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Diverting & Recycling Organics
Barriers, Opportunities and Solutions

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The Problem

- Improper management of organic wastes causes:
  - Air pollution via odours, GHGs
  - Water pollution via contaminated runoff and leachate
  - Public health problems via vectors
  - Reduction in quality of life for residents
  - Deterioration in economic vitality for communities
- Organics:
  - 40-60% of municipal solid waste are decomposable
  - Municipal and industrial sludges
  - Animal manures and mortalities

How are these organics managed in U.S.?

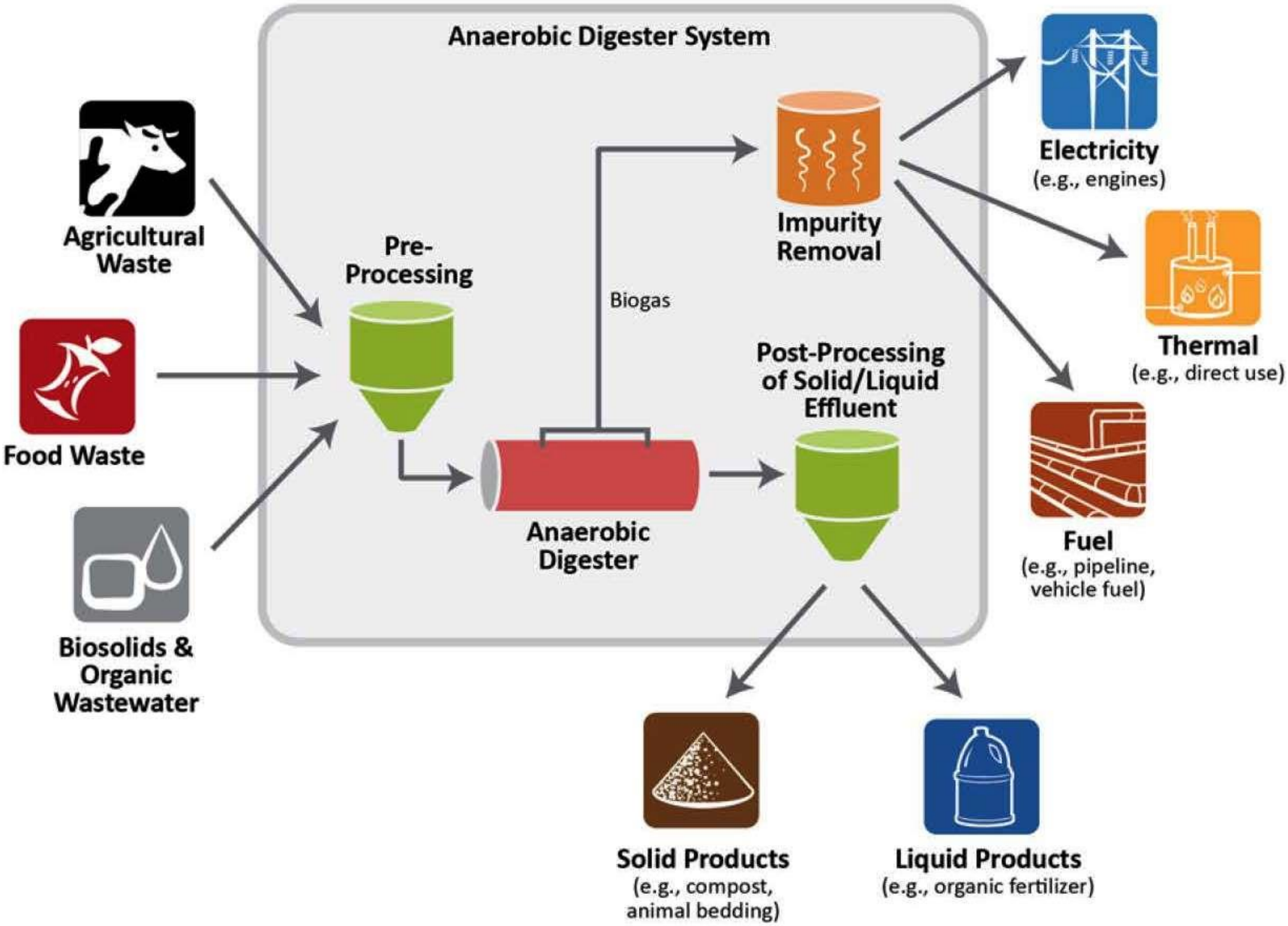
- Composting
  - 4,000 – 5,000 composting facilities in U.S. today
  - Windrow (most), aerated static pile (growing), in-vessel
- Anaerobic digestion (AD)
  - Stand-alone solid waste AD – 21 on-line, 14-16 in development
  - Landfill gas-to-energy – 645 operational projects
  - Livestock AD – 247 operational
    - > 60 co-digestion with food scraps
  - Sludge AD at WWTPs – 1,238 operational
    - 12-15 are co-digesting food scraps, more in development

U.S. trends in organics management

- Composting
  - Various state programs regarding organics
    - CT, VT, MA, RI – new bans on landfilling food scraps
    - IA – reversed ban on landfilling yard trimmings
    - FL, MN – adopted 75% recycle goals by 2020
  - Several high-profile shutdowns recently
    - Odors, contamination, storm water quality major issues
  - Growing interest in small-scale community facilities linked to community-supported agriculture (CSA)

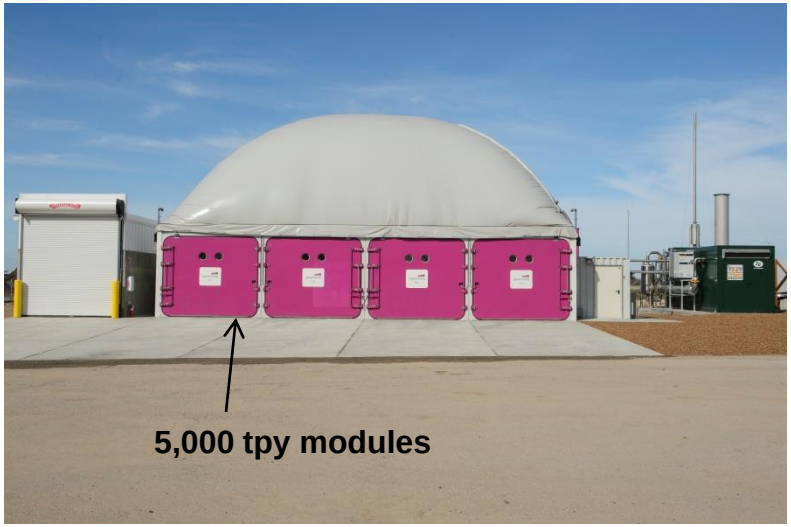
U.S trends in organics management

- Digestion
  - Markets for AD biogas competing with fracked gas
    - Power utilities willing to accept net metering – of great interest to WWTPs
    - CNG for fleet vehicles most robust market today
  - Digestate management
    - No accepted end usage standards yet
    - Additional processing (i.e. composting) needed
  - Growing interest in European dry fermentation systems for solid waste digestion
    - Four on-line, > dozen in development



Source: Global Methane Initiative, 2013

Figure 2: Anaerobic Digestion Process



Monterrey Regional Solid Waste Mgt. District, Marin, CA

San Jose AD/IVC Facility, San Jose, CA

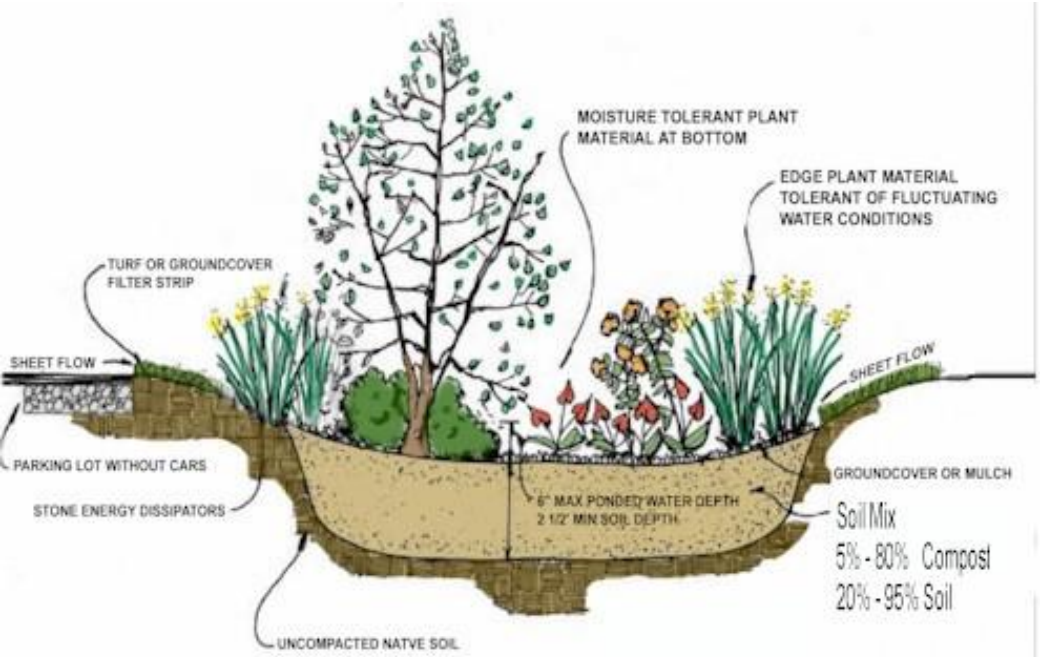
Possible policy initiatives - financial

- Set up Revolving Loan Fund for infrastructure
- Allow investment and/or production-based tax credits
- Explore preferential tax treatments for investments in facilities in all three countries
- Consider exempting compost products from sales taxes
- Create a centralized info depot for Renewable Energy Credits (RECs) from organic wastes recycling facilities
  - Create a pool of RECs available for purchase tri-nationally

Possible policy initiatives - markets

- Establish national compost & digestate quality standards
- Encourage CSA groups and community-scale composting
- Establish a tradable “soil health carbon credits” pool for improved carbon sequestration in amended soils
- Encourage compost usage (blankets, filter socks) for erosion and sediment control in all three countries
- Encourage compost-based soils for storm water runoff treatment through biofiltration

Bioretention/Biofiltration/Rain Garden



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Possible policy initiatives - regulatory

- Consider implementing state-level bans on landfilling organics and/or establishing high recycling rate targets (> 50%)
- Simplify permitting by removing bureaucratic silos
  - Waste vs. water vs. air
- Establish incentivizing Feed-In Tariffs for electricity produced by renewable energy
  - At least US $0.10 / kWhr
- Remove barriers to co-digestion of food wastes with sewage sludges

Challenges in rural communities

- Cheap disposal
- Expensive energy
- Lack of affordable technology
  - Field-scale anaerobic digesters for cooking, heating fuel

Small digester at Addis Ababa Institute of Technology

Role of CEC in trilateral initiatives

- Information dissemination – case studies, costs info
  - Operating facilities – composting & AD
  - Agronomic crop yield performance in compost-amended soils
  - Carbon sequestration in amended soils
- Develop and disseminate value proposition for healthy soils amended with organics
  - Reduced water demand for irrigation
  - Improved storm water runoff quality
- Set up study tours of operating facilities
- Quantify CO_{2eq} emissions benefits from co-collection

Co-collection of SSO with MSW

GHG emissions*

SSO collected separately – 0.343 mt CO_{2eq} / ton SSO

SSO co-collected – 0.026 mt CO_{2eq} / ton SSO

*Source: Wenck Engr. 2015, Organics Collection Carbon Emissions Baseline Study of Blue Bag Organics®/Green Bag Organix™ in Elk River, Minnesota

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ISWA
International Solid Waste Association

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Questions?

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