State of the art on PPP in Italy: the successful case of Perugia for MSW management

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GESE.N.U. is a joint venture (public and private) limited company, founded in 1980 by Perugia City Council (45%) with the Sorain Cecchini Group (55%). The mixture of public and private investment has proved to be a winning combination: the public sector has contributed to the general direction of the company, its global vision of the problems to be dealt with, and care for the environment, whilst the private sector has contributed its managerial capacity, a spirit of initiative and an optimal management of the company to give the best economic results.

Gesenu S.p.A. has been designated a Quality Company [Certification UNI EN ISO 14001 (2004)].
Core Business

- Urban cleaning services


- Planning projects, construction and management of:
  - Selection, recycling and quality compost plants
  - Controlled landfill sites
  - Storage plants for special waste and hazardous waste
  - Liquid waste treatment plants
  - Combustion plants

- Research and development of new environmental technologies
From 1980 to TODAY
Life-cycle thinking in waste management

- 5 step waste hierarchy
  - Prevention
  - Preparing for re-use
  - Recycling
  - Other recovery, e.g. energy recovery
  - Disposal

- Application of the basis of life-cycle thinking
The Landfill Directive’s diversion targets

- EU Landfill Directive targets: Reduce biodegradable municipal waste going to landfill
  - to 75% by 2006
  - to 50% by 2009
  - to 35% by 2016

of the total amount generated in 1995
Italian Legislation

1- Waste disposal legislation (D.Lgs. 36/2003)

2- Waste collection, recycling and recovery legislation (D.Lgs. 152/2006)
Italian Legislation

1- Waste disposal legislation (D.Lgs. 36/2003)

**NO IN LANDFILL**

- Materials with P.C.I. > 13.000 KJ/Kg

**MATERIALS AND ENERGY RECOVERY**

**NO IN LANDFILL**

- Biodegradable MSW < 81 Kg/year/inhabitant
- MSW with IRD > 1000 mg/Kg S.V.

**BIOSTABILISATION (MBT)**
Italian Legislation

2- Waste collection, recycling and recovery legislation (D.Lgs. 152/2006)

MSW (100%)

50% (31.12.09)
S.S.C.
GLASS, PAPER, IRON, ALUMINUM, STEEL, WOOD, PLASTIC, ORGANIC FRACTION FROM HOUSEHOLDS

50% (31.12.09)
Residual MSW
MBT + BIOSTABILISATION
LANDFILL or WTE

MATERIALS RECOVERY
Integrated solid waste system “GESENU’s philosophy”

- It is a flexible system to recover materials and energy. It develops in several phases following the improvement of the global system of waste.

- Recovery of materials is made in accordance with market availability.

- Recovery of energy can be done from wet part of msw through anaerobic system.
The integrated system starts with no “source separated collection” (all undifferentiated system) and a sanitary landfill and improves itself, through different phases, as soon as the market of recycled materials grows. Every treatment line has its own cost/benefit ratio to be evaluated.
INTEGRATED SOLID WASTE SYSTEM

100 %

RSU

50 %

SEPARATED COLLECTION

RECOVERY AND RECYCLE

MATERIALS (PAPER, GLASS, IRON, ALUMINUM, STEEL, WOOD, PLASTIC)

CONAI System

50 %

RESIDUAL MSW

WET ORGANIC FRACTION

HIGH QUALITY COMPOSTING

100 %

MBT PLANT

WET FRACTION

DRIY FRACTION

BIOSTABILISATION

LANDFILL or WTE

COMPOST

LANDFILL

RDF PRODUCTION

ENERGY
Integrated Waste Disposal System
Perugia model
Expansion in Italy
Ge.se.nu. S.p.A. has become a major point of reference not only for the city of Perugia but also for the institutions of Umbria and other national and international organizations.
WASTE COLLECTION AND TRANSPORT

Street collection

House collection

Separated waste collection

Ecologic platforms

House composter
CONAI CONSORIUM

CONAI, National Packaging Consortium, is a private consortium of firms working towards the recovery and recycling of packaging issued for consumption on national territory, with the aim of meeting statutory targets.
Rifiuti, Perugia è la città più ecologica
«Medaglia» dall’Istat: compost e riciclo recuperano il 76% degli scarti

Di ROBERTO BOGGIONI - PERUGIA

MEDAGLIA. Il comune di Perugia, al termine dell’impegno per l’anno 2009, recupera e ricicla un volume di rifiuti per abitante pari a 368 chili. Il volume di compostaggio è il più alto tra 214 città italiane.

Perugia è la città più ecologica in Italia

In Sardegna, la città più ecologica è Cagliari, con un tasso di riciclo del 66%. A Perugia, il tasso è del 76%, superiore a quello di Roma, Firenze e Milano.

Sfida all’immondizia

Perugia è al primo posto in Italia per il riciclo e il compostaggio. Il comune ha recuperato 327 chili di rifiuti per abitante, superiore a quello di Roma, Firenze e Milano.

La scomparsa

La spazzatura che va in discarica è scende sotto i 170 chili a residente

Perugia è la città più ecologica in Italia. Il comune ha recuperato 327 chili di rifiuti per abitante, superiore a quello di Roma, Firenze e Milano.
WASTE RECYCLING AND DISPOSAL PLANTS

Composting plant of PERUGIA (Italy)

- Incoming waste: Organic fraction for mechanical separation of MSW
- Start up: 1986 (compost from MSW)
- Design by: Sorain Cecchini Spa.
- Technology: Bio reactor Sorain Cecchini Spa.
- Product: Compost from MSW ex DCI 27/07/84

- Incoming waste: Organic waste from separated collection
- Start up: 2003 (quality compost section)
- Design by: GESENU SPA
- Product: high quality compost
- Capacity:
  - MSW line: 150 ton/day
  - High quality compost: 100 ton/day
Composting plant of Maccarese (ROMA)

- Start up: 2002
- Design and construction by: SECIT Spa
- Technology: Bio reactor Sorain Cecchini
- Incoming waste: Organic fraction from separated collection
- Capacity: 88 ton/day
- Product: High quality compost
Composting plant of Borgo San Dalmazzo (CUNEO)

- Start up: 2003
- Design and construction by: SECIT Spa / GESENU Spa
- Technology: Bio reactor Sorain Cecchini
- Incoming waste: MSW and organic fraction from separated collection
- Capacity:
  - High quality compost: 30 ton/day
  - MSW: 180 ton/day
Composting plant of Parma

- **Start up:** 2006
- **Design and construction:** SECIT SpA
- **Technology:** Dynamic bio cells SECIT
- **Incoming waste:** Organic fraction from separated collection
- **Capacity:** 60 ton/day
- **Product:** High quality Compost
Composting plant
Castelceriolo (ALESSANDRIA)

- Start up: 2007
- Design and construction: SECIT Spa
- Technology: Turning machine SECIT
- Incoming waste: Organic fraction from separated collection
- Capacity: 80 ton/day
- Product: High quality Compost
Composting plant of Chilivani (SASSARI)

- Start up: November 2009
- Design and construction: SECIT Spa
- Technology: dynamic bio cell SECIT
- Incoming waste: Organic fraction from separated collection
- Capacity: 75 ton/day
- Product: High quality Compost
Composting plant of Druento (TORINO)

- **Start up:** 2009
- **Technology:** Static bio cells
- **Incoming waste:** Organic fraction from separated collection
- **Capacity:** 190 ton/day  85,000 ton/year
- **Product:** High quality Compost
Anaerobic digestion plant of Marsciano (PERUGIA)

- Start up: 1988
- Managed by: SIA Spa
- Technology: Anaerobic digestors + aerobic bio reactor
- Incoming waste: waste from husbandry, sludge from WWTP, waste from abattoir
- Products: Biogas for electricity production, High quality Compost
The GROUP OF GESENU’s activities are characterized by a network of companies that stand out for both the specificity of their sector of operation and for the territories they cover.
THE GROUP OF GESENU design, build and manage collection and waste treatment and disposal plants all over the world: in Romania, Poland, Arab Emirates, Bahrain, Abu Dhabi, Egypt, Angola, Honduras and Chile.
A successful case of abroad experience

Know-how

Thanks to the consolidated experience of its stockholder GESENU S.p.A., ASA International can assure the best quality in study and realization of its own projects.

In particular, in the Gesenu group the cooperation with Secit S.p.A. and Sorain Cecchini Tecno companies, leaders in designing and building of waste treatment plants, has been fundamental.
The GESENU Group operates in Cairo through the subsidiary company AAEC.

Founded: 2003
Capital: 51 million EGP
The experience in Egypt

As a result to its participation to the International bidding called by the Governorate of Cairo for the supply of last generation urban health service, the Company won the contract for the Northern District, signing the contract on August 5, 2002, with the Governor of Cairo. On January, 2003 a special purpose entity of local law, AAEC S.A. (Ama Arab Enviroment Company), controlled by ASA International was constituted for managing the contract.

In the light of the positive reply of Egyptian authorities on service quality and of technical adaptability, the Company was invited to come into the contract of managing services in the Western area of the town. The signature of the contract took place in November, 2006 and the activities begun in December.

Today, figures of AMA Arab are impressive: 5 millions of citizens served for a daily collection of over 3000 tons.

The great deal of interest gained thanks to the accurateness of service management in the major areas of Egypt brought AMA Arab to the attention of the most important Middle East municipalities. Therefore, the company has recently gained new contracts of qualified technical assistance in the towns of Jeddah (Saudi Arabia) and Abu Dhabi (U.A.E.).
Existing contracts

AAEC manages two major contracts for integrated waste management until 2018:
1- contract for Cairo North started 01/12/2003 (annual value 85 million of EGP)
2- contract to Cairo West started on 01/11/2006 (annual value 66 million of EGP)

On 27/05/2009 AAEC signed a new contract that provides for an increase in services offered in the same geographical areas (North Cairo and West Cairo) for an increased annual fee of around 73 million pounds.

Total value of projects: 224 million EGP
INTEGRATED SOLID WASTE SYSTEM

Served area
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of districts served</td>
<td>15</td>
</tr>
<tr>
<td>Served area</td>
<td>64 Km²</td>
</tr>
<tr>
<td>Population served</td>
<td>5.5 milioni</td>
</tr>
<tr>
<td>Average population density</td>
<td>94,000 ab/Km²</td>
</tr>
<tr>
<td>Number of households</td>
<td>800,000</td>
</tr>
<tr>
<td>Waste daily production</td>
<td>2,250 ton.</td>
</tr>
<tr>
<td>Number of employees and workers</td>
<td>5,500</td>
</tr>
<tr>
<td>Landfill</td>
<td>1</td>
</tr>
<tr>
<td>Selection and composting plant</td>
<td>5 lines + 2 lines of refining</td>
</tr>
<tr>
<td>Areas of transference</td>
<td>7</td>
</tr>
<tr>
<td>Operational vehicles</td>
<td>540</td>
</tr>
</tbody>
</table>
INTEGRATED SOLID WASTE SYSTEM

Services provided

The contract services covering the full cycle of the Integrated Management of Municipal Solid Waste in the two areas.

- Mechanical and manual sweeping
- Domestic door to door collection
- Street collection
- Raccolta commerciale
- Shops collection
- Selection and composting plant
- Final disposal
- Environmental awareness campaigns
INTEGRATED SOLID WASTE SYSTEM
Collection and Sweeping flow sheet

Municipal Waste (Residential, Commercial and Industrial)

- Bin 1100 Lit Backup for Residential Waste Collection and Sweepers
  - Door To Door Collectors
    - Wide Streets Medium Trucks (6m³) (No=30)
    - Narrow Streets Small Trucks (2.5 m³) (No=30)
  - Compactor Trucks (27 m³) (No=7)

- Sweeping & Demolition Waste
  - Manual Street Sweepers
  - Mechanical Sweepers (Build)
  - Mechanical Washers (6=7)
  - Construction & Demolition Waste

- Open Containers (20 m³) (No=40)

- Landfill Compactor Containers (No=50)

- Lift Trucks (No=36)

- Transfer Station

- Lift Trucks + Trailers (No=16)

- Marketing, Compost & Recyclables

- Sorting & Composting Plant

- Direct Transport to Landfill

ISWA
International Solid Waste Association

GRUPPO GESENU
Currently waste from the areas north of Cairo and Cairo West are awarded to Kattameya plant (selection and composting plant + landfill), located about 25 km. from the center of Cairo.
Thanks to the selection process are recovered significant amounts of cardboard, PET, glass and aluminum.
INTEGRATED SOLID WASTE SYSTEM

Compost production
The Awareness Department of AAEC is constantly engaged in organizing events and campaigns to spread awareness in the community towards environmental problems and an education towards environmental protection. Schools and children are obviously the preferred targets.
INTEGRATED SOLID WASTE SYSTEM

The project

“Fighting poverty and environmental degradation”

First...

Recovering a garden in a school of Zawia district

... after

Recovering a garden in a school of Rod El Farag district
INTEGRATED SOLID WASTE SYSTEM
The project
“Fighting poverty and environmental degradation”

Rehabilitation of Mubarak in the Garden District of Sharabeya
(activity still in progress)

Before to start...  ... the current state of work
INTEGRATED SOLID WASTE SYSTEM
Future perspectives

• Implementation of “New Solid Waste Management Strategy”
• Production and marketing of quality CDR
Ama International is an important stock-holder of the Italian Amest Srl. This company, with other major associated companies of the sector (Veritas, Iris Isontina and Società Italiana per le Condotte d’Acqua) has the control of the Polish Amest Sp.zo.o., active in the industry of waste disposal and which at present manages 5 landfill sites in Kórnik, Kamieńsk, Otwock, Kętrzyn and Mysłowice. At present, the authorized and used plants have a total capacity of ten millions ton and provide an indispensable service for local communities.

The aim of Amest is to bring innovation and last generation technologies in Eastern Europe preparing green projects directed to the ecological restauration of some areas.
OTHER ABROAD EXPERIENCE: CILE

As a result of an agreement among ASA International, AMIAT S.p.A of Turin and Tubosider America Latina S.A, Chilean branch of Tubosider SpA Group, in 2003, in Chile, was born one of the first national company with only Italian capital assets: Ecosider S.A. One year after, in 2004, this company won the contract for services of waste collection and transport, and sweepings of La Serena and San Joaquin in Santiago communes. The two contracts involved the purchase of a complete fleet of compactor trucks capable of collecting and transporting waste to the final destination. Then, Ecosider obtained the contract related to the management of municipality of Peñalolén, one of the most modern and characteristic municipality of Chilean capital.

The support of ASA International and its partners has been very important, in particular, in what concerned the instruments needed for the worker’s training.
Gesenu S.p.A. was a shareholder of two companies in Romania and has many professional experiences in Balkan countries.

The two Romanian companies are:

1. **COMPREST S.A.**
   - **Main function:** Provides cleaning services in the city of Brasov and the surrounding area, serving a population of around 140,000.

2. **Fin-Eco S.A.**
   - **Main function:** Plans, constructs, and manages the landfill site in the Commune of Brasov and surrounding areas, with a capacity of 12 million cubic metres. Inhabitants served 300,000.
Edmonton - Canada

- TRANSALTA CORPORATION
- Start up: 2000
- Technology: Sorain Cecchini
- Input: MSW - Sludge
- Capacity: 1200 tons/day
Edmonton - Canada
Sydney - Australia

- GRL-Global Renewables Limited-GRUPPO GRD
- Start up: 2004
- Technology: Sorain Cecchini
- Input: MSW
- Capacity: 600 tons/day
Murcia - Spain

- CESPA-GRUPPO FERROVIAL
- Start up: 2005
- Technology: Sorain Cecchini
- Input: MSW - Sludge
- Capacity: 900 tons/day
WASTE TREATMENT PLANTS

The Italian Company SECIT S.p.a. has been active in the field of environmental protection since 1972. It is a Public Limited Company with a share capital of 1,700,000 Euro, the major shareholder being the Perugia based company GESENU.

Thanks to its use of and access to a wide range of technologies, coupled with its own brand of know-how, SECIT is in a strong position to provide innovative, successful solutions to every type of environmental problem.

SECIT has already successfully seen various projects in this field through to completion and has several others currently in progress.

The company acts primarily as a contractor, bidding for tenders in the public domain and subsequently being responsible for setting up “turnkey” projects including:

- process design
- engineering
- equipment supply
- construction works
- commissioning
- operations start-up

SECIT’s skilled personnel are able, according to the needs of each individual client, to commission, design, build and set up a plant or operation, as well as manage it at a supervisory level.
INTEGRATED SOLID WASTE SYSTEM
ENVIRONMENTAL TECHNOLOGY

Areas of interest

✓ Photovoltaic
✓ Biomass and biogas
✓ Wind
✓ Energy management
✓ Renewable energy power plants
✓ New technologies

Green Utility Company operates in the energy management and co-generation fields that prides itself on several years of experience
Green Utility is oriented towards the energy needs of our clients. Each investment is supported by an added consultancy and by a technical and financial analysis to provide solutions concerning alternative energy resources and a tailor-made rational use of energy for the client.

**Photovoltaic sector**
- Implementing projects using at best this system through the achievement of feed on tariff incentives.
- Providing turn key solutions for medium and big size photovoltaic plants
- Availability of state of the art technologies and products for architectural integrated photovoltaic plants and sun tracking systems

**Biomasses and biogas**
- Projecting, installing and managing biomasses and biogas plants of cogeneration
- Developing projects in the field of biofuels

**Wind**
- Projecting and implementing wind energy plants

**Energy management**
- Global and energy efficiency service
- Providing and managing cogeneration and trigeneration plants
- Developing projects aimed at eliminating greenhouse emissions

**Large-size renewable energy plants**
- Investments targeted at implementing large-size projects on renewable
Thanks for your attention!

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