Solid Waste Management

PRIORITY ISSUES AND RECOMMENDATIONS

CITY OF KHMELNYTSKYI, UKRAINE
JULY – 2016

Two Fundamental Issues:

#1 – A 60-year old open landfill that is *well beyond* its capacity

#2 – A *changing* regulatory environment

We Face Four Tasks:

#1 - *Open* a new landfill

#2 - *Identify* ways to reduce the waste going into the landfill

#3 - *Meet* new standards for recycling, recovery and waste management

#4 - *Close* and reclaim the current landfill

Let's look more closely at the current landfill . . . .

Current Landfill

- Opened in 1956
- Operated by SpetKomunTrans
- Nearly 9 hectares
- Depth unknown
- Height is 50 meters above ground
- Filtrate is collected and returned
- Receives 2,300 cubic meters daily
- About 100,000 tons annually

Current Landfill

State Environmental Inspection declared the landfill to be . . .

". . . over its designed capacity, in violation of the design parameters on the volume of waste accumulation and that it does not comply with the requirements of environmental safety."

Державна екологічна інспекція України

Current Landfill

State Environmental Inspection report further stated . . .

" . . . the site is a source of intense air pollution and requires urgent rehabilitation and reclamation."

Sector Summary

According to a 2015 USAID Report and a 2014 study by the International Finance Corporation

- Ukraine produces 13 million tons of MSW annually.
- Only 3 to 8 percent is recycled and most waste goes to 6,700 landfills and dumps, many of which fail to meet minimal standards.

Sector Summary

According to a 2015 USAID Report . . .

- The government is facing many issues and *simply does not have all the resources it needs*.
- In response, the government of Ukraine aims to reform its solid waste management sector with *private sector participation* to reduce costs, increase recycling and protect public health.

Current Landfill

Clean City Project

- Ukraine's *Clean City* project included Khmelnytskyi in a comprehensive nation-wide program to build modern waste-processing facilities, funded through public-private partnerships.
- The Clean City project has been abandoned.

Now, let's look at
the regulatory environment. . . .

Regulatory Environment

The *Association Agreement* with the European Union commits Ukraine to transpose into national law the *Waste Framework Directive 2008/98/EC* of the European Union as well as other directives associated with waste management.

Regulatory Environment

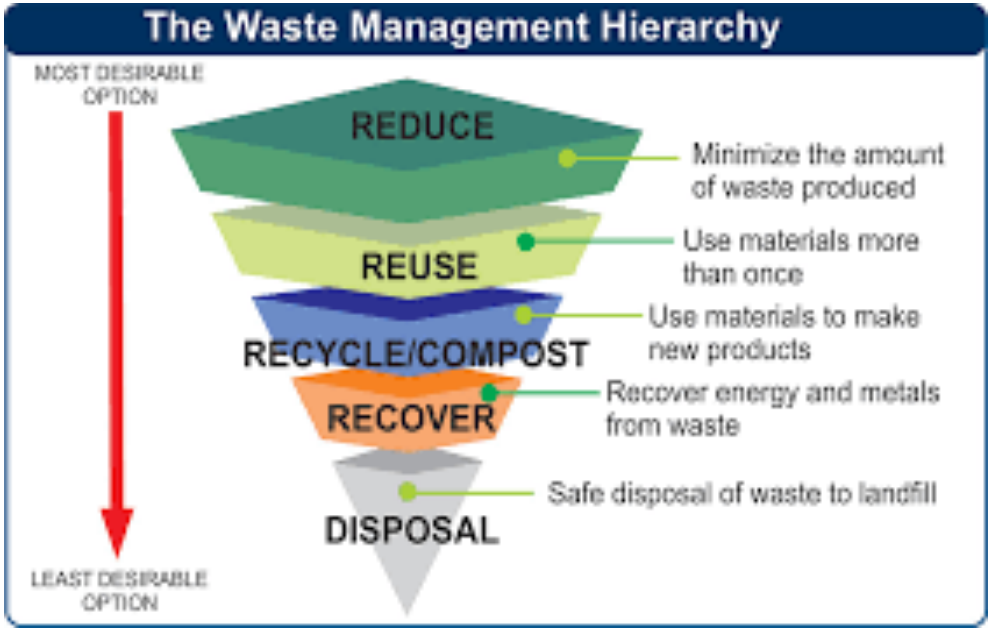
Association Agreement and Waste Framework Directive 2008/98/EC of the European Union

Waste Framework Directive 2008/98/EC sets the basic concepts and definitions of waste, recycling and recovery.

Regulatory Environment

Association Agreement and Waste Framework Directive 2008/98/EC of the European Union

The framework also establishes the waste management hierarchy



Regulatory Environment

EU Waste Principles . . .

- *Waste Prevention* – improving manufacturing methods and reducing packaging
- *Recycle & Reuse* – all possible materials should be recycled or recovered
- *Diversion* – diverting waste from landfill is a key element of EU policy

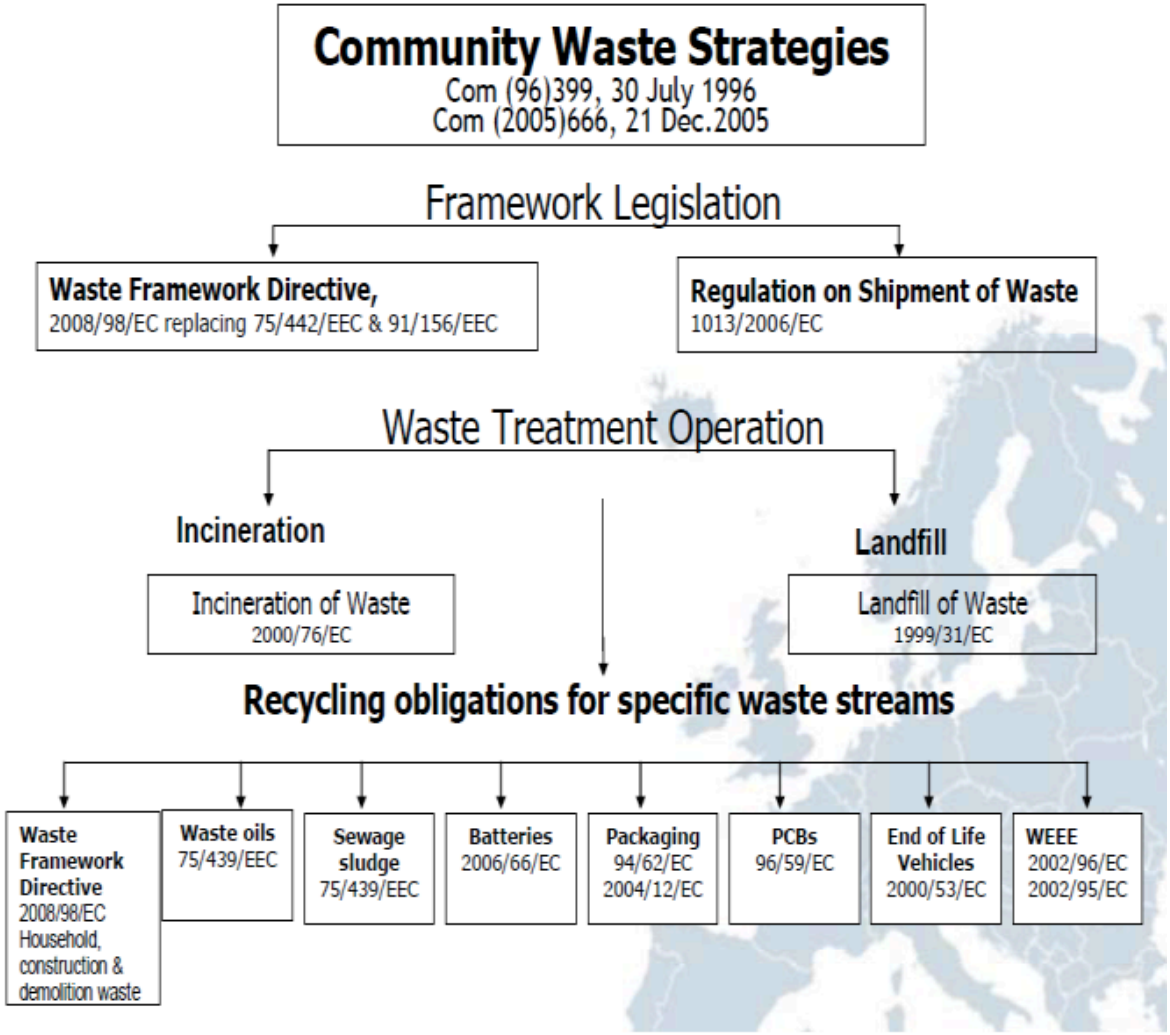
Regulatory Environment

EU 2020 Targets . . .

- *50 percent* reuse and recycling of certain household waste
- *70 percent* re-use, recycling and other recovery of construction waste

Regulatory Environment

Overall EU MSW Regulation Structure . .



Regulatory Environment

Public-Partnerships (PPP) Draft Law #1058 approved by the Verhona Rada on November 24, 2015

- Allows creation of *Special Project Vehicle* (SPV) as legal entity for PPP project
- Simplifies allocation of land for PPP
- Allows public and private partners to have *joint ownership*
- Provides *protections* to investor's rights
- Authorizes *types of payments*

Regulatory Environment

Public-Private Partnerships (PPP) –

Lessons learned from Vinnytsia, according to a recent P3DP/USAID report

- MSW treatment programs have the *potential* to generate funds.
- The private sector requires *greater certainty* about tariffs – and tariff calculations.
- The ability of government to make *long-term budget commitments* is important for the viability of PPPs.

Regulatory Environment

Green Tariff Laws

On July 15, 2015 Verkhovna Rada adopted “On Amending Some Laws of Ukraine As to Providing Competitive Conditions for Producing Electricity from Alternative Energy Sources" No. 2010-d

- Fixes the “green tariff” in Euros until 2030.
- Electricity produced by stations from renewable energy sources will be paid as per "green" tariff.
- Tariff is about 15 Euros per kWh.
- Not entirely clear that this rate applies to Waste to Energy plants.
- A great deal of uncertainty about future rates.

Now, let's look at
some technical considerations . . . .

Technical Issues

According to the International Solid Waste Association

- *Waste to Energy* (WtE) is the most common form of waste energy recovery in Europe, with over 330 plants.
- About 170 of these are on a "small" scale.
- About half have an annual capacity of less than 50,000 tons.
- The remainder range in capacity from 50,000 to 100,000 tons.

Technical Issues

Waste to Energy (WtE)

- WtE recovers electricity and heat from solid waste.
- Modern incinerators reduce volume by 90-95 percent.
- Meet high standards for emissions.

Technical Issues

Waste to Energy (WtE) details provided by World Bank

- The lower calorific value (LCV) must be at least 6 MJ/kg throughout all seasons.
- The annual average LCV must be not less than 7 MJ/kg.
- Minimum of 30,000 to 40,000 metric tons of burnable waste per year.
- Weekly variations not more than 20 percent.

Technical Issues

Secondary Raw Materials Market

- We do not have a good understanding of the secondary raw materials market in Ukraine at this time.
- Prices for secondary raw materials world-wide are down, and in some places, recycling operations are closing.

Technical Issues

Preliminary Planning Schedule

(See handout for details)

- *Phase – I: Feasibility Phase*, conduct assessments and make political decisions
- *Phase — II: Project Preparation Phase*, detailed engineering, financial planning, tender and final-go ahead
- *Phase — III: Project Implementation*, award contracts, permitting, construction, testing, operation and maintenance.

Now, a few recommendations . . . .

Recom-mendations

Визначити вміст сміття

Варіанти:

- Залучення спеціалістів зовнішньої консалтингової компанії
- Подання запиту на дослідження за допомогою донорських організацій
- Використання роботи місцевих вчених і статистів на волонтерських засадах.

Recommendation: Determine content of waste.

Recom-mendations

Провести попереднє ТЕО

Варіанти поводження з ТПВ

See handout for details

- Спалювання сміття
- Пресування та продаж
- Переробка
- Спалювання для виробництва електроенергії чи пару
- Використання комах для виробництва кормів для тварин

Recommendation: Conduct Prefeasibility Study. See handout #2

Recom-mendations

Назначити директора проекту and study team

Recommendation: Appoint a project director

Recom-mendations

Розбити проект на елементи і розглянути можливість його поетапного здійснення

Рекомендовані елементи проекту

- Відкриття нового санітарного полігону
- Будівництво сортувально-переробного підприємства з виробництва матеріалів для продажу переробній промисловості
- Будівництво об'єкта з переробки сміття в енергію, та як наслідок продажу електрики або пару в мережу.
- Закриття поточного полігону екологічно відповідальним чином, з потенціалом видобутку метану, а також його триваючий, довгостроковий моніторинг.

Recommendation: Break project into elements and consider phasing

Recom-mendations

Залучити громадян

Залучення некомерційних організацій та громадян для розуміння питань управління відходами та розробки майбутніх політичних рішень

Recommendation: Engage citizens.

Recom-mendations

Виявити та залучити зацікавлені сторони

- Урядовий сектор
- Сектор відходів
- Енергетичний сектор
- Спільнота

Recommendation: Identify and engage stakeholders.

Recom-mendations

Провести подальше правове дослідження

Зібрати інформацію і отримати уявлення про необхідні статуси, правила та директиви

Recommendation: Conduct further legal research and name compliance officer.

Recom-mendations

Провести дослідження допустимих продажів елелектроенергії

Застосувати більш консервативне припущення загальних ринкових цін до прогнозів по прибутковості від продажу електроенергії по «зеленому тарифу»

Recommendation: Establish conservative power sales assumptions.

Recom-mendations

Розглянути більш широкий проект

Розглянути питання про залучення відходів з більшої площі, наприклад, Хмельницької області, через угоди про співпрацю або послуг по контракту.

Recommendation: Consider a broader project. Efficiency of scale.

And finally, let's review a plan to conduct a PreFeasibility Study (PFS). . . .

See handout #3

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