

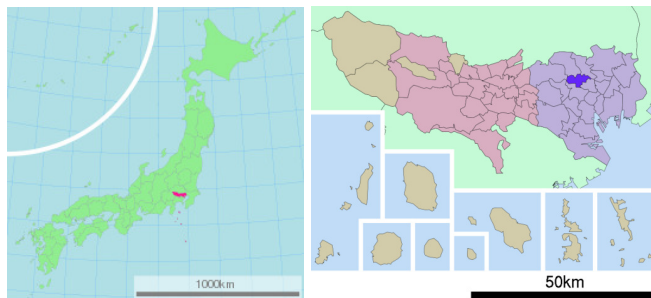


Japan Local Government Centre

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## ***Toshima Ward Cleaning Plant – “Waste-to-Energy” from Dealing with Tokyo’s Rubbish***



*Toshima Ward within the (LEFT)*

Toshima (“Toshima-ku” 豊島区) is one of Tokyo Metropolis’ 23 “ku” or special wards, and incorporates Ikebukuro, one of the capital’s most cosmopolitan and bustling commercial and shopping centres. The ward was founded on March 15, 1947 has a population of 264,542 (2010)<sup>1</sup>. Right in the centre of this important hub is the “ward cleaning facility” with a high volume

incinerator being used daily in a densely populated area in the heart of the Tokyo Metropolis.

Toshima Cleaning Depot in the district of *Kami-Ikebukuro* is a waste disposal plant, and an example of Japan’s very different priorities when it comes to dealing with household and commercial waste. Central to the plant, much like other waste treatment centres in Japan, is an incineration facility dealing with over 400 tonnes of waste per day. Japan as a nation has a particularly high population density in habitable areas, and with little provision for landfill sites with land at a premium, Japan’s waste management policy has centred on recycling and incineration, very different to the UK which largely disposes of rubbish by using landfill sites. Further, contrary to the view in the UK, the Japanese methodology for waste management focuses on incineration facilities as being not only friendlier to the environment but being a more effective processes in dealing with waste and protecting public health. In addition to this, investment in and the use of advanced thermal treatment technology provides economic opportunities for Japanese local authorities.

*Toshima Cleaning Centre (right), and the surrounding densely populated Ikebukuro area (left)*



## Power Generation

In processing 400 tonnes of waste per day Toshima Cleaning Plant has an electrical output of 7,800 Kw, which is used to heat water for the next door Kenko Plaza Toshima, a public health centre run by the local authority. The centre also has sports facilities including a large swimming pool, fitness studios and a large gym for use by local residents, again powered by output from the cleaning plant. The total energy output of the Toshima Incinerator in one year is around 15,700 gigajoules, the equivalent of 2,616 barrels of oil.

Any remaining electricity left over from running the centre and from supplying power to other local authority facilities in the ward is sold on to Tokyo Electric Company (TEPCO). In 2008 around 12,600 MWh was sold onto TEPCO at a profit, which is around the same amount of power used by 3,150 households in Japan in one year.<sup>ii</sup> Local authorities have the ability to sell this spare power capacity as an aspect of their role defined by the Local Autonomy Act. All new waste facilities in Japan have the ability to do this, and the majority of larger local authorities have such a centre.

*Building materials produced by incinerating rubbish; using new technology and high temperature treatment the materials are low in dioxins and environmentally friendly*



asphalt for surfacing roads, making interlocking blocks for paving on pedestrian walkways and zones as well as curb stones. The artificial sand is currently being used in major building projects in neighbouring wards within Tokyo Metropolis. The Tokyo region is undergoing various building and regeneration programmes with a growing population, meaning that artificial sand can be used instead of natural resources, again cutting down on transportation costs in terms of fuel and emissions, helping to protect the environment through this “2<sup>nd</sup> generation” use of recycled material.

## Public Health

Public concerns in the UK over waste incineration include anxiety over the perceived health effects from emissions of incineration facilities such as high dioxin levels, nuisance from refuse collection vehicles loaded with waste adding to traffic in the area and loss of property value with such a facility being close to residential housing.



*Kenko Plaza Toshima health centre, next to the cleaning plant*

## Building Materials

The incineration process has additional benefits in dealing with residue with the by-products from the process. The volume of waste is greatly reduced after being incinerated at over 1,200 degree centigrade to produce ash which is 2.5 % of the volume of the original waste. The ash can then be reduced down to molten slag with further heat treatment to be used in a variety of materials for construction. It is ground down to become “artificial sand”, a flexible resource for use in products such as

In Japan the policy and belief is that through use of this kind of facility pollution levels are lower than those of most other waste disposal methods, and are friendlier to the environment in terms of carbon dioxide and methane release, when compared to landfill. Dioxin levels are extremely low through the use of chemical scrubbers in the stack (chimney), and well below Japanese legal limits.



In order to ensure that levels of emissions are safe the facility gained ISO14001 international environment standard certification in 2002, which ensures that environmental management at the facility is within the agreed limits of the standard. The facility is inspected twice yearly to ensure that methods adhere to the processes proscribed by ISO14001 and this is carried out by the Japan Audit and Certification Organisation (JACO) who are licensed inspectors by the Japanese government. Japanese environmental law which defines emissions limits also requires facilities such as Toshima to adhere to these ISO management standards in protecting public health. The facility, and all others managed by Clean Association of TOKYO 23<sup>iii</sup>, publishes the survey results twice yearly online and local citizens groups meet regularly with the facility's management to discuss public health issues.

For more information local authorities in Japan and other case studies looking at local government roles go to <http://www.jlgc.org.uk/en/publicationsfromjapan.html>, or contact JLGC by email at [mailbox@jlgc.org.uk](mailto:mailbox@jlgc.org.uk)

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<sup>i</sup> The population has declined from a high of 370,000 in 1965, and as of 2010 the ward had an estimated population of 264,542 with a density of 20,330 persons per km<sup>2</sup>. During the day the population swells with commuters as Ikebukero Station is second busiest in Japan after Shinjuku Station (which claims to be the busiest in the world). Though Toshima is a ward, it refers to itself as a city. The ward offices are also located in Ikebukuro, the commercial and entertainment centre of Toshima. Approximately 47% of Toshima's land is residential, and 20% is commercial and public areas.

<sup>ii</sup>This figure is taken from Toshima Cleaning Depot's annual report for April 2008 to March 2009.

<sup>iii</sup> The Toshima Cleaning Plant is managed by the Clean Association of TOKYO 23, an umbrella organisation across the Tokyo Metropolitan region, a sub-national semi-governmental body set up by Tokyo's 23 Special Wards. The Clean Association of TOKYO 23 is a collaborative established under the Local Autonomy Law which allows Local Public Entities (defined as Prefectures, Special Designated Cities and Local Authorities *meaning cities, towns and villages*) to establish cooperative organisations to carry out the competencies of the associated local authorities, with the agreement of the leader of the local body and the Minister for Internal Affairs and Communications (with responsibility for local government). Local authorities through the Local Autonomy Law have the ability to raise the finance to invest in such facilities as these, for example through local bonds; there are other high technology facilities in other wards such as gasification facilities in Setagaya ward, where waste gasification treatment has further advantages over landfill as well incineration. Similarly there are also Refuse-Derived-Fuel (RDF) treatment facilities which offer further financial benefits for local authorities treating waste and selling fuel on the market.

