

Evaluating the Treated Municipal Sewage: the Economical Feasibility of Implementing WWTPs PPP Projects in the Central Syrian Cities

IWRM Research Proposal

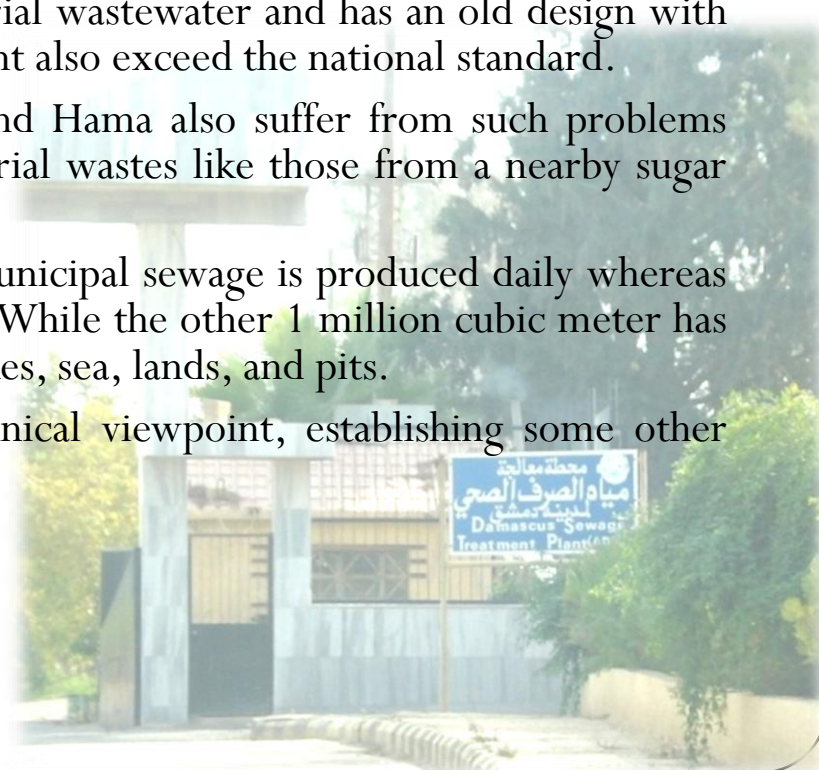
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Dec. 2012

Wastewater Situation in Syria

- The deficit in water balance in Syria is 2400 million m³/y.
- Major public central municipal wastewater treatment plants face serious difficulties in their performance.
- The one of Damascus receives 700,000 m³/day (double designed capacity) of sewage, with illegal mixture of industrial waste. The treated water doesn't meet the Syrian standard for irrigation.
- The one of Aleppo also receives illegal industrial wastewater and has an old design with no consider for sludge handling, and the effluent also exceed the national standard.
- The public central plants of each of Homs and Hama also suffer from such problems especially that of Homs which receives industrial wastes like those from a nearby sugar factory.
- There are at least 2 millions cubic meter of municipal sewage is produced daily whereas only 1 million of them is treated ineffectively. While the other 1 million cubic meter has different destinations such as, wadis, rivers, lakes, sea, lands, and pits.
- The Government has studied, from the technical viewpoint, establishing some other plants in the main cities.



Water/Wastewater PPP Projects

- What is PPP (Public-Private Partnership) project?
- The concept is to avoid the high capital cost of establishing infrastructure projects
- Good management by the private sector
- The contract would also allocate risks between the parties
- Some recent researches have focused on the legal and lawful part of water PPP projects
- The main challenge is the fact that public WWTPs product is not sold by the Ministry of Irrigation; it is given by free for farmers
- This would not encourage the government to implement PPP project due to inefficiency of buying the treated sewage from the private sector
- The economical feasibility of treating water should be studied

Objectives

- The different environmental valuation methods will be discussed for evaluating the economical value of treated wastewater
- The valuation methods are:
 - market price
 - production method
 - hedonic pricing
 - contingent valuation
 - contingent choice
 - habitat or resource equivalency analysis
 - travel cost
 - damage cost avoided

Research Plan

- Surveying and investigating the main central (existing and proposed) public WWTPs with the surrounding area. This will be done by collecting data from the related bodies in addition to field visits, and if needed, sampling and analyses
- By using the environmental economics techniques, evaluating the cost of negative effects of the untreated/bad-treated municipal sewage on agriculture, public health, animals, groundwater, etc.
- Studying the cost of sewage treatment in the Syrian market (capital and operational costs) with reference to different technologies (including rehabilitating)
- Cost-effective study of paying for each cubic meter versus the cost of destroying the environment, and the economical benefits of providing clean water for the nearby agricultural and industrial activities



**Treated water might have higher value than
fresh water**

