

**Mercredi 15 Novembre 2017**

08h00 – 08h30 : Accueil et inscription

09h00-11h00 : Atelier D et E

**Atelier D - Retombées économiques, sociales et environnementales de la gestion durable des déchets. (Bibliothèque centrale)**

Sous la présidence de Jamel Eddine HENCHIRI, Professeur en économie, (Gabes Tunisie),

Rapporteur : Lounis Aoudia, MCB en sciences économiques (Université de Bejaia)

- Malika BAKDI, Fatima BAKDI Université de Khmis Meliana, *Enjeux, Freins Et Leviers A La Transition Vers*

*L'économie Circulaireappliquée au recyclage des e-déchets (DEEE),*

- Nassima LAMRANI, Université de Sétif, *La gestion des matières organiques au service du développement durable, l'expérience Turque.*

- Ibtissam NOURI, Université d'Oran, *Le recyclage des déchets industriels en Algérie, entre conscience*

*environnementale et intérêt économiques : « Cas de recyclage des déchets en papier et carton à Oran ».*

- Asma CHAKER, Université de Jijel, *Sur la voie de l'économie circulaire : La pisciculture intégrée à l'agriculture.*

**Atelier E - Approches concertées et communication pour une gestion intégrée de la propreté entre population, puissance publique et opérateurs privés. (Bibliothèque centrale)**

Sous la présidence de Moussa BOUKRIF, professeur en sciences de gestion (Université de Bejaia),

Rapporteur : Mustapha MEZIANI MCB en sciences économiques (Université de Bejaia).

- Fayssal BOUDJILAL, Houari Boumediane OUIIC, Université de Saïda, *Biodegradability of five-chain nitrogen heterocycles in water and soil on the environment.*

- Lynda BELGAID, Louiza AMEZIANE, Université de Tizi-Ouzou, *L'intelligence urbaine au service de l'économie circulaire : retour d'expérience du cas de la ville de Paris*

- Hassina TIGHEDINE, Tawfik SADOUNI, Université de Bejaia, *Household waste in the city of Béjaia between*

*behavior citizens and local authorities : The impossible pact*

10h30 – 10h50 : Pause-café

Abdenacer SIFER, Mohamed Akli FERADJI, Université de Bejaia, *Aménagement du territoire et conflits de gestion*

*des déchets : Cas de Bejaia.*

Shanez AMIROUCHE, Tayeb CHABI, Université de Bejaia, *Gestion des déchets et partenariat public-privé : réalités et perspectives, cas de la commune de Bejaia.*

11h30 – 12h20 : Rapports des ateliers

12h20 – 12h40 : Synthèse par Serge ORMAUX, Professeur de Géographie, Université de Bourgogne Franche-Comté

(UBFC)

12:30 - Clôture du colloque, Bahirjeddine HACHEMAOUI, Président du colloque, (Université de Bejaia), Professeur Kamal OUKACI doyen de la faculté SECSG, (Université de Bejaia)

13h00 : Déjeuner.

14h30 : Visite de la ville de Bejaia.



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Université Abderrahmane MIRA - Béjaïa

Faculté des Sciences Economiques, Commerciales et des Sciences de Gestion

Laboratoire Economie & Développement

Laboratoire de Recherche en Management et Techniques Quantitatives



## Colloque International d'Intelligence Territoriale

# Valoriser le territoire et améliorer sa qualité au moyen de la gestion des déchets et de l'économie circulaire

# PROGRAMME

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# Lundi 13 Novembre 2017

## Salle des conférences - centre de TAMAZIGHT

**14h30** : Séminaire INTI – projet GDRI C2IT en cours de rédaction « Collective Intelligence et Innovatives Territoires » qui sera déposé le 28 février 2018, Serge ORMAUX, professeur de Géographie, Université de Bourgogne Franche-Comté (UBFC)

Ce séminaire est ouvert à tous ceux, chercheurs et acteurs territoriaux, qui souhaitent participer ou s’informer sur le projet international GDRI C2IT

**15h00** : Discussion

# Mardi 14 Novembre 2017

## Auditorium d’Aboudaou

**08h30** : Accueil et inscription

**09h00** : Ouverture et introduction du colloque

**Séance plénière - Présidence** : *Serge ORMAUX, professeur de Géographie, Université de Bourgogne*

**Franche-Comté (UBFC), Rapporteur** : *M. Rabah TERMOUL, (Université de Bejaia).*

**09h30** : Cyril MASSELOT, MCF en Sciences de l’Information et de la communication, (UBFC), Coordinateur du

réseau « International Network of Territorial Intelligence INTI » - *Perspectives de l’Intelligence Territoriale.*

**10h00** : Jean-Jacques GIRARDOT, MCF en Sciences Economiques, UFC, Président du Conseil Scientifique de INTI, *Intelligence territoriale, développement économique et économie circulaire.*

**10h30** : Débats, Pause-café

**Séance plénière - Présidence** : *Jugurta BELLACHE MCA en Sciences économiques, (Université de Bejaia), Rapporteur* : *Samir BOUMOUOLA MCA en Sciences économiques (Université de Bejaia).*

**11h00** : Serge GUILLEMIN, responsable performance de la Ville de Besançon et de la Communauté d’agglomération du Grand Besançon, *La qualité au service de la performance dans la gestion des déchets du territoire du Grand*

*Besançon.*

**11h30** : Mokhtar KHELLADI, Professeur en sciences économiques Université de Bejaia, Bejaia : *une ville en guerre contre son territoire.*

**12h00** : Débat

**12h30 - 13h30** : Déjeuner

**14h00 - 17h00** : Atelier A, B et C

**Atelier A- Gestion des déchets et qualité de la vie dans les territoires. (Bibliothèque centrale)**

Sous la présidence de Samir BOUMOUOLA, MCA en sciences économiques (Université de Bejaia),

Rapporteur : Slimane MERZOUG MCA en sciences économiques (Université de Bejaia).

- Hamza MEDJAHED, Université d’Annaba, *Contribution à la caractérisation des déchets urbains solides issus de l’activité commerciale et de service, cas de la commune d’Annaba.*

- Adel BOUJEMLINE Université de Bejaia, *La gestion des déchets ménagers de la ville de Bejaia (Poster)*

- Ahmed BOUSMAHA, Aïssa BOULKIBET, A/Kader CHOUACHE, Université d’Oum El Bouaghi, *Problématique de la gestion des déchets et la qualité de la vie en Algérie : Le cas de la commune d’Oum El Bouaghi.*

**15h30 - 15h50** : Pause

- Nadia MANKOU, Nadia MOALI, Hechmi SIDI, Université de Bejaia, *Les déchets solides et débris marins dans les zones côtières de Bejaia (Algérie)*

- Bahidjeddine Hachemaoui, Université de Bejaia, Jean-Jacques GIRARDOT (UBFC) Environnement et qualité de vie : *quelle perception les habitants de la commune de Bejaia ont-ils ?*

- Ahmed Mansouri, LemyaKACHA, Université de Bejaia, *Waste Management System in Japan*

**Atelier B - Transition socio-écologique dans les territoires. (Bibliothèque centrale)**

Sous la présidence de Mouhamed ACHOUICHE, Professeur en sciences économiques (Université de Bejaia), Rapporteur : Nacereddine MOUFFOUKMCB en sciences économiques (Université de Bejaia)

- Jean-Jacques GIRARDOT, Serge GUILLEMIN, Université de Franche-comté, Le « *parcours de vie* » un nouvel outil pour la transition socio-écologique

- HoudaKHELLADI, Mokhtar KHELLADI, Université de Bejaia, *Pertes alimentaires, sécurité alimentaire et hydrique.*

**15h30- 15h50** : Pause

- Moustapha BAKLI, Université de Bejaia, *Essai d’application du modèle d’évaluation des performances de durabilité à la cité 140 logements de Sidi Ali Lebhar (Bejaia).*

- Mohamed ADRDOUR, Mohamed OUDADA, Abdelaziz EL OUARDI, Université Ibn Zohr (Agadir, Maroc), *La gouvernance dans l’attractivité des territoires pour un développement régional durable : cas des projets de développement des collectivités territoriales au Maroc.*

**Atelier C - Economie Sociale et Solidaire (ESS) et valorisation des territoires fragiles. (Auditorium)**

Sous la présidence de Cyril MASSELOT, MCF en Sciences de l’Information et de la communication, (UBFC), Rapporteur : Brahim GANA MCB en sciences économiques (Université de Bejaia)

- Mohamed HOCINE, Lynda SEBBACHE, EPAU Alger, *L’intelligence territoriale par « économie circulaire et sociale », cas de la ressource alimentaire « pain » et de ses déchets dans la banlieue algéroise.*

- Sonia KARA, Rosa AKNINE, Université de Tizi-Ouzou, *La modernité de Thajmaâth et le renouveau du mouvement associatif.*

- Philippe WOLOSZYN, CNRS Bordeaux, *De l’économie productive à l’économie fonctionnelle : vers une hybridation des champs de liberté du citoyen.*

**15h30- 15h50**: Pause

- Adil MOSTADI, Université de Bechar, *Une friche industrielle a l’entrée de la ville de kenadsa – une perception négative d’un territoire inhospitalier.*

- Djamilia KERROUCHE, Amar AMIMER, Tahar SADOUN, Nabila ROUBA, Université de Bejaia, *Impacts socio-économiques de traitement de déchets plastiques et de déchets papiers de la ville de Bejaia.*

- Salem BENSMAIL, Université de Bejaia, *Evaluation du système de gestion des déchets solides ménagers : cas de la commune de Bejaia.*

# Waste Management System in Japan

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## Thème A: Gestion des déchets et qualité de la vie dans les territoires

### Abstract

This paper is related to the Japanese legal system of dealing with the emerging problems caused by the deterioration of the living environment through a focus on: (1) public health; (2) prevention of pollution; and (3) the establishment of a sound material-cycle society (Basic Recycling Act, 2000) to ensure the implementation of the 3R (Reduce, Reuse, and Recycle). This law legally determined the order of priority for resource recycling and waste management: (1) generation reduction; (2) reuse; (3) recycling; (4) thermal recovery; and (5) proper disposal.

### Keywords

*Waste management, 3R, legal system, sound material-cycle society*

### 1. INTRODUCTION

Because of economic development, increasing population and industrialization, several environmental and sanitary problems emerged in Japan. These problems are related to the expanded consumption and the increased output of wide-ranging types of waste.

Throughout the years, a system was developed in order to collect and transport waste, process it and then dispose it in landfills in a sanitary way to prevent environmental pollution in residential and natural areas.

### 2. HISTORICAL AND JUDICIAL BACKGROUNDS

#### 2.1 Meiji restoration (late 19th century ~ early 20th century)

At the beginning of the modernization of Japan, waste was treated by waste generators themselves or by private waste treatment operators. It was often discarded on roadsides or vacant lots. The waste-cleaning act enacted in 1900 defined that the collection and disposal of waste was the obligation of municipalities, placed waste treatment operators under the supervision of government organizations and stated that waste should be incinerated.

#### 2.2 Post war period (1945~1950s)

During the post-war period, waste was piled up in the open or dumped into rivers. The Japanese

government enacted the public cleansing act in 1954 that defined the obligation of national and prefectural governments to provide financial and technological support to municipalities regarding waste collection and disposal, as well as the obligation of residents to cooperate with municipalities in this process.

In 1963, the act on emergency measures concerning the development of living environment facilities was enacted. A five-year plan was formulated in order to establish policies for the development of waste management facilities, including incineration facilities.

#### 2.3 Rapid economic growth period (1960s~1970s)

As a result of income increase resulting from rapid economic growth, marketing system and consumption behavior changed considerably during the 1960s and 1970s. This caused a rapid increase in the amount and diversity of urban waste. Construction waste was also generated in huge amounts due to urban development and factories generated a variety of waste (fig.1).

In 1970, the Japanese government revised the public cleaning act and two types of wastes have been distinguished: Industrial waste and municipal waste.

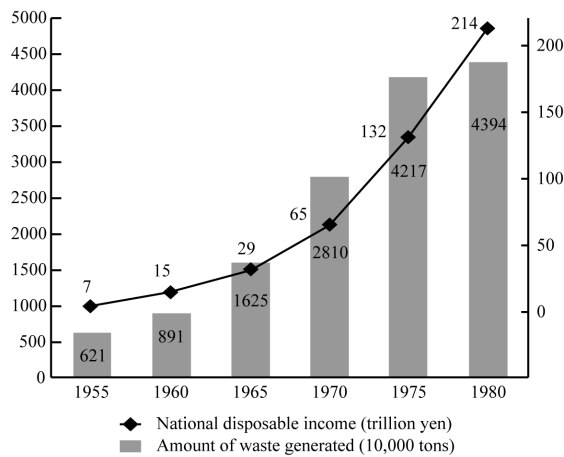


Fig.1 Changes in the amount of generated waste.  
(Source: Japanese ministry of the environment, office of Sound Material-Cycle Society 2014, *History and current state of waste management in Japan*, <<https://www.env.go.jp/en/recycle/smcs/attach/hcswm.pdf>>)

The waste management act defined the responsibility of municipalities to manage municipal waste, while at the same time defining the responsibility of waste generating business operators to manage industrial waste (fig.2).

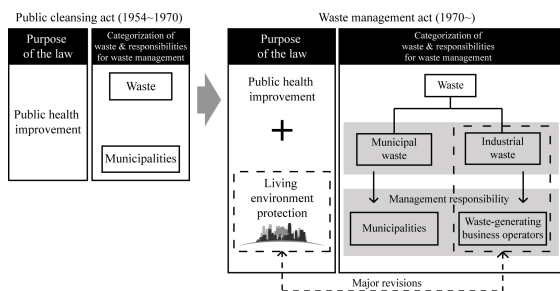


Fig.2 Development of basic systems for waste management.  
(Source: Ibid)

In 1967, the basic act for environmental pollution control was enacted to comprehensively promote pollution control measures. This act defined:

- The responsibility of the national government to protect the health of the people and the living environment
- The responsibility of local governments to prevent pollution in accordance with the natural and social conditions of local communities
- The responsibility of residents to cooperate in implementing pollution control measures.

Emission control standards regarding air and water pollution were also established in the enforcement regulations of related laws. During the 1970s, the enforcement regulations for the waste management act defined:

- Architectural standards for municipal waste management facilities (1971)

- Architectural standards for final landfill sites for municipal and industrial waste (1977).

- Assessment standards regarding hazardous waste, including hazardous heavy metals and organic (1973).

- Architectural and maintenance standards for final landfill sites (1977).

The Japanese government also defined three types of final landfill sites for industrial waste: closed landfills, controlled landfills and open landfills.

## 2.4 Rapid economic growth period (1980s ~ early 1990s)

The bubble economy era (late 1980s ~ early 1990s) lead to an increase in consumption and an expansion of production activities. The amount and variety of waste that were difficult to process properly continued to increase and it became difficult to prevent combustible waste from being landfilled without being incinerated. Among the factors that made the construction of new landfills difficult was the difficulty to obtain the agreement of residents and the opposition movements organized by residents who were concerned about the environmental pollution issues caused by landfills. There were also other problems related to illegal dumping because of the irresponsibility of business operators and dioxins generated by waste incineration facilities.

## 2.5 Establishment of a sound material-cycle society (1990s ~ 2000s)

In 2000, the Japanese government established the basic act for establishing a sound material-cycle society (basic recycling act) in order to promote the establishment of a sound material-cycle society designed to ensure the implementation of the 3R (Reduce, Reuse, and Recycle) and the proper waste management.

This law legally determined an order of priority for resource recycling and waste management: (1) general reduction, (2) reuse, (3) recycling, (4) thermal recovery, and (5) proper disposal. It set numerical targets for resource productivity (input), recycling rate (circulation), and the final waste disposal amount (output).

Local governments launched awareness raising programs for waste reduction and sorted collection of recyclable waste among local communities. Concerning industrial waste management, the Japanese government implemented a reform focusing on the responsibility of waste-generating business operators, the prevention of improper waste management and the creation of appropriate waste management facilities.

Because of the dioxin emission control regulations, the development of emission control technologies and waste incineration facilities, dioxin emissions from waste incineration facilities were reduced in 2011 by approximately 99% compared to the level of 1997.



## 2.6 Current strategies for waste management and 3R

Currently, in addition to the efforts conducted to promote the 3R (3R promotion national convention (since 2006), minister of the environment's awards for contributions to the establishment of a sound material-cycle society, 3R promotion Meister system, etc.), the Japanese government certifies advanced environmentally harmonious areas as "Eco-towns" (26 throughout Japan).

## 3. TECHNOLOGY OF SOLID WASTE MANAGEMENT AND RECYCLING IN JAPAN

### 3.1 Efficiency in waste collection and transport through transfer stations

Setting up waste transfer stations where wastes can be transferred from small trucks to larger trucks represents a good strategy in improving the efficiency of the process of collection and transport operations within cities with wide collection zones. The commonly adopted transfer station method in Japan is the compactor container transfer station in which the garbage collected by small trucks is dropped in a hopper, compressed in containers then reloaded onto larger trucks (fig.3).

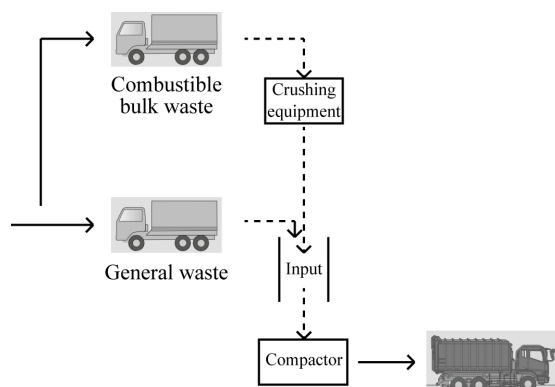


Fig.3 The concept of transfer station.

### 3.2 Streamline collection and transport operations

Transfer to larger trucks at transport stations improves transport efficiency and helps in cost reduction by minimizing fuel consumption, therefore reducing CO<sub>2</sub> emissions (fig.4).

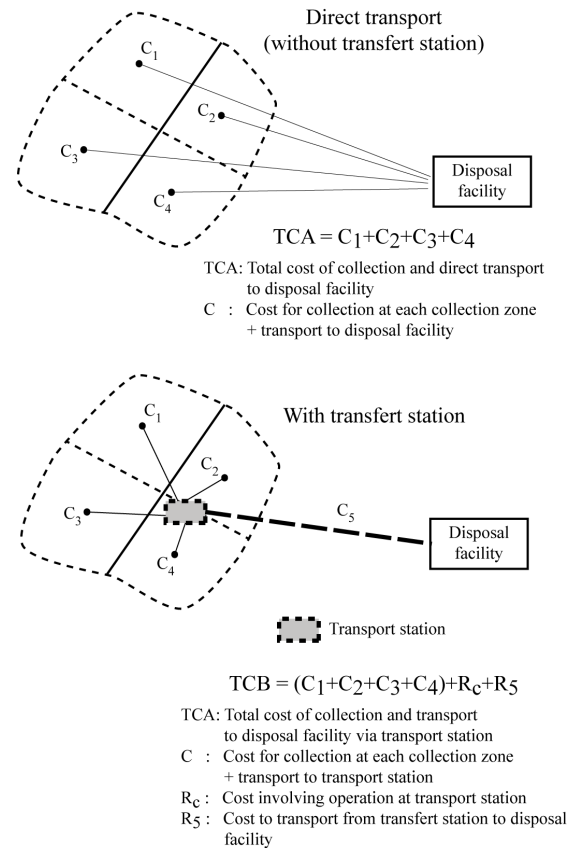


Fig.4 Efficiency in streamline collection and transport operations.

(Source: Japanese ministry of the environment, office of Sound Material-Cycle Society 2012, *Solid waste management and recycling technology in Japan, toward a sustainable society*, viewed 15 October 2017, <<https://www.env.go.jp/en/recycle/smcs/attach/swmrt.pdf>>)

### 3.3 Development of fuel-efficient collection and transport vehicles with high load volume

Because of narrow roads, the use of small collection trucks is necessary to improve efficiency. Low-pollution type garbage trucks, such as electric motor drive and hybrid trucks are being developed and put into practice.

### 3.4 Incineration technology and reduction of dioxin generation

Technologies related to high efficiency power generation and technologies related to safe operation, such as automatic incineration devices and automatic cranes have been developed and used. The newest stocker furnace technology is low air incineration that aims for high efficiency power generation. Among the technologies applied to reduce the generation of dioxin are exhaust cooling, bag filters and activated coal that absorbs and eliminates dioxin.

### 3.5 Waste landfill technology (CMD methodology)

The model of semi-aerobic landfill structure developed by Fukuoka University and Fukuoka city

in the 1970s has been applied in many landfills in Japan. It represents a sanitary model without environmental issues. Compared to anaerobic landfill, the semi-aerobic landfill technology quickly stabilizes landfill sites after completing their role as landfills, enabling them to be used for parks and open spaces.

#### 4. CONCLUSION

Japan had to deal with multidimensional problems related to the environment as a result to its economic development and industrialization. Throughout the years, a system had been developed to collect, transport and dispose an increasing output of wide-ranging types of waste in a sanitary way.

This paper covered mainly two dimensions of this process of COLLECTION-TRANSPORT-DISPOSAL, which are the judicial and the technological aspects. The legal process was developing according to the challenges imposed by a rapid economic growth and an extensive industrialization. The development in environmentally friendly technologies in waste disposal and transportation is continuing to help in improving sustainability within Japanese cities. However, this could not be done without the involvement of both citizens and governments in this process. The social as well as the political dimensions were the pillars of this process.

(*SMEs focus*), EU-Japan centre for industrial cooperation, Tokyo.

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