



# Connective Cities Study Tour and Project Workshop

Cooperation with Jordanian municipalities in waste management

*27 – 31 March 2017 in various cities in North Rhine-Westphalia, Germany*

Partners of Connective Cities



In the framework of

Municipal know-how  
for host communities  
in the Middle East  
PROGRAMME

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## Disclaimer

This is a Connective Cities publication. The views expressed in this publication do not necessarily reflect the views and policies of the Connective Cities partners (German Association of Cities, Engagement Global gGmbH / Service Agency Communities in One World and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH).

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## Municipal know-how for host communities in the Middle East Programme

Since the start of the civil war in Syria 2011, millions have fled the country. The most important first host countries are the neighbouring states of Jordan, Lebanon, and Turkey. A large proportion of the refugees live in towns and communities, as opposed to refugee camps.

In view of the rapid growth in the population, host communities are facing massive challenges, for example in the areas of waste management, water and energy supply and municipal administration. Exchange between experts at municipal level can play a major role in overcoming challenges.

The German Federal Ministry for Economic Cooperation and Development (Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung – BMZ) has launched a programme to this effect that promotes cooperative partnerships between the host communities in Jordan, Lebanon and Turkey on the one hand and German municipalities on the other.

The “Municipal know-how for host communities in the Middle East” programme has been set up by Engagement Global with its Service Agency Communities in One World, together with the cooperation project Connective Cities – International Community of Practice for Sustainable Development.

The focus of the programme is on professional dialogue and constructive cooperation between the partner municipalities for the joint development of local solutions.

For additional information please visit the online portal: [www.initiative-middle-east.com](http://www.initiative-middle-east.com)

# Executive Summary

With the continued growth of Jordan's urban population as a consequence of the Syrian civil war, municipalities are struggling to cope with the increasing amounts of solid waste. Against this background, Connective Cities – in the framework of the “Municipal know-how for host communities in the Middle East” programme – brought together municipal actors from both Jordan and Germany for a Study Tour and Project Workshop in North Rhine-Westphalia to enhance joint learning, develop concrete project ideas and strengthen bilateral cooperation between participating cities. This documentation contains a brief introduction to major aspects of integrated solid waste management, summarises insights presented and highlights the key outcomes of the joint workshop.

## Background & Objectives

Connective Cities, the international Community of Practice for Sustainable Urban Development, organised a Study Tour and Project Workshop in North Rhine-Westphalia as a follow-up to previous Workshops conducted in Jordan on solid waste management in May and November 2016. These activities seeking to enhance the exchange process between Jordanian municipalities and German municipal companies took place within the framework of the “Municipal know-how for host communities in the Middle East” programme. During the workshops in 2016, participants from Jordanian municipalities and German experts from municipal waste management companies presented good practice examples, discussed common challenges and developed first project ideas to improve solid waste management in the participating Jordanian municipalities. The Connective Cities' combined Study Tour and Project Workshop consequently had two main objectives. On the one hand, the practical experiences of the Study Tour were supposed to deepen the participants'

knowledge on German examples and approaches in the specific fields of solid waste management that are crucial to the project ideas developed by the Jordanian municipalities. On the other hand, the combined project workshop allowed participants to take the developed ideas one step further towards implementable project concepts and to define first steps towards project-based partnerships between Jordanian municipalities and German municipal companies. The Study Tour and Project Workshop were conducted in close cooperation with GIZ Jordan and its 'Waste to Positive Energy' project.

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# Introduction to the Topic

The issue of solid waste is inextricably linked to the process of urbanisation. As countries urbanise, production and consumption patterns change, which in turn results in increasing amounts of waste. This is especially true for Jordanian municipalities, which have been facing a massive influx of refugees since the beginning of the Syrian crisis.

Waste management is an important responsibility and a core service which municipalities offer their citizens. Otto Huter from the German Association of Cities emphasised: ‘Cities have the responsibility to provide urban sanitation, cleanliness, safety and order.’ The credibility of local governments among the population often depends on very concrete experience with core services the municipalities are supposed to offer. Thus, successful public waste management is not only a technical challenge, but also a way for local authorities to strengthen their credibility in the eyes of their citizens. But waste management is much more than this, as it ‘represents moreover a mission of general interest by protecting both the environment and human health’, stated Patrick Hasenkamp, the operational manager of Münster’s waste management company Münster “AWM” and vice president of

the German Association of Local Public Utilities. Poorly managed waste has a tremendous impact on health, the local and global environment, and the economy. Successful waste management, on the other hand, can not only reduce negative impacts but may also unlock potential in terms of enhanced resource efficiency and increased employment. Hence, waste management is a crucial local service with cross-cutting scope involving a wide range of public issues. Especially for a municipal service such as waste management, it is of crucial importance to actively involve the community, share information on waste separation and recycling and develop a culture that minimises waste production and promotes an efficient use of resources. While national entities are charged to establish legal frameworks for waste management, the responsibility to provide and operate this fundamental public service usually rests with local authorities. In Jordan, many cities reportedly encounter tremendous difficulties in performing this service adequately. With rapidly increased quantities and complexities of waste materials due to the influx of refugees, Jordan’s cities are coming under tremendous pressure.

## Methodology

The activities carried out with the Jordanian municipalities and German municipal companies consisted of two main parts: three days were dedicated to a Study Tour and the following two days to a Project Workshop. After an introductory session at the waste management company “AVG” in Cologne the Jordanian representatives visited a wide range of waste management facilities covering the relevant aspects of waste-related challenges in Jordan. The second part of the week consisted of a Project Workshop. In this part, German and Jordanian participants jointly worked on project ideas aiming at the improvement of solid waste management in the different Jordanian municipalities. These project ideas were mapped out in working groups using different interactive tools to support the peer-to-peer action planning.

On the last day of the event, the working groups identified opportunities for future collaboration between participating German experts and Jordanian cities in

order to implement the developed project ideas. For this cooperation first very concrete steps were formulated. In the follow-up to the Connective Cities workshop, the “Municipal know-how for host communities in the Middle East” programme continues to support the participating municipalities by several follow-up activities, such as a Project Exploration Tour in May 2017 as well as financial support for the implementation of selected project ideas and long-term project partnerships.



## Site Visits

During the Study Tour, the Jordanian delegation visited several waste management facilities and actors in North Rhine-Westphalia that carry out waste management planning, collection, separation, recycling and composting of different types of waste.

### Waste management planning, City of Krefeld

The City of Krefeld presented the process of establishing waste management plans. Developing an integrated waste management master plan is imperative for each city. These plans should pay attention to local requirements and should be regarded as a process that constantly needs to be approved and adapted in line with changing conditions on the ground. The planning process of an integrated municipal waste management plan begins with the definition of problems and objectives as well as with the identification of framework conditions and the collection of data. This preparation allows a projection of future developments. On this basis, a master plan and an action plan can be drafted and decided upon by municipal decision-makers, for the period of five years. For successful

implementation, it is crucial not only to have sound economic planning, but to constantly involve all relevant local actors and the population in order to improve the integrated waste management system. Even a technically excellent concept can fail in implementation when it lacks compliance from municipal actors and from the population.

### Communication strategy and public relations

AVG Cologne presented its public relation and communication strategy emphasizing the importance of good information policy and implication of concerned citizens. This is of particular importance when introducing new services or infrastructure. The municipal waste company "AWA" shared its experience in introducing a separate bin for organic waste on household level. From the first information campaign twenty years ago until today the implication and the information of the citizen is a prerequisite for a successful separate collection and a good sorting quality at household level.



Reception by the Lord Mayor at the Krefeld city hall



Collection vehicle at work in Castrop-Rauxel

## Waste collection and street cleaning by the municipal company “EUV Stadtbetrieb”, Castrop-Rauxel

The EUV Stadtbetrieb Castrop-Rauxel offers a wide range of services to 36,000 households, namely waste management, street cleaning, winter service, sewage disposal, civil engineering and environmental protection. 190 employees work for the company, which is owned entirely by the municipality. The site visits in Castrop-Rauxel focused on waste collection and street cleaning. Several types of waste are sorted at the household level and collected by the municipality. Residual waste, organic waste and lightweight packaging is collected every other week, paper waste once in four weeks and bulky waste once per year upon request. Altogether, over 31,000 tons of waste is produced and collected every year by the municipality, half of which occurs as residual waste. The delegation witnessed the collection of lightweight packaging bins in one residential area. Bins are emptied only when placed by the citizens directly in front of the individual properties. Next on the agenda was a visit of the street cleaning within Castrop-Rauxel, where streets and sidewalks are cleaned up to 6 times a week. In total, 321 km of streets and pavements have to be cleaned in the entire municipal area. Streets outside the downtown area are swept less

frequently, as EUV cleans once a week and residents have the responsibility to sweep twice a month. The municipality employs 5 drivers for sweeper vehicles and 15 workers for various purposes, namely city cleaning, waste collection from public waste bins, cleaning and maintenance of public collection containers and collection of illegal dumps.



Demonstration of city cleaning techniques in Castrop-Rauxel



## Paper sorting station, Remondis company, Cologne

The Study Tour led the delegation from Jordan to the paper sorting station of Cologne, which recycles about 130,000 tons of waste paper every year, of which about half is collected within the city of Cologne as well as the same amount in surrounding municipalities. As paper is perceived and used as a resource it is bought from the municipality, and by selling the output to producers of recycling paper, the privately owned paper sorting company is able to generate profit. The speed of the recycling process mentioned allows paper from newspapers for example to be recycled within five days. Ninety-nine per cent of the total input can be recycled, which avoids overexploitation of timber and therefore directly has a positive impact on the environment. In Jordan, however, there is no systematic collection, sorting and recycling of waste paper due to the lack of a paper industry.



Visit of a paper sorting station in Cologne





Visit of the bulky waste sorting station

## **Sorting station for bulky waste, municipal waste management company “Entsorgungsgesellschaft Niederrhein (EGN)”, Neuss**

The EGN sorting station for bulky waste is situated on a former landfill site that operated until 2005. The pre-sorting of the waste is executed in a hangar by excavator. Then, the material is shredded and sorted gradually through huge drum screens, where metal, wood and other materials are taken out. The sorted and shredded bulky waste has 16,000 kJ of calorific value. At the end of the entire process, dry flakes of bulky waste are produced and mixed with flakes of lightweight packaging material to enhance the calorific value of the product. This mixture with a value of 22,000 kJ is sold as fuel to the cement industry. Every year, 27,000 tons of this material is produced. The non-recyclable residues go to incineration.

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At the recycling centre in Eschweiler

## Recycling centre of the municipal company “AWA”, Eschweiler

The delegation also visited the AWA recycling centre in Eschweiler, where citizens and commercial customers bring smaller quantities of waste and are advised by employees on sorting it into the bins available at the centre. The following types of waste are collected: bulky waste, construction waste, different hazardous waste types (such as asbestos, batteries and hazardous liquids), waste paper and cardboard, green waste, wood, metal and e-waste. The further treatment of the waste is carried out by certified treatment companies. AWA can sell certain types of waste such as paper, certain types of e-waste etc. which can consequently be disposed of free of charge, whereas the treatment of other types of waste need to be paid for by the citizens or customers concerned. Some sorts of waste are treated within AWA's facilities such as the incineration plant or the composting plant. The price system for each type of waste is classified according to the legal framework.

## AWA tunnel composting plant, Eschweiler

AWA's modern composting facility in Eschweiler has a capacity of 30,000 tons of green waste from private households per year. Green waste is limited to garden waste, which means that kitchen and market waste are excluded from the treatment. In this composting process, the green waste is shredded in a first step and treated in a composting tunnel in a second step, where it is exposed to constant aeration and humidification. Thanks to the closed composting system and the high temperature of 70 degrees Celsius, the composting procedure is reduced to 14 days. The collection system is mainly organised by collection in containers within the 25 surrounding municipalities, as well as a bring system to the composting plant where citizens can drop off their green waste free of charge. The treatment costs for AWA Eschweiler are 50 € per ton of treated green waste. This means that composting is not profitable, though it is less cost intensive than other forms of treatment. It is thus a service publicly provided for the citizens. A yearly output of 20,000 t of compost can be sold on the market. The main quantities go to agriculture, but it is also possible for all citizens to buy smaller quantities for private use.



View into a composting tunnel





Open composting facility in Mönchengladbach

## Open composting plant, RETERRA Service GmbH, Mönchengladbach

The delegation also visited the Reterra composting plant in Mönchengladbach, which is an open composting plant with a capacity of 25,000 tons of green waste per year. Its customers are residents, gardening companies and municipal services; they bring the material directly to the plant. Fees for leaving the green waste at the plant are calculated based on weight. The facility is run by only three persons, namely one manager and two drivers for the wheel loaders. The process begins with a visual quality control of material and weighing upon arrival. After a screening by hand of plastic impurities the material is further shredded and placed in large compost heaps of 1500-1700 m<sup>3</sup>. These heaps are constantly monitored to ensure that their temperature remains at 55-65°C and to regulate their moisture, and turned once every three weeks. Aeration is guaranteed through 40 per cent bigger pieces of wood,

which can be reused up to two times. The moisturising is performed with collected rain water. The entire process, in which 40% of the heaps are transformed into compost, takes 12 weeks. At the end of the process the material is screened in order to separate the wooden pieces from compost and also to remove smaller impurities such as plastic and metal.





## **Focus and Outcome of the Workshop: Project Ideas of Jordanian municipalities**

The Project Workshop gave participants the opportunity to continue the work on concrete project ideas that had been developed during two previous workshops in Jordan and to move from project ideas to applicable project concepts. Three working groups were established on the topic of waste management planning, composting and sorting. Therein, waste management plans for the municipalities of Deir Alla, New Ramtha and Irbid were elaborated and concepts to sustainably run composting plants in Karak and Deir Alla were drawn up as well as a system for waste sorting in Jerash, Madaba and Mafraq. In all working groups, the practitioners from municipal companies in Germany gave peer-to-peer advice and brought in their expertise.

The aim of the municipality of Deir Alla was to develop a 5-year financially sustainable waste management plan. The city faces numerous challenges, such as a lack of financial resources and of qualified staff, the considerable number of Syrian refugees, the weakness of legislation and the lack of awareness among citizens. A short-term local plan had already been developed with support from GIZ. The following items will complement this plan and help make it a comprehensive, strategic and financially viable waste management strategy: An analysis of the current specific waste management situation as well as analyses of current staff and costs is required. Furthermore, a comparison of waste treatment options in relation to their appropriateness to the given situation and to their cost-effectiveness will be conducted. Moreover, the plan will be disseminated and improved by a local team of committed stakeholders.

This project will also be implemented in the municipalities of New Ramtha and Irbid, which face the same challenges. The population of New Ramtha has doubled over the past five years due to the influx of Syrian refugees. This crisis led to further socio-economic changes, such as a higher unemployment rate and a decline of the regional trading volume. The socio-economic conditions in Jordanian municipalities, especially those in the North, are very unpredictable and can change quickly according to the political situation in Syria.

New Ramtha is seeking to implement a short-term financial and action plan on solid waste management. Their main measures are the involvement of refugees, information services for refugees, a cooperation arrangement with the municipality of Irbid on waste collection and the involvement of the private sector. The lack of private companies involved in the waste management sector is one of the main differences between the waste management systems of Germany and Jordan.



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Discussing technical questions of composting





By establishing a composting facility, the municipality of Karak is seeking to reduce costs and the need for land-filling, alleviate the impact of emissions from landfills and protect the groundwater. Moreover, the facility is designed to create jobs. The cost for building the plant will be covered by GIZ Jordan. The construction of the composting plant is scheduled to take place this year in July so that it will start to operate in August 2017.

In the municipality of Deir Alla there already exists an operational composting factory, which is to be improved and further developed. Its management will be taken over from the NGO that is currently in charge. Deir Alla seeks to enhance the environmental situation and to change its waste services towards more sustainable solutions. Key objectives for this process are to manage organic materials from farms, households and markets, to make this process beneficial, to create jobs and to help solve the environmental problems linked to solid waste. After the technical, financial and structural analysis of the current situation, a business plan will be developed to take over the management procedure with an appropriate partner from the private sector.

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Presentation of project ideas

The municipalities of Jerash, Madaba and Mafraq have planned sorting stations in which sorting will be carried out by hand. These sorting stations are scheduled to be commissioned in autumn 2017. Urban practitioners from Jerash are eager to implement waste management system that incorporates environmental protection. Their key objective is awareness-raising on sorting paper and plastic within the framework of a pilot project in one selected neighbourhood in Jerash by 2020. This neighbourhood will be identified according to the ability to deliver the required material, and an incentive system will be implemented. Furthermore, the intended waste management system will be operationalised in conjunction with a marketing system that will also be developed. The pilot project can be executed within a year, however, the whole project is scheduled to take five years. A working group will begin with data collection on the pilot neighbourhood, developing a marketing system and training the team on the importance of sorting paper and plastic. This concept integrates the acceptance within a neighbourhood as a most relevant success factor for a functioning sorting system. If one district shows reliable results, others will be eager to follow this example.

The goal of the municipality of Mafraq for the next year is to update the routing plan for the city centre in order to optimise waste collection. Currently streets are congested and not accessible during daytime anymore. The improvement shall be based on collected data in a first step and by then assessing the route planning according to the waste situation.



Defining concrete project outlines

# Future Cooperation Potentials Identified by Participants

During the last session of the workshop, the following cooperation opportunities with concrete goals for project partnerships between Jordanian municipalities and German municipal companies were identified. To support the implementation of bilateral project partnerships, a range of instruments is available through the “Municipal know-how for host communities in the Middle East” programme.

The participants of the municipality of Jerash and the municipal company “AWV Nordschwaben” are interested in collaborating in the field of sorting paper and plastic waste. Both parties wish to formalise the cooperation and build a sustainable cooperation arrangement. The next steps will be data collection in a pilot neighbourhood in Jerash, a consultancy concerning the establishment of a marketing system, and the training of municipal employees on the importance of separating paper and plastic.

Cooperation on waste management planning was suggested by the representatives of the municipality of Deir Alla and the municipal company “Kommunal Service Jena”. Both sides are eager to promote the project through reciprocal visits, during which the waste management plan of Jena can be shared.

The EUV Stadtbetrieb Castop-Rauxel is interested to advise the municipality of Madaba on the development and implementation of a waste collection plan with a focus on sorting and vehicle routing and would welcome employees from Madaba for internships in Castrop-Rauxel. Both partners are interested in further cooperation.

The waste management company “AWR Abfallwirtschaft” Rendsburg-Eckernförde is eager to advise the municipality of Karak on the sustainable operation of its composting plant. The first concrete steps were defined and a first visit to Karak to analyse the current situation was planned. There is a solid interest in further cooperation.

The municipalities of Ramtha and Irbid were supported by the expert of the municipal waste management company “AWA Entsorgung” Eschweiler on the development of a common plan for the collection of recyclables in both Jordanian cities. AWA Entsorgung is very interested in continuing its support and advice of Jordanian partners.

The municipality of Wasattyah was advised by Cologne’s waste management company AVG on developing a waste management plan with a business plan included, and on carrying out pilot activities for waste collection and recycling. Wasattyah and AVG are looking forward to further cooperation.

The municipality of Mafraq will be supported by German experts in establishing a feasibility study on waste sorting, reuse and recycling, for which the municipality of Mafraq will provide the data and is seeking advice on the planning process.

A follow-up study and project planning visit of the German experts to Jordan has been facilitated by the Service Agency in May 2017.



## Participating Institutions

- AWB Münster
- AVG Köln, Cologne
- AWA GmbH, Eschweiler
- AWR mbH, Borgstedt
- AWV Nordschwaben, Donauwörth
- City of Deir Alla
- City of Irbid
- City of Jerash
- City of Karak
- City of Krefeld
- City of Madaba
- City of Mafraq
- City of Ramtha
- City of Wasattyah
- EUV Stadtbetrieb Castrop-Rauxel
- German Association of Cities
- German Association of Local Public Utilities, VKU, Berlin
- GIZ Jordan
- Kommunalservice Jena
- Ministry of Municipal Affairs, Hashemite Kingdom of Jordan
- Stadtreinigung Hamburg





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