Organized Research Center of Excellence (ORCE)

Solid Waste Institute for Sustainability (SWIS)

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• **Urban Population**
  - 2002 – 2.9 Billion (0.68 kg/P/day)
  - 2012 – 3.0 Billion (1.2 kg/P/day)
  - 2025 – 4.5 Billion (1.42 kg/P/day)

As countries urbanize:
• Economic wealth **increases**
• Standards of living **increases**
• Consumption **increases**
• Waste generation **increases**
Uncollected solid waste contributes to:

- Air pollution
- Flooding
- Public health impact
  - Respiratory ailments
  - Diarrhea
  - Dengue fever
Waste Piles up in the Street of Naples, Italy

- Foul smell – from waste facility
- Riot against – new facility and waste piles up in Naples as waste disposal was on hold
- Prime Minister finally agreed to improve existing facility to stop the violence
SWIS – Background
Sweden Importing Garbage

- Energy - 2 Million Tons of waste/Year
- Heating 810,000 homes and providing electricity to 250,000 homes.
- Sweden is now importing SW from Norway
SWIS – Background

Waste Management in USA

- Recycled or Composted: 34.1%
- Combusted for Energy: 11.7%
- Landfilled: 54.2%
Waste treatment methods per country, municipal solid waste
70% - Dumpsites and sanitary landfills.
11% - Thermal and Waste to Energy (WtE)
19% - is recycled or treated by Mechanical and Biological Treatment (MBT), including composting
Poorly managed waste has an enormous impact on health, local and global environment, and economy;

Improperly managed waste usually results in down-stream costs higher than what it would have cost to manage the waste properly in the first place.

Lack of understanding or training of challenges and importance of solid waste management and its impact on health, sanitation and sustainable cities.
To research, develop and implement innovative solutions for sustainable waste management

To provide training and support sustainable waste management in both developed and the developing countries.
• **Open Loop to Close Loop Solid Waste Management**
• **Landfill Mining and Operating Landfill as Perpetual Landfill is Potential Way Forward**
SWIS – Concepts of Sustainable/Perpetual Landfill

Collected Solid Waste → MRF → Degradable MSW components are sent to Landfill

Plastic, Metals, Glass, and In-organics are taken out

Cell - 1 → Cell - 2 → Cell - 3 → Cell - 4

Landfilling Cell-1 → Cell-2 → Cell-3 → Cell-4 → Cell-1

Mining of Cell-1 → Cell-2 → Cell-3 → Cell-4 → Cell-1
The objective of the Summer School is to:
- provide advanced knowledge in the field of waste management to an international audience of existing and emerging solid waste experts.
- 2012 (Vienna, Austria)
- 2013 (Malaysia)
- 2014 (Romania)
- 2016 (UTA/Denton)
SWIS-ISWA Co-operation Partnership

- SWIS is a Co-operative Partner of ISWA
- SWIS – is working on a collaborative partnership agreement among SWIS, ISWA and CCAC (Climate and Clean Air Coalition)
- CCAC is a program under United Nations Environment Programme (UNEP)
- SWIS is working on Agreement for Sustainable Waste Management Projects and Landfill Gas to Energy Projects with Few Other Countries
SWIS Members completed a landfill to gas to energy potential project in Ghana.

The Project was funded by US EPA’s Global Methane Initiative (GMI) Program.

SWIS also completed a landfill design and operation training program in Accra, Ghana in July 2014.
SWIS – Infrastructure
SWIS – Proposal for Texas

- Annual Meeting with Member Cities and Other Members
- Discuss emerging Issues related to Solid Waste Management
- Identify needs for the cities – Immediate and future
- Develop solutions and protocol for the identified problems and share them among the member cities
- Train solid waste personnel on the newly developed protocols and help them implementing the new technology
- Present new findings to the regulatory agencies
- Bridge the knowledge gap between solid waste operators and regulatory agencies
Thank You

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ISWA – Finland Trip

ISWA BEACON
2nd International Conference on Final Sinks
16–18 May 2013
ISWA – Annual Congress, Vienna