











Following the creation of the Japan Housing Corporation,

Following the creation of the Japan Housing Corporation, the former Urban Renaissance Agency, was established in 1955, the Agency has been involved in the development of various technologies to contribute to close contact with nature, the efficient use of resources and energy, as well as living safety, security, and well-being, for over half a century, in our aim to build environment-friendly towns and residences. In 2005, the Agency released the Policies for Environmental Protection to declare its keen efforts toward environment measures in all of its business activities.

This brochure introduces our efforts to date, particularly construction of rental housing, with a focus on the following four perspectives:

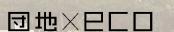
Preservation and regeneration of natural environment

- Energy saving and comfort
- · Efficient use of resources and waste reduction
- · Eco-friendly lifestyle

The brochure also includes actual examples of housing complexes that we have built.

The Urban Renaissance Agency is committed to the reduction of environmental impact in cities as we continue our initiative towards creating cities which draw the best out of their residents and beautiful, safe and comfortable towns.

For details, please see the Environment Report on the Agency website: http://www.ur-net.go.jp/e-report/



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Environment-focused Efforts

Conservation and regeneration of natural environment

Biotope

Biotope

Green

- Rooftop gardening
- Gardening of wall
- Green bank
- Conservation of natural green area

Rainwater overflow control

- Water-retentive pavement
- Rainwater use by rainwater storage, et
- Underground infiltration of rainwater
- Permeable pavement

Energy saving and comfort

nergy saving

- Condensing heating and
- water heater system

 CO2 heat pump hot water supply
- Household fuel cell cogeneration system
- Cogeneration system
- Peak alarm distribution board
- Improvement of heat insulation
- (Next-generation energy-saving standard
 Heat reflecting glass

Use of natural energy

- Photovoltaic power generation
- Wing power generation

 Passive cooling
- Passive cooling

 Wind environmental designing
- Solar thermal utilization
- Cool tube system
- Coortube system

Effective use of resources and waste reduction

Recycling and waste reduction

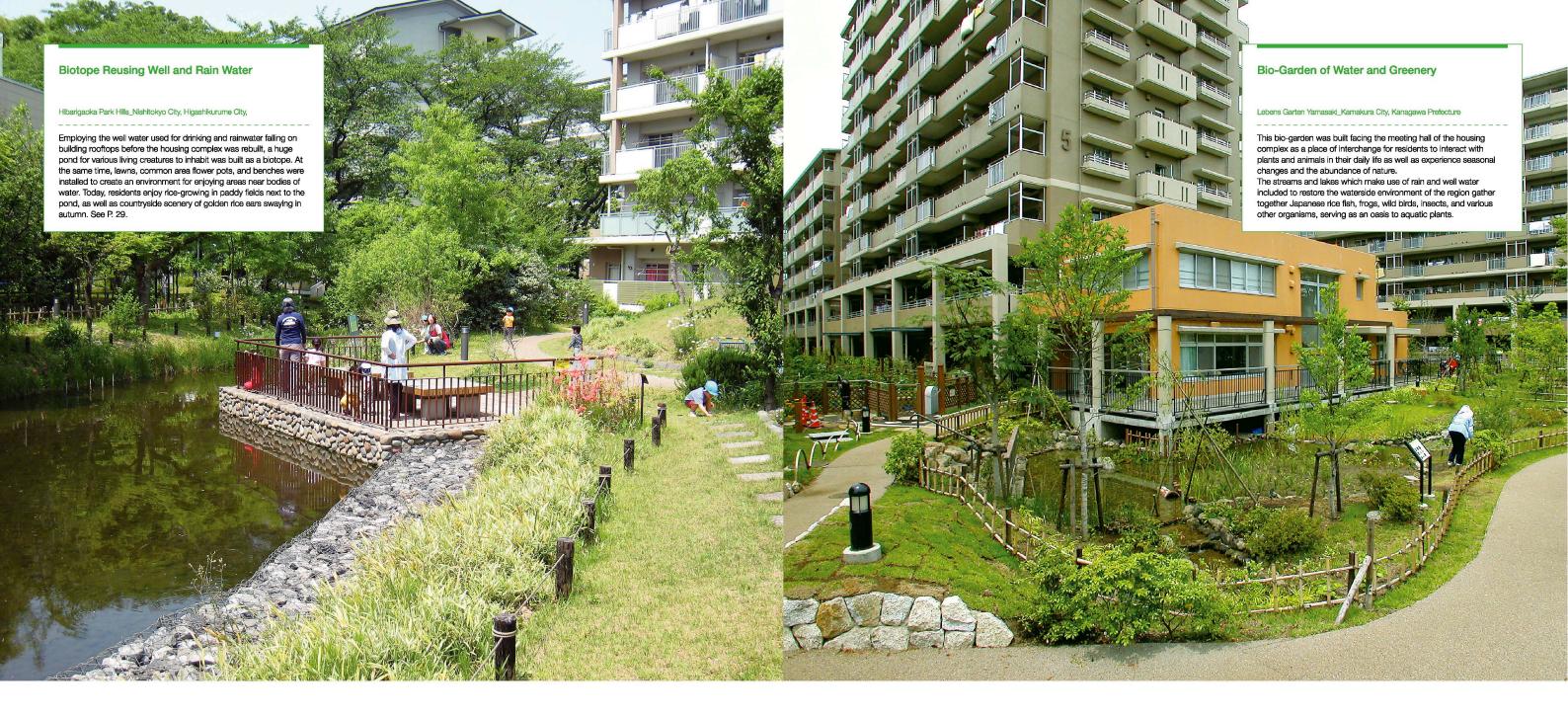
- Use of concrete-recycled crushed
- (On-site regeneration)
- KSI

 Recycle foamed core Unplasticized
- polyvinyl chloride pipes
- Eco-material cable
- Ultra water-saving toilet
- Compost-type food waste processor
- Compost-type food waste processo
- Disposer

Eco-friendly lifestyle

Community Lifestyle

- Green workshop
- Common flowerbed
- Kleingärten
- Symbiosis urban area model project



Biotope

Conservation and regeneration of natural environment

- ☑ Biotope
- ☐ Rooftop gardening
 ☐ Gardening of wall
- ☐ Green bank
- ☐ Conservation of natural green are
- ☐ Water-retentive pavement
- ☐ Rainwater use by rainwater storage, etc
 ☐ Underground infiltration of rainwater
- Permeable pavement

Biotope means a restricted homogenous area with specific environment conditions which specific biological communities can inhabit.

The Urban Renaissance Agency is dedicated to (carries out) the building of biotopes,

with the aim to restore biological diversity to the region, form an urban environment for humans and living things to coexist, and create a place for people to interact with living things in their daily life.

Identifying the environmental characteristics of respective regions, we are also actively building a biotope network

which complements and links biotopes serving as a home to wildlife growing and inhabiting

the region or a relay point during their migration. In drawing up biotope plans,

we conduct surveys on the current situation of vegetation, insects, birds, reptiles, and amphibians at various points in the vicinity, as well as literature surveys and interview surveys of locals.

Biotopes serve as a venue for children to learn about the environment,

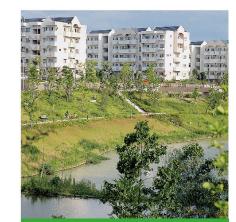
and for local residents to accept the existence and coexistence of vegetation and animals. Since 2005,

we have been conducting systematic monitoring surveys of biotopes built in UR rental housing, to accumulate data and review improvements needed.

Rooftop Biotope

Green Plaza Hibarigaoka-Minami_Nishitokyo City, Tokyo

This biotope built on the rooftop of an assembly hall serves to restore the ecosystem and is an opportunity interact with nature in daily life.



Biotope Lake "Close to Home" Built Inside Housing Complex

Takatsuki, Abuyama_Takatsuki City, Osaka

Built as part of an existing forest adjoining the balancing reservoir in a neighboring park, this biotope serves to restore the ecosystem.



Stream Making Good Use of Rainwater

Urbane Bio Kasuga_Kasuga City, Fukuoka Prefecture

The stream which makes use of rainwater and lush greenery combines together to create a relaxing space that feels like a forest within the housing complex.

Sain Varier Sakuradutsumi

Reborn Senkawa and biotope

Site: Sakuradutsumi 1-1, Musashino City, Tokyo Management began in: October 1999-December 2005

Purpose: For rent. 1.120 units Construction: Reinforced concrete, 3-10 stories, 28 buildings

Site area: Approx. 8.4 hectares

Underground infiltration of rainwate Rooftop gardening

Permeable pavement

Peak alarm distribution board Recycle foamed core Unplasticize Improvement of heat insulation
Heat reflecting glass polyvinyl chloride pipes

Eco-material cable
Ultra water-saving toilet

Common flowerbed

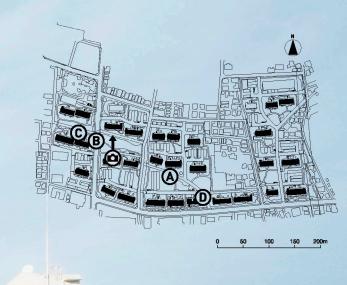
Sain Varier Sakuradutsumi is a housing complex surrounded by lush greenery, within walking distance from the JR Chuo Line Musashi-Sakai station. Near this housing complex, rebuilt in a rehabilitation project, is the Koganei Park, well-known for its cherry blossoms since the Edo Period, lying in an area which closely retains the characteristics of the Musashino area. Built on the concept of "town development where residents can blend in easily," Sain Varier Sakuradutsumi lives up to the envisioned living environment, which blends well with the nature of Musashino, with south-facing building layout making use of traffic lines inside the housing complex which were there previously, preservation of trees, and networking with greenery around the housing complex. Based on the policy of "remaking Musashino," the basic plan for "greening" Musashino City, Senkawa river flowing through the site of the housing complex was regenerated as a space to enjoy the waterside in the rehabilitation project. The park along the river serves as a green center consisting of three areas: pond, bushes, and grass, and is integrated with the waterside. The river and park draw their water from rainwater. The rainwater collected in a tank is drawn up by a pump running on solar energy and released into the river and lake. The development of the waterside environment was awarded the 1999 Zenken Award (Joint Project category). There are also twenty outdoor compost waste disposal systems recycling raw household wastes. This raw waste is composted, and the fertilizers



Cherry Blossoms Preserved from Pre-Rebuilding

This housing complex inherits cherry blossom and keyaki trees which have been there since before it was built. Transplanted trees and new trees were added to those preserved to create a quaint, leafy street. See







Biotope Home to **Diverse Organisms**

From the deck that sits out onto the lake, the biotope home to diverse organisms such as the dragonfly can be observed. See P. 04.



River Environment Close to Nature

The river flowing through the housing complex has been designed as close as possible to the natural environment so that it can serve as a habitat to various types of organisms



Use of Household Fuel Cell cogeneration system

Some of the units use household fuel cell cogeneration system to save energy and sharply cut CO2 emissions.

- Biotope
- ✓ Rooftop gardening
- Gardening of wall
- Green bank
- Underground infiltration of rainwater

Rainwater use by rainwater storage, etc

Permeable pavement

☐ Water-retentive pavement







Urbanebio Kawasaki_Kawasaki City, Kanagawa Prefecture

Urbanebio Kawasaki is an endeavor to create a rooftop biotope where residents can access on a daily basis, envisioned by such themes as landscaping of comfortable and beautiful urban residential area, increased eco-friendliness of central areas (protection and inhabitation of small ecosystems), and environment-consciousness. The basic use of rainwater is a symbolic characteristic of the rooftop biotope, and serves as a water place to birds and insects. Plants providing food to birds and butterflies are selectively introduced here to attract organisms living in Kawasaki.

Greening of Wall: Improving View of Multilevel Parking Lots

Lebens Garten Yamasaki_Kamakura City, Kanagawa Prefecture

Lebens Garten Yamasaki is an effort to add vegetation to rooftops and walls in order to integrate the greenery on the ground and on buildings. The lush-green and pleasant space created helps enhance the outdoor environment. To enhance the landscape of streets, etc., the walls of parking lots, bicycle parking areas, garbage areas, etc. have been greened where possible to promote vegetation in this housing complex. The greening of walls in parking lots contributes to the improvement of the immediate natural environment, such as noise reduction and landscaping of walls.

Green Bank Using Preserved Tree as Symbol of Housing Complex

Chaleur Hiroo_Shibuya-ku, Tokyo

Trees planted in a housing complex built in the 1950's, and trees that have been preserved since those times are now the landmark of greenery, comprising the landscape of the area over a long period of over 40 years. To the residents, these trees hold memories of days long passed. The towering Mchillus thunbergii tree which survived a fire even though Chaleur Hiroo was devastated during WWII is remembered by the people in this area and preserved carefully, even after the rebuilding of the former housing complex.

Conservation of Natural Green Space for Rebuilding Relaxing Forest

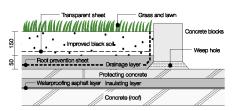
Tamadaira no Mori_Hino City, Tokyo

This forest, which was established as a forestry test center in the Taisho Era, was reborn as the Tamadaira Housing Complex Natural Park, serving as a symbolic presence of the housing complex today. At the same time, it also functions as a green zone in the area, attracting birds and other wildlife. Valuable trees, mainly fir trees which are rarely found in cities and suburbs, are fostered here while promoting symbiosis between people and nature, as a place where residents can enjoy nature and as a spot for people to rest, etc.

In its urban development projects, the Urban Renaissance Agency has been dedicated to respecting the characteristics of the local natural environment where possible, and actively preserving and regenerating such features. Lush-green places of livelihood where residents can enjoy nature serve as an important means of securing pleasant spaces close to home.

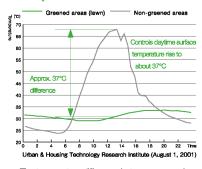
The Urban Renaissance Agency has been involved in the technical development of rooftop greening using thin-layer soil with minimum impact on building structures since FY1993, and started to introduce this system in some regions from FY2001.

We also conduct surveys on existing trees in the premise of housing complex sites to build a database on usable trees, in efforts aiming at the effective use of trees in the rebuilding projects of housing complexes together with local public corporations and private sector businesses.



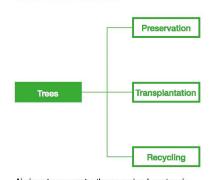
Standard Cross-sectional View of Rooftop Gardening

Rooftop Greening Experiment for Temperature Measurement



The temperature difference between greened areas (lawn) and non-greened areas such as concrete can reach up to a 37°C maximum during the day. Rooftop greening has been found to be effective for reducing heat absorption in buildings, thus easing the "heat island" phenomenon, as well as to have an impact on insulation preventing heat transfer indoors.

Green Bank System



Aiming at zero waste, the green bank system is designed to make use of green assets fostered over a long period of time in housing complexes to be rebuilt using three methods: preservation, replanting, and the recycling of logged trees (benches, chips, etc.).



Replanting of Large Keyaki Tree (Green Bank)

Hibarigaoka Park Hills_Nishitokyo City, Higashikurume City, Tokyo

Trees which cannot be preserved due to new building layout, etc. in the rebuilding of housing complexes are replanted as much as possible for effective use.



Recycled Bench from Logged Trees: Green Bank

Tamadaira no Mori_Hino City, Tokyo

Trees which had to be logged inevitably are recycled into benches, etc.

Tamadaira no Mori

Life with the preservation of and interaction with the forest

traffic and frequent cleaning. These efforts won Tamadaira no Monthe 25th Urban Award (regional greening category, urban greening fund director sprize).

Site: 4-6 Tamadaira, Hino City, Tokyo Management began in: March 2002 Purpose: For rent, 945 units (As of March 2008)

Site area: Approx. 9.9 hectares

Construction: Reinforced concrete, 5-13 stories, 19 buildings

Biotope Underground infiltration of rainwate

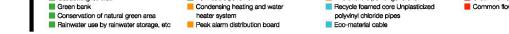
Improvement of heat insulation Photovoltaic power generation
Recycle foamed core Unplasticized

Ultra water-saving toilel

the landscape of the 550 m long main

road of the housing complex. See P.

watering place for birds and insects.





housing complex, with a trunk

circumference of 3.98 m and height of

Rainwater Overflow Control

Water circulates in the natural world. Rain falling on the ground enters soil and is maintained there.

The rainwater enters rivers and the sea as surface water and underground water,

and vaporizes in air during the process to become rain again. Growing urbanization in recent years,

however, has produced more and more asphalt and concrete grounds, decreasing soil surface

for rainwater to penetrate. As a consequence, this is causing various problems including reduced water retention in the soil,

increased surface water which leads to floods, etc. This situation also causes heat island phenomena.

One of the solutions given for easing these phenomena is the improvement of the ground level casing.

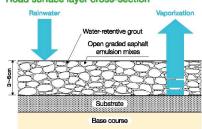
UR Renaissance is also working on efforts in this area. The following introduces some of these efforts such as technology to install water-retentive and permeable road paving techniques,

methods of using rainwater such as rainwater underground penetration and rainwater storage.

Reducing Ground Level Temperature Water-Retentive Pavement

With this paving method, rainwater is accumulated in microspaces built into pavements and gradually evaporated on sunny days. The heat from vaporization is used to reduce road surface temperature. Materials used include water-retentive asphalt made by filling materials with water retention such as water absorption polymer and special cement into the voids of open graded asphalt emulsion mixes, as well as water-retentive blocks for absorbing and maintaining moisture in micro spaces of several micro meters.

Road surface layer cross-section



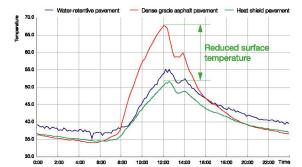
Using the nature of grout to attract micro water molecules of less than 0.6 mm in size, water retention is increased.



Water-retentive block

[Life Town Kokuryo]

Water-retentive asphalt



Changes in surface temperature by paving material
This graph shows measured changes in road surface temperature
over 24 hours according to type of pavement material. Compared to
the peak road surface temperature, water-retentive and heat shield
pavement demonstrates better temperature reduction effects than
normal dense grade asphalt pavement. The UR Renaissance Agency
continues on-site temperature measurements to verify effects.

Туре	Name of housing complex, etc	Address	Construction year	Construction area (m2)
Water-retentive block	Urbane Renace Kaizuka	Fukuoka City, Fukuoka	1996	1,000
Water-retentive block	UR Technology Institute	Hachlo ji City, Tokyo	1997	430
Water-retentive block	Togashira	Toride City, Ibaraki	2002	100
Water-retentive block	Asaka Hamasaki	Asaka City, Saitama	2003	530
Water-retentive block	City Court Futakotamagawa	Setagaya-ku, Tokyo	2003	240
Water-retentive asphalt	Freres Nishi Kyodo	Setagaya-ku, Tokyo	2003	180
Water-retentive block	Life Town Kokuryo	Chofu City, Tokyo	2003	170
Water-retentive asphalt	Life Town Kokuryo	Chofu City, Tokyo	2003	400

Installation of water-retentive pavements to date

Water retention pavement is increasingly gathering interest as a
technique for resolving heat island problems, and it is increasingly
being adopted in road construction in recent years. Though there still
remain aspects that need to be reviewed such as economic viability
and sustenance of effects, we plan to adopt this water-retentive
pavement method as required in the future.

Conservation and regeneration of natural environment

☐ Rooftop gardening

☐ Rooftop gardening
☐ Gardening of wall
☐ Green bank

□ Conservation of natural green area.

MZ C

☑ Rainwater use by rainwater storage, etc
☑ Underground infiltration of rainwater

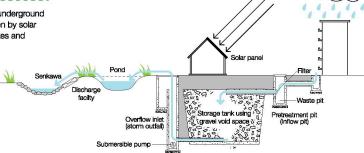
✓ Permeable pavement

✓ Water-retentive pavement

Rainwater Reservoir

Sain Varier Sakuradutsumi

Rain accumulated on buildings is stored in underground reservoir tank, pumped out by a pump driven by solar energy, and used to supply water for the lakes and streams in the Senkawa Waterside Park.



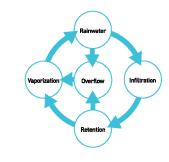


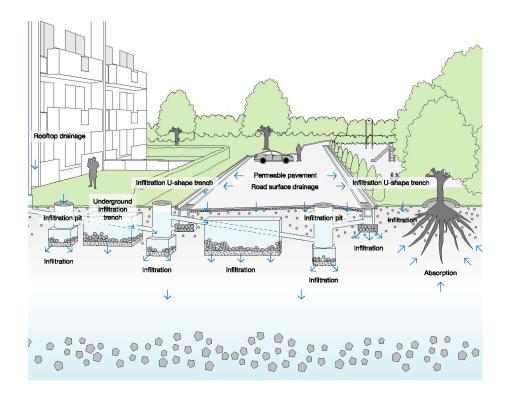
Rainwater Underground Infiltration and Permeable Pavement

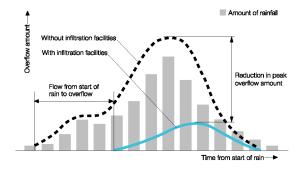
Rainwater infiltration is an eco-friendly method combining infiltration trenches, infiltration pits, permeable pavernents and other rainwater infiltration facilities for rainwater to distribute and penetrate into ground surface or soil nearby to minimize overflow of rainwater outside the district.

The UR Renaissance Agency first applied this method in Japan in the 1981 Akishima Tsutsujigaoka Heights (Tokyo). Since then, we have been installing rainwater infiltration facilities in housing complexes in which their benefits can be expected.

Natural water circulation

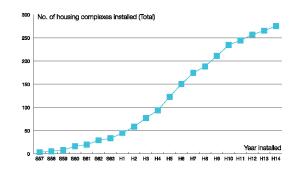






Rainwater overflow control effects

Compared to areas without infiltration facilities, total amount of rainwater overflow outside can be cut down to 1/5 in areas with infiltration facilities. The graph shows that there is no overflow outside for some time after rain starts, and overflow is controlled at peak rainfalls.



Installation of rainwater infiltration construction methods to date Since the first installation in 1981, we have been installing rainwater infiltration facilities in housing complexes in which their benefits can be expected. The number of housing complexes installed with these facilities exceeded 250 in 2000 and continues to increase. The UR Renaissance Agency will continue to support and spread this technology.

Site: 3-5 Mukomotomachi, Amagasaki City, Hyogo Park Town Nishi-muko Management began in: October 2003 Purpose: For rent, 1,165 units (As of March 2008) Green promenade under the bright sky Site area: Approx. 6.8 hectares Park Town Nishi-muko is a housing complex located about 30 minutes from Umeda and Sannomiya, in the northwest district of Amagasaki City. Rebuilt in a rehabilitation project, this housing complex lies in an area blessed with water and vegetation, adjoining the Nishimuko Park and Muko River. Making good use of its features being situated next to the

Muko River, the housing complex was planned giving consideration to landscaping consisting of roads and dry riverbed, preservation of the natural environment, and symbiosis with the environment. Specifically, preserved trees were used as part of the landscape, and paths running through the premise were planned so as to blend the townscape of the area and nature, effectively creating an outdoor space inheriting the lush-green environment. To ease wind effects of the high-rise apartment blocks, the premise is actively greened. Along the paths are flower beds running by the residential flower club "Kiku No Kai" to create pleasant

Use of Preserved Trees

Trees that have grown large in the

preserved and planted in the open

space to pass down the greenery.

previous housing complex are

Kiku No Kai

scenery.

Linking the townscape

of the area and nature To live up to the Muko River and

to excursion in the area.

Nishimuko Park rich in nature, paths

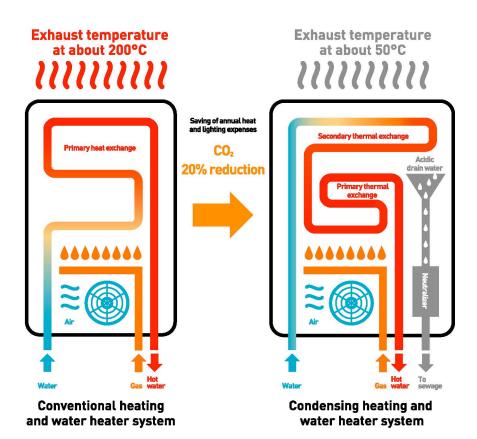
are built on the premise to contribute



Condensing heating and water

Rooftop gardening

Recycle foamed core Unplast



state-of-the-art enhancement of insulation and introduced highly efficient facilities.

Condensing heating and water heater system

The condensing heating and water heater system is a gas heating and water heater system with high energy efficiency, which preheats water using the secondary heat exchanger and reuses the latent heat, etc. obtained from emitted heat to boil water. The precedent model has an exhaust loss of 20%, but this latent heat collection system has reduced exhaust loss down to 5%. The UR Renaissance Agency started introducing the system in 2003, and had installed it in about 9,000 units by the end of 2006. This allows CO2 reduction of about 1,000 tons each year.



Cogeneration System

Acty Shiodome_Minato-ku, Tokyo

The cogeneration system generates electricity and heat simultaneously. It provides more than two types of energy from one energy source. The motor, which drives the power generator, consists of a gas engine and gas turbine. The heat generated from the exhaust gas and cooling water emitted is collected as hot water, and used for hot water supply and floor heaters running on hot water. By effectively using heat and electricity, high energy efficiency is attained, contributing enormously to energy conservation (in the case of Acty Shiodome, CO2 reduction is about 16%). This system has been installed in about 5,000 homes in 10 districts between 1990 and 2006.



Heat-exchange unit

Energy Saving

In order to prevent increase in greenhouse cases which cause global warming, it is effective to reduce energy made from fossil fuels. As complex housing is a concentration of housing units, energy consumption of electricity and gas is said to be about 20% less compared to average houses. Moreover, in order to enhance the energy saving performance of housing, it is necessary to enhance the heat insulation performance of buildings to ensure efficient cooling and heating with little energy, as well as introduce highly effective equipment. One effective means of enhancing energy efficiency that is drawing interest is the introduction of the cogeneration system, which simultaneously generates and uses air and heat. UR Renaissance Agency has steadily implemented



CO2 Heat Pump Hot Water System

Vanguard Tower_Toshima-ku, Tokyo

The CO2 heat pump hot water system uses CO2 as coolant and boils water using atmospheric heat. This new system saves power consumption by about 30% compared to conventional electricity hot water devices, and because it uses nighttime power to store hot water, it contributes to reducing power demands during the day.



Household Fuel Cell cogeneration system

Sain Varier Sakuradutsumi_Musashino City, Tokyo

Home fuel batteries are high efficiency energy systems which generate electricity from urban gas as well as collect heat emitted during reaction. They were used for the first time in a housing complex in 2004, which was the first such endeavor in the world. By the end of 2006, they were installed in three districts.



Exhaust

heat exchanger

Gas engine

Power generator

CO2 heat pump hot water supply Cogeneration system

Pair glass

Heat-

exchange

✓ Improvement of heat insulation
☐ Wind environmental designing ☐ Heat reflecting glass ☐ Solar thermal utilization

✓ Household fuel cell cogeneration system
□ Photovoltaic power generation
□ Cool tube ☐ Wind power generation

Peak alarm distribution board Enhancement of insulation performance

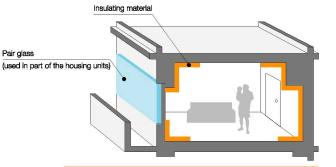
Condensing heating and water heater system, household fuel cell cogeneration system or CO2 heat pump hot water supply



Peak Alarm Distribution Board

Acty Shiodome_Minato-ku, Tokyo

The peak alarm distribution board displays the state of use of electricity to indicate excessive use of electricity by voice alert. As residents are able to know the state of use in real-time, energy saving benefits can also be looked forward to. The Agency installed it in about 100,000 units by the end of 2006.



Enhanced Insulation Performance (Next-generation energy saving standards)

Next-generation energy saving standards are standards on targets for adiabatic performance of the home. Compared to the new energy saving standards, which are considered to be applied in more than half of newly built homes in Japan, adiabatic materials are required to have a certain thickness, considered to reduce energy used for cooling and heating by about 20%. The Agency built about 10,000 homes meeting the next-generation energy saving standards by the end of 2006.

Acty Shiodome

Site: 1-1 Kaigan, Minato-ku, Tokyo Management began in: March 2004 Purpose: For rent, 683 units (UR Rent upto 44th story) Construction: Reinforced concrete, 56 stories, 1 building Site area: Approx. 1.2 hectares

Rooftop gardening

Permeable pavement

Environment-focused design for city center super high-rise building



Greening of Parking Lot Wall

This endeavor proposes one of the ideal ways of urban greening using "three-dimensional green network formations." This green parking lot also functions as a wall garden to enhance landscape. See P. 08.



Floating Garden

A three-story void garden is installed in three places in the middle-, and low-story portions to attract light and wind into the complex as well as serve as a green relaxation place.



Super-high Rise Building C Cogeneration at

Heat generated by the gas engine generator is collected and reused for the hot water supply for residential units. The system contributes enormously to saving energy by effectively using heat and electricity.



Step Garden Serving as Place for Interchange

This open space created by making high-rise buildings provides a green network together with adjacent parks, which functions as a recreational place to the locals.



- CO2 heat pump hot water supply

- - Solar thermal utilization
- ☐ Heat reflecting glass ☐ Household fuel cell cogeneration system ☑ Photovoltaic power generation ☐ Cool tube system ✓ Wind power generation



Passive Air-Conditioner

Heart Island Shinden_Adachi-ku, Tokyo

Passive cooler is a housing system which eases cooling load during summer without relying on facilities and equipment, by circulating air through vault space and solar screen consisting of movable sunblock tents, etc. The Agency also provides passive solar housings which ease heating load

for Summer Comfort

Solar Power Generator in Pavilion

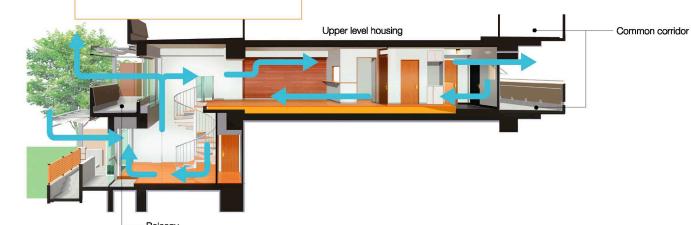
Tamadaira no Mori_Hino City, Tokyo

The solar power generation system is a quiet and clean power generator which effectively uses solar light. It also promises to serve as an independent power supply during power failures caused by disasters, etc. In Tamadaira no Mori, the solar power generator is installed in a pavilion and on rooftops. and the power is used for circulating the rainwater accumulated in streams.

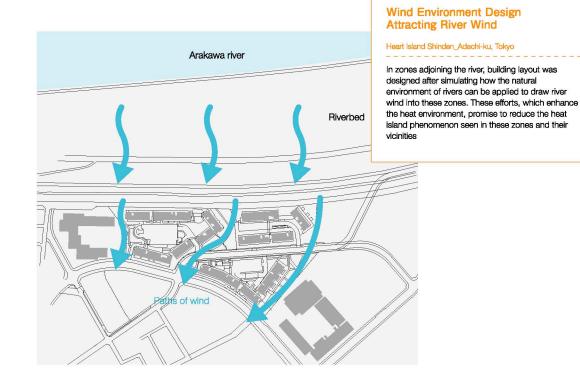


Mure Housing Complex_Mitaka City, Tokyo

Hybrid lighting devices are installed on the premise, which are able to efficiently change even the weakest wind to power by combining solar panel and Savonius windmill. The display panel indicates the quantity of electricity being generated.



In recent years, increasing energy demands worldwide have led to huge expectations directed to new energies with little environment impact using natural power such as sunlight and wind. The UR Renaissance Agency installs facilities for various effective use of natural energy such as photovoltaic generation system and wind generation system in areas where such effective uses can be looked forward to. As efforts to reduce environment impact through architectural approaches that do not rely on mechanical facilities, we also adopt methods to build a good wind environment by constructing wind routes during building layout planning as well as housing plans giving consideration to ventilation. All of these endeavors help reduce energy used as well as contribute to the enhancement of comfort of the residents. The buildup of these efforts is considered to contribute to the preservation of the global environment.



Monumental Windmill Symbolizing

the Housing Complex Heart Island Shinden_Adachi-ku, Tokyo

The windmill for wind power generation is designed as a symbol of the housing complex. The power from this windmill is used to light up the LEDs embedded along the walking trails.

This effort has been highly received, winning it an award for its symbiosis with nature (International Illumination Design Award (IIDA)).





Hot Water Supply System Using Solar Heat

Narumi Housing Complex_Nagoya City, Aichi

The solar heat hot water system accumulates solar heat with the solar energy collector installed on the building rooftop, and uses this heat to make hot water. It contributes to saving energy in the supply of hot water. It is composed of the energy collector, which absorbs solar heat, and hot water tank accumulating heat as hot water.

Heart Island Shinden

Paths of window connecting Arakawa River and the city

Heart Island Shinden is a housing complex in a pleasant area surrounded by the Sumida and Arakawa rivers, 10 km from central Tokyo. The housing complex forms a new town at an old factory site of 20 hectares in total area, and comes with a new bridge, roads, park, school, etc. By building a housing complex integrated with slightly inclined Super Teibo Bank by raising the level of the bank over a wide area, the nature of the waterside is retained to create this eco-friendly town. Cutting-edge technology to protect the environment can be seen throughout this town. Making use of the pleasant river breeze of Arakawa, walking

Site: 3-35, Shinden, Adachi-ku, Tokyo Management began in: March 2004 Purpose: For rent, 781 units (As of March 2008)

Construction: Reinforced concrete, 6-14 stories, 13 buildings

Biotope
Rooftop ga

Underground infiltration of rainwate

Condensing heating and water

Wind environmental designing

polyvinyl chloride pipe

Ultra water-saving toilet

Site area: Approx. 2.9 hectares



Peak alarm distribution board

Improvement of heat insulation
Photovoltaic power generation

Momentum Windmills Symbolizing River Breeze

Momentum windmills are installed as symbols of the symbiotic town. Power generated by these windmills is used to light outdoor design lamps. See



Water Facilities Using Rainwater

Rainwater accumulated on buildings is stored in water tanks, and circulated using pumps. These water facilities function to enhance scenery, reduce temperature, and attract wildlife.



Use of Solar Energy

Solar panels are installed on apartment rooftops (solar batteries). Power generated is used for lighting assembly halls, etc.See P. 20.





Effective use of resources and waste reduction

✓ Use of concrete-recycled crushe
✓ KSI

Ultra water-saving toile

Dienneer

The effective use of limited resources requires the transition to a recycling-oriented society while provisionally reducing the current practice of mass production, consumption, and disposal.

The reduction, reuse, and recycling of waste in every scene of daily life are efforts indispensable for building

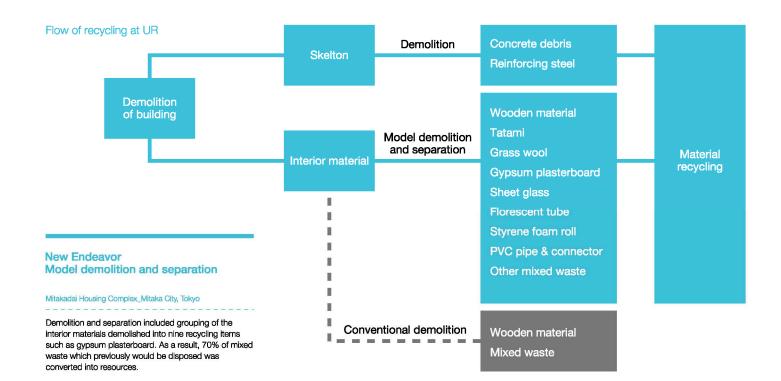
cities capable of sustainable growth. The UR Renaissance Agency has been encouraging the recycling of construction waste produced in rebuilding projects since 1988 to reduce environmental load.

The Agency has also been actively carrying out experiments and trial production

of Agency-developed skeleton infill (KSI) housing, which enables longer life buildings,

for their practical application. The Agency considers it important to effectively use resources

and reduce waste in every step of housing planning, design, construction, remodeling, and demolition.





Waste reduction

The UR Renaissance Agency encourages demolition and separation aiming at zero-emission in construction dismantling work in rehabilitation projects. The Agency is also committed to enhancing recycling technologies as well as constructing recycling systems of building materials including the use of recycled materials to contribute to the formation of a recycling-oriented society.



100% recycling of concrete debris

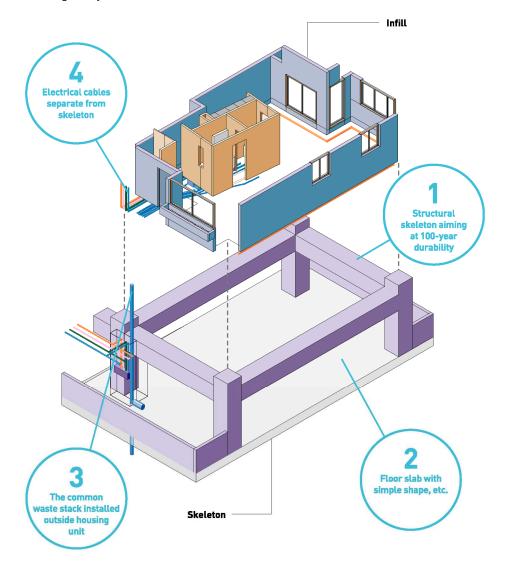
Concrete debris generated in the dismantling of buildings, etc. are crushed on site or in external recycling plants to produce recycled concrete rubble for road bottoming, etc. Since 1993, all concrete debris have been more or less 100% recycled.



Use of recycled concrete for buildings

Recycled concrete made of the sand gravel extracted from concrete debris following demolision were used for building the water receiving tank pump room in Verdure Ichikawa Minami, Chiba Prefecture in 2000. The material has been confirmed to have excellent construction quality. Inspection is continued to study changes in times even today.

4 design requirements



KSI Housing

The KSI (Kikou Skeleton Infill) housing system can achieve higher building skeleton durability (about 100 years). The system retains the skeleton while replacing the infill in accordance with changes in lifestyle. It is employed in buildings in the midtown area in Tokyo and skyscraper apartments.

Social significance of KSI housing

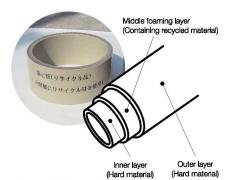
Long-time durable building suited for recycling-oriented society

Responding to changes in lifestyle of residents

New developments in housing industry

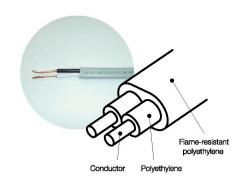
Sustainable and quality townscape development

As of the end of 2006, UR Renaissance Agency has built about 14000 KSI housing units, which are expected to contribute to about 1,300 tons of CO2 reduction effects in a year as energy saving effects per durable years with regard to the energy consumed for the building of structural skeletons, compared to convention buildings.



Recycle foamed core Unplasticized polyvinyl chloride pipes

PVC resin collected following use is finely crushed and recombined to re-foam, both sides of which is sandwiched by new PVC to make pipes. These pipes are used for sewage in housings, reducing the use of new PVC by half of the volume used currently.



Eco Material Cable

These are eco-friendly electrical lines and cables whose covering material is made of flame-resistant polyethylene, not containing halogen and lead. Used for the electrical cables of housings, they do not produce harmful halogen gas when burnt or during fires, as well as prevent soil pollution by lead during landfill.



Ultra water-saving toilet

UR has developed a highly efficient water-saving toilet bowl (6L/flush) which is able to reduce the water used by 2/3 over normal toilet bowls (9L/flush). It has installed the innovative facility in homes since FY 2001 with the number reaching about 28,000 homes as of the end of FY 2006. These efforts are expected to contribute to about 90t CO2 reduction effects by saving about 220 million liters of water each year.

Acty Sangenjaya

Pleasant squares with conserved trees

Site: 1-35 Nozawa, Setagaya-ku, Tokyo Management began in: March and August 2002 Purpose: For rent, 523units

Site area: Approx. 2.0 hectares

Permeable pavement

Rooftop gardening
Gardening of wall
Green bank



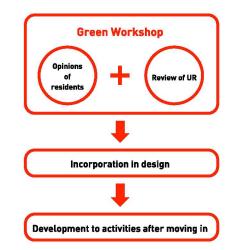


Community Lifestyle

Green Workshop Proposing Community Lifestyles

Hibarigaoka Park Hills_Nishitokyo City/Higashikurume City, Tokyo

Hibarigaoka Park Hills carries out green workshops with its residents for building comfortable and relaxing living spaces. Proposals by residents are incorporated in various places of the outdoor space of the housing complex. Common flowerbeds that have been planned carefully are managed by the resident group "Green Work."



Taking precious care of nature and stopping the unnecessary use of resources andenergy are

vital for making better changes to our daily lives. It is important for residents who are the main players of the towns and homes they live in to cut down on waste in daily life and practice environment-friendly lifestyles.

Together with local residents, the UR Renaissance Agency is dedicated to building community lifestyles friendly

to surrounding nature as well as to the global environment while enjoying the natural environment,

and providing support to help people hand such practices down to future generations.

During the rebuilding of the housing complex, efforts were made to preserve and reuse

the greenery on the premise as it serves as an important environmental asset to the area.

To realize and pass down the hopes and interests of the residents that are nurtured with

the time spent living amongst this greenery, a workshop is held on outdoor space development and improvement.

Events such as nature observation are planned and discussions

are carried out on new outdoor spaces that need to be developed,

to ensure that the new environment after rebuilding work is easy to use and appreciated by residents.



Recreational Space of Flowers and Green

Urbania Shigakoen_Nagoya City, Aichi

In the Hanamonogatari Plan (Flower Story Project), flowers grown by the residents are replanted in promenades and squares to create a colorful outdoor space while enjoying interaction with soil and other living things during planting work. The residents also concluded a "Flower and Green" agreement with Nagova City.



Common Flowerbed **Decorating Roadside**

Freres Nishiarai 2nd_Adachi-ku, Tokyo

This picture shows the replanting of a common flowerbed along the roadside of the assembly hall of this housing complex. Classes on repotting are also held for residents to participate in the flowerbed planting effort more easily. The flowerbeds decorating the roadsides have a three-dimensional feel, consisting of morning glories twined around bamboo trees.



Flowerbed Planting Collaboration

Arbis Midorigaoka_lkeda City, Osaka

These flowerbeds were planted jointly by members of the municipal club "Flower Club" and students of the local Osaka Prefectural Engel High School, who worked together from the planning up to the planning stages. The municipal club and high school students continue to keep in touch even after completion.



Sain Varier Sakuradutsumi_Musashino City, Tokyo

Nature and birdwatching tours are held for residents and children from neighboring children centers and elementary schools to learn about nature at the Senkawa waterside park and in the compound and district. Efforts are also made to build a system for residents to maintain and manage the biotope as a recreation.



Recycling of Raw Refuse

Sain Varier Sakuradutsumi_Musashino City, Tokyo

This housing complex has been a pioneer in composting raw refuse produced on the premise. The compost is collected by Musashino City, added with organic fertilizers, and used by farmers in the city. A morning vegetable market is held by these farmers once a year, which attracts many visitors.



Dried Plum Making from Preserved Transferred Trees

Tamadaira no Mori_Hino City, Tokyo

Plum trees grown by the residents of the precedent housing complex are preserved or transferred. In Tamadaira no Mori, every year, resident groups and municipals get together to make dried plum and plum liquor. Products are distributed at tasting events, etc.

Hibarigaoka Park Hills_Nishitokyo City/Higashikurume City, Tokyo

A small rice paddy field was made next to the biotope pond as

suggested by residents. Run mainly by a resident group, it provides

the opportunity to deepen interchanges between residents while

enjoying the rice-making experience. During the harvest festival. harvested rice and dried plum picked from the trees replanted here are



Common Flowerbed Decorating Streets

Mure Housing Complex_Mitaka City, Tokyo

Accessible and familiar common flowerbeds are grown here mainly by the Mure Gardening Club. The pretty flowers grown with tender love and care by the residents decorate the streets and welcome all entering the complex.



First Kleingärten of **UR Housing for rent**

Lebens Garten Yamasaki_Kamakura City, Kanagawa

This is the first Kleingärten (allotment garden for growing vegetables) built by the UR Renaissance Agency in a housing complex. 35 segments of the garden were built on the premise for cultivating various vegetables like tomatoes, eggplant, and herbs. These gardens also serve as an agricultural opportunity for users to communicate with each



Kleingärten Adjoining Square

Confort Kawasaki Fujimi_Kawasaki City, Kanagawa

A Kleingärten is built inside the courtyard for growing vegetables and working with the soil for gardening. Adjoining a playground and square where children play freely, this recreational site can be enjoyed by both adults and children, and serves as a place for interchange as well.

Chaleur Higashitoyonaka

Protecting Nature of Senri Hills

Site: 6-5 Higashitoyonakacho, Toyonaka City, Osaka Management began in: January 2004 Purpose: For rent, 675 units (As of March 2008) Construction: Reinforced concrete, 5-13 stories, 18 buildings

Site area: Approx. 6.8 hectares

Underground infiltration of rainwate

- Rooftop gardening
- Conservation of natural green area
- Improvement of heat insulation

Installed on the premise, hybrid lighting

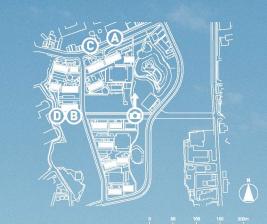
equipment combining a solar panel

and savonius windmill. See P. 20.

- Wind power generation
- Use of concrete-recycled crushed
 Recycle foamed core Unplasticize
- polyvinyl chloride pipes

Ultra water-saving toilet

Chaleur Higashitoyonaka is located in a lush green area, adjoining Senri New Town within 30 minutes of central Osaka. It is also a very convenient area to live, with a concentration of public facilities such as library and retail shops in the vicinity. The urban development of this housing complex, which started with a government rehabilitation project in 2004, was carried out according to a master architect plan by UR Renaissance Agency staff and nine architects. The layout of the apartment (residential) blocks, giving priority/consideration to roadside landscape, was designed to create a space which blends unique housing design and rich nature. In the development of Chaleur Higashitoyonaka, the results of workshops conducted specifically for its construction and participated by previous residents of the premise design of common flowerbeds, etc. The rich nature that existed from before the new housing complex was rebuilt, such as the acom and mushroom hills familiar with the locals, rows of Metasequoia trees, etc. have been preserved as the asset of the housing complex. Chaleur Higashitoyonaka has been awarded the 2006 Urban Design Award (landscape category) and 2007 Green City Award Regional





Boulevard of Metasequoia Trees, **Symbol of Housing Complex**

Lining the road on the north side of the premise are preserved Metasequoia trees, planted about 40 years ago and popular with the



Towards the north side of the premise

is a rock garden. The flowers show a

change and provide color, peace, and

different expression as the seasons

tranquility as the landmark of the

housing complex.

On the west side of the grassy square are a switchback slope and stairs about 15 m wide. The white stone surface of the slope and green plants in the vicinity create a pleasant

団地imes巳 \square \square \square \square \square \square \square

≪Standardized ○Found in the housing complex ■Actual example introduced in this brochur

No.	Nатте о	Address	Manage	Constru	No. of units	Co of	onse	rvat ural (ion a envir	ind r	eger	nerat	tion	Ene	rgy :	savi	ng ar	nd or	omfor	t						ctive te re			sour	ces and		co-f	riend le	dly
	Name of housing complex	u	Management began in:	Construction area (ha)	nits	Biotope	Rooftop gardening	Gardening of wall	Green bank	Conservation of natural green area	Rainwater use by rainwater storage, etc	of rainwa	Permeable pavement*	Condensing heating and water heater system*	CO2 heat pump hot water supply	Household full corporation system	Peak alarm distribution board*	(Next-generation energy-saving standard)**	Improvement of heat insulation	Host reflecting class	Wing power generation	Passive cooling (Solar)	Wind environmental designing	Cool tube system Solar thermal utilization	(On-site regeneration)	KSI	polyvinyl chloride pipes**	Recycle foamed core Unplasticized	Citra water-saving tollet:* Eco-material cable:*	Compost-type food waste processor	Green workshop	Common flowerbed	Kleingärten	Symbiosis urban area model project
01	Sain Varier Sakuradutsumi	Tokyo	1999	8.4	1120	•	0		•					™ ○			0											0				C		0
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)5	Tamadaira no Mori	Tokyo	2002	9.9	945	0		0	•		•	0	0	0			0	()	•								C	0)		C	1	
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7	Green Plaza Hibarigaoka-Minami	Tokyo	2000	0.8	495								0				0							0							C	1		
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23	Acty Sangenjaya	Tokyo	2002	2.0	523	-						0					0									C								0
24	River Harp Court Minamisenju	Tokyo	2003	2.9	521	0	0	0	0			0	0				0			C						C		0						
25	Acty Shiodome	Tokyo	2004	1.2	683			•			0					•	•									C			0					0
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27	Yurigaoka Mizuki machi	Kanagawa	2006	2.4	349	0	0			0		П		0			0			C								0	00		C	C		
28	Confort Tokaichiba	Kanagawa	2007	0.8	153		0	0	0		0			0			0)	C								0	0				0)
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31	Urbane Ohmiya	Saitama	2000	7.8	588		0		0		0	0					0			C								0	00		C	C		
32	Life Town Kokuryo	Tokyo	2003	2.2	520		0	0	0		0	0	0				0											0	0					
33	Park Town Nishi-muko	Hyogo	2003	6.8	1165		0		•			0	0	0			0											0	0			•	r .	
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History of Achievements and Activities

■ Conservation and regeneration of natural environment ■ Energy saving and comfort ■ Effective use of resources and waste reduction ■ Eco-friendly lifestyle ■ UR achievements

Year	UR achievements and activities of environmental technology. [] suggests the name of	the site or c	ommunity
1955	Sunshine-focused layout with the south sides of the buildings being parallel	1994	Fuel cell-based heating system [Trial introduction for Tachikawa redevelopment]
	Housing and Urban Development Corporation founded	1995	The Great Hanshin Earthquake
1956	Development and construction of sewage disposal facilities	1996	Full introduction of the green bank system
1959	Development of the housing complex while conserving		Constant low air volume ventilation system [Searea Odaiba]
	natural topography and the existing groves [Mikage]		Water-retentive pavement [Urbane Renace Kaizuka]
1960	Development of the balancing pond [Higashikurume]		Peak-cut distribution board
1964	Tokyo Olympic Games	1997	Photovoltaic power generation [Arbis Asahigaoka]
1965	Use of the infiltration method [Kunitachi Fujimidai]		Resident-involved Gardening (Kleingärten) [Lebens Garten Yamasaki]
1966	Flowerbed serving as a storage during inundation [Ayamedai]		Kyoto Protocol adopted
1970	Shared vegetable garden [Ogawa]	1998	Peak alarm distribution board standardized
	International Exhibition in Osaka, Japan		Green workshop [Tamadaira no Mori]
1972	United Nations Conference on the Human Environment		Winter Olympic Games, Nagano
1973	First oil crisis	1999	Raw refuse compost [Sain Varier Sakuradutsumi]
1976	District heating and cooling by the use of refuse		KSI model housing (currently, Urban Housing Technology Institute)
	incineration-based waste heat [Morinomiya]		Urban Development Corporation established
1977	Rooftop gardening [Kitasuna 5-chome] ⇒2001 Standardized	2000	Eco-material cable standardized
	Standardization of the external wall insulation and waterproofing method	2001	Unplasticized PVC-U three layer pipes with recycled foamed core
1978	Industrial water-based stream [Shibayama]		[Green Plaza Hibarigaoka-minami]⇒2002 Standardized
1981	Permeable pavement 【Akishima Tsutsujigaoka Heights】 ⇒1984 Standardized		Rooftop biotope [Green Plaza Hibarigaoka-minami]
	Trial of the rainwater infiltration method		Demolition and assortment [Mitakadai]
	[Akishima Tsutsujigaoka Heights]⇒1981 Standardized		Super water-saving toilet bowl [Freres Nishikyodo]⇒2002 Standardized
	Home solar water heater system [Narumi 3rd]	2002	KSI housing [City Court Meguro]
	Housing and Urban Development Corporation established		Disposer [Acty Sangenjaya]
1985	The International Exposition, Tsukuba		FIFA World Cup Korea/Japan
1986	Passive solar homes [Konandai 8-chome]	2003	Eco-friendly housing approved [Heart Island Shinden]
1987	Rainwater was used for landscaping facilities [Sagamiono]		Thermal insulation increased, Next-generation energy-saving criteria standa
1988	Intergovernmental Panel on Climate Change (IPCC) established	2004	Household fuel cell [Urbane Namba West]
1989	Imperial era from Showa to Heisei		The best-grade sick house measures standardized
1990	Introduction of cogeneration system [Parale Kawasaki]		Latent heat collection heating and water heater system
	Gardening of wall (multi-level parking lots) [Nishikubo]		[Heart Island Shinden]⇒2006 Standardized
1991	District heating and cooling by the use of river water heat		UR established
	[Okawabata Rivercity21] Improved insulation		Mid Niigata Prefecture Earthquake
	Standardization of new energy-saving criteria	2005	Recycled concrete-based meeting hall [Mure]
	Environmental summit		Wind power generation [Heart Island Shinden]
1992	Development of biotope using the balancing pond [Takatsuki-Abuyama]		Development of eco-friendly policies
	Coating with chips made of fell down trees [Hanno Minamidai]		Expo 2005 Aichi, Japan
	Use of recycled asphalt standardized	2006	Development of FY 2006 environmental report
	United Nations Conference on Environment and Development (Earth Summit) held;	2007	CO2 heat pump hot water supply [Vanguard Tower]
	Rio Declaration, Agenda 21 adopted		Development of FY 2007 environmental report
1993	Recycling of concrete debris [Sagamiono]⇒1995 Standardized		Off Mid-Niigata Earthquake
1994	Symbiosis Experiment Yard (currently, Urban Housing Technology Institute)	2008	Development of the 団地×eco brochure

Afterwor

Today, global environment issues are being addressed from all directions, and global warming measures are being carried out across the world as a task of utmost importance. It is also a fact that we can even feel the environment around us changing bit by bit. The environment surrounding housing complexes is linked closely to surrounding regions, and often, the greens and squares of a housing complex contribute to enhancing the regional environment. The UR Renaissance Agency continues to actively develop environment-friendly technologies it has nurtured over the past half century. Aiming to further reduce environment impact, we are also committed to town and city development projects that are both people and earth friendly.

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