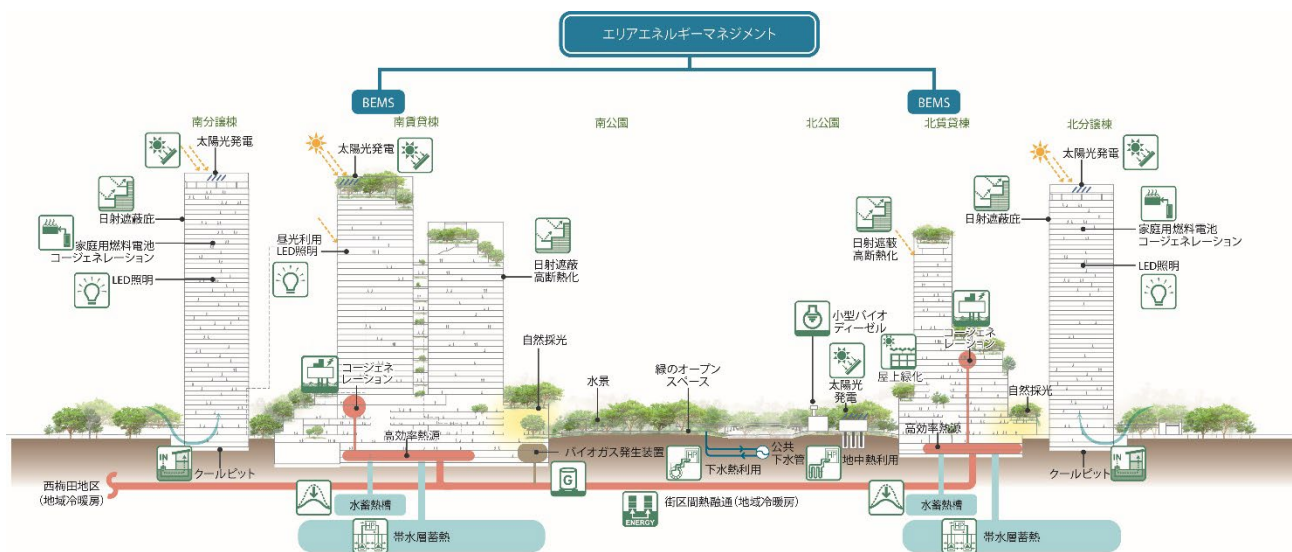
Organic matter contained in food waste and kitchen sewage emitted from buildings are converted into methane gas using methane fermentation. In addition, used cooking oil is converted into biodiesel fuel, and these are used to produce electricity and heat (hot water) to achieve resource circulation within the area.

- Sewage and geothermal heat utilization

The project adopts efficient air-conditioning and hot water supply systems that make use of the characteristics of sewage and underground earth, which is cooler than the outside air in summer and warmer in winter.

- Household fuel cells

All units in the condominium blocks are installed with the household fuel cell ENE-FARM Type S. An independent energy system is introduced by combining them with emergency generators to mutually distribute electricity within the blocks during power outages.



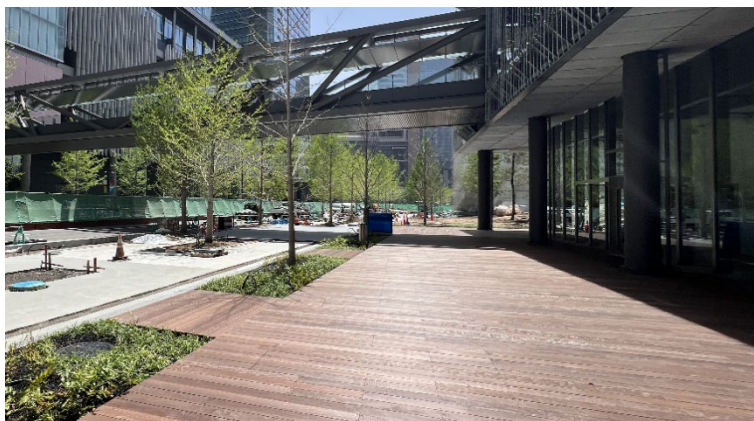
▲Environmental impact reduction technologies being adopted in the project

3. Active use of wood

Wood is used at various locations within the development area, including the 350-meter Hirameki Walkway that runs from north to south across UMEKITA PARK and the flooring of building terraces (such as the outdoor premises of the North Building). When using tropical timber, which have excellent strength, the project selects materials that have obtained the proper government permits and international forest certifications based on forest management, processing, and distribution. In addition, other than tropical timber, Japanese timber with the appropriate traceability is adopted to protect forests.



▲ Hirameki Walkway



▲ Outdoor premises of the North Building

Certain areas such as park facilities adopt the new building material MI Deck (framework material that also functions as finishing material) from MEC Industry Co., Ltd.*⁵ This new building material combines wooden sheets with steel decks that have steel trusses used in reinforced concrete structures and steel structures. It contributes toward land conservation and carbon fixation by using Japanese timber that have reached appropriate harvesting age.



▲ Park facility ceiling deck

*5: MEC Industry was established in January 2020 by seven companies—including Mitsubishi Estate and Takenaka Corporation—to realize a society that uses wood. Kagoshima Yusui Plant—the first plant in Japan that carries out the entire process from procurement of domestic logs to the production of timber and manufacturing and sales of products—and Kagoshima Yusui Material Center commenced full-scale operations in June 2022. It produces products that include cross-laminated timber (CLT) and other building materials, new building materials such as MI Deck, and prefabricated housing. By having its own plants, MEC Industry established a business model that integrates the business flow in forestry—from upstream to downstream processes—and limits intermediate costs to provide low-cost, high-quality products that meet user needs.

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About ORIX Group:

ORIX Group (ORIX Corporation TSE: 8591; NYSE: IX) was established in 1964 and has grown from its roots in leasing in Japan to become a global, diverse, and unique corporate group. Today, it is active around the world in financing and investment, life insurance, banking, asset management, real estate, concession, environment and energy, automobile-related services, industrial/ICT equipment, ships and aircraft. Since expanding outside of Japan in 1971, ORIX Group has grown its business globally and now operates in around 30 countries and regions across the world with approximately 34,000 people. ORIX Group unites globally around its Purpose: “Finding Paths. Making Impact.” combining diverse expertise and innovative thinking to help our world develop in a sustainable way.

For more details, please visit our website: <https://www.orix.co.jp/grp/en/>

(As of March 31, 2024)

Caution Concerning Forward Looking Statements:

These documents may contain forward-looking statements about expected future events and financial results that involve risks and uncertainties. Such statements are based on our current expectations and are subject to uncertainties and risks that could cause actual results that differ materially from those described in the forward-looking statements. Factors that could cause such a difference include, but are not limited to, those described under “Risk Factors” in the Company’s annual report on Form 20-F filed with the United States Securities and Exchange Commission and under “(4) Risk Factors” of the “1. Summary of Consolidated Financial Results” of the “Consolidated Financial Results April 1, 2023 – March 31, 2024” furnished on Form 6-K.