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Energy & Environment

Waste, Energy & Climate Change Policy

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Themes of a 'developing' economy / region

- Reducing government control , increasing local action
- Adopting an open approach (based on supply and demand)
- Increasing GDP & waste generation
- Increasing employment / population and expectation
- Increasing demand for energy
- Need for security of supply chain (materials and energy)
- **Need an effective waste management system to cope!**



The global cities agenda

- Urban migration is real – around the world!
- People & support services generate waste!
- Composition will change
 - *urbanisation, suburbanisation and increasing affluence*
- Increasing demands being placed on cities (waste management)
 - *collection, treatment, resource recovery, disposal etc.*
- Cities are getting denser creating further problems
 - *space, land values, logistics, transportation and pollution*
- Cities need resources and energy to function properly
 - *Cities have growing energy demands*
 - *EfW has been about energy and heat (what about cooling?)*

We need to rethink 'waste' as a critical resource underpinning city expansion & sustainable development



- EfW is not just about waste management!!
- Energy produced is a valuable domestic energy source contributing to energy security (increasingly important globally)
- Can contribute to renewable energy targets and decarbonise energy generation (long term goal globally)
- Can complement other renewable energy sources such as wind or solar (where appropriate) as non-intermittent
- Has a widespread portfolio of potential applications
 - *Electricity production*
 - *CHP (or district cooling)*
 - *Transport fuels*
 - *Substitute for natural gas*

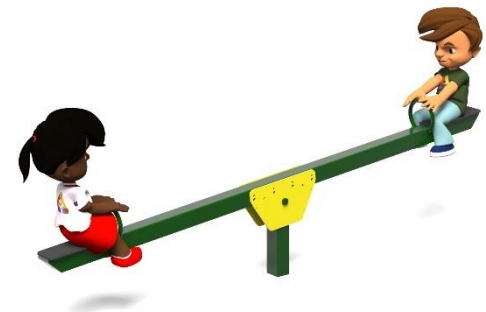


Strategy development and policy alignment is key!

- To build sustainable communities / cities we must plan properly
 - *What infrastructure do we need & where should it go?*
- But we must also consider how we should pay for it?
 - *User fees? / Gate fees?*
 - *Income share?*
 - *Inward investment?*
 - *Public or Private funds?*
- And that means we must understand where we want to be and what policies / regulations we need to get there....
 - *Renewable energy incentives*
 - *Recycling credits*
 - *Statutory targets*

Getting the balance right

- Some sector incentives may not help drive the agenda as you wish
 - *Landfill tax will drive investment in new treatment technologies*
 - *But if the energy incentives are not supporting renewable technologies the switch to EfW may not happen*
- For example....
 - *UK Government ran a technology demonstration programme for 'new technologies' which was strongly in favour of AD and traditional EFW (in the end, as other technologies failed during operation)*
 - *But most of the incentives for these facilities from the energy sector have been removed!*
 - *AD solutions have been mothballed!*



Develop a Strategy

- Design to Recover Value (i.e. revenue)
 - *Recyclates / Compost*
 - *Fuel (solid and liquid)*
 - *Energy (power and heat)*
- Many possible solutions
- *Strategic Objectives*
- *Legislation*
- *Institutional Arrangements*
- *Collection charges / Levies / Landfill Tax*
- *Project Funding and Budgets*
- *Other stakeholders*
- *Don't forget the Implementation Plan*



Integrate your Systems and Services

- Consider the Waste Hierarchy
 - *Recycling and Composting first*
 - *Then energy recovery*
 - *Finally disposal*
- Consider Interdependencies
 - *Future Waste Growth*
 - *Consumer Trends*
 - *Waste Composition and Arisings*
 - *Collection Techniques*
 - *Recycling and Composting*
 - *Residual Waste Treatment*
 - *Residue Disposal*

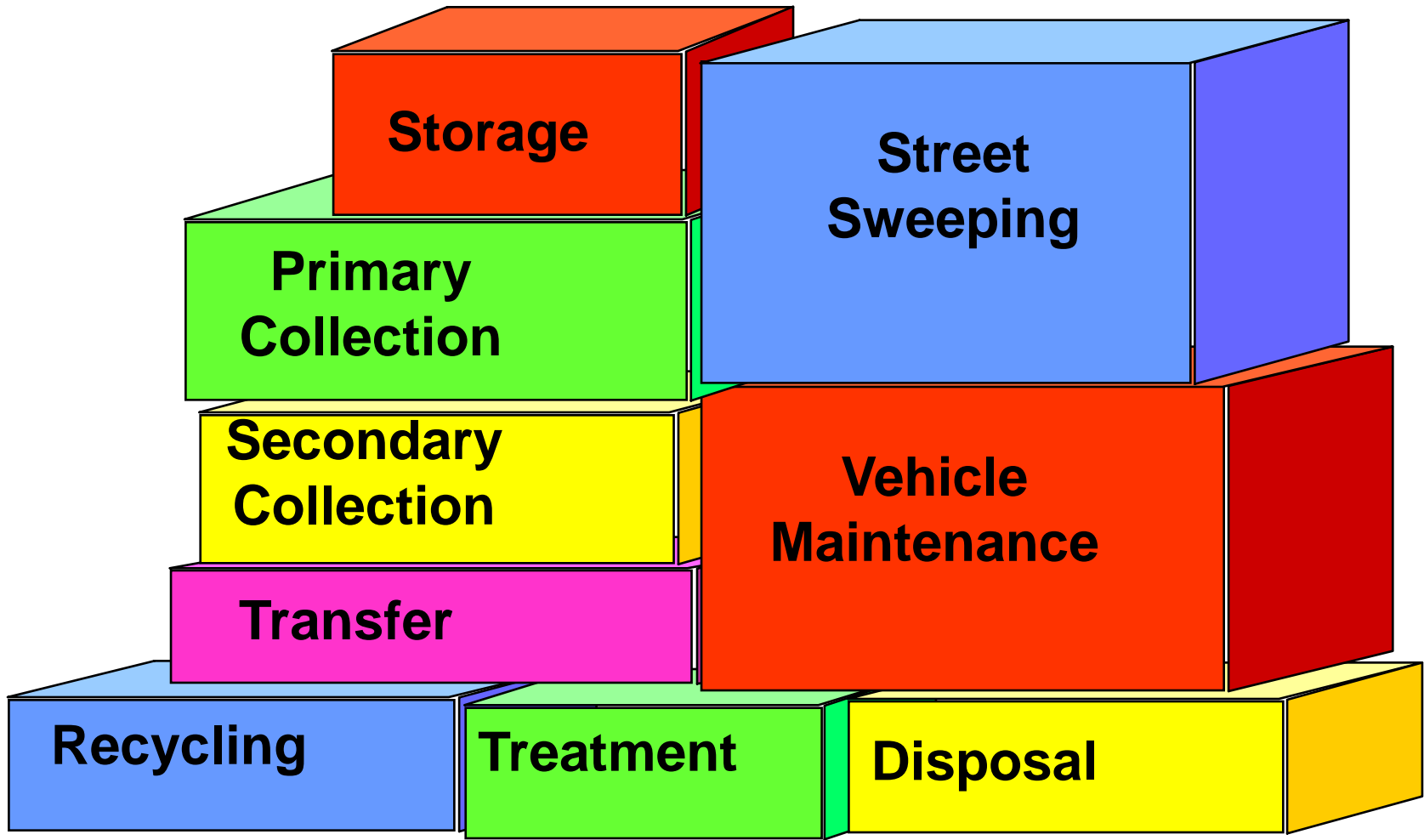
Preferred Environmental Option



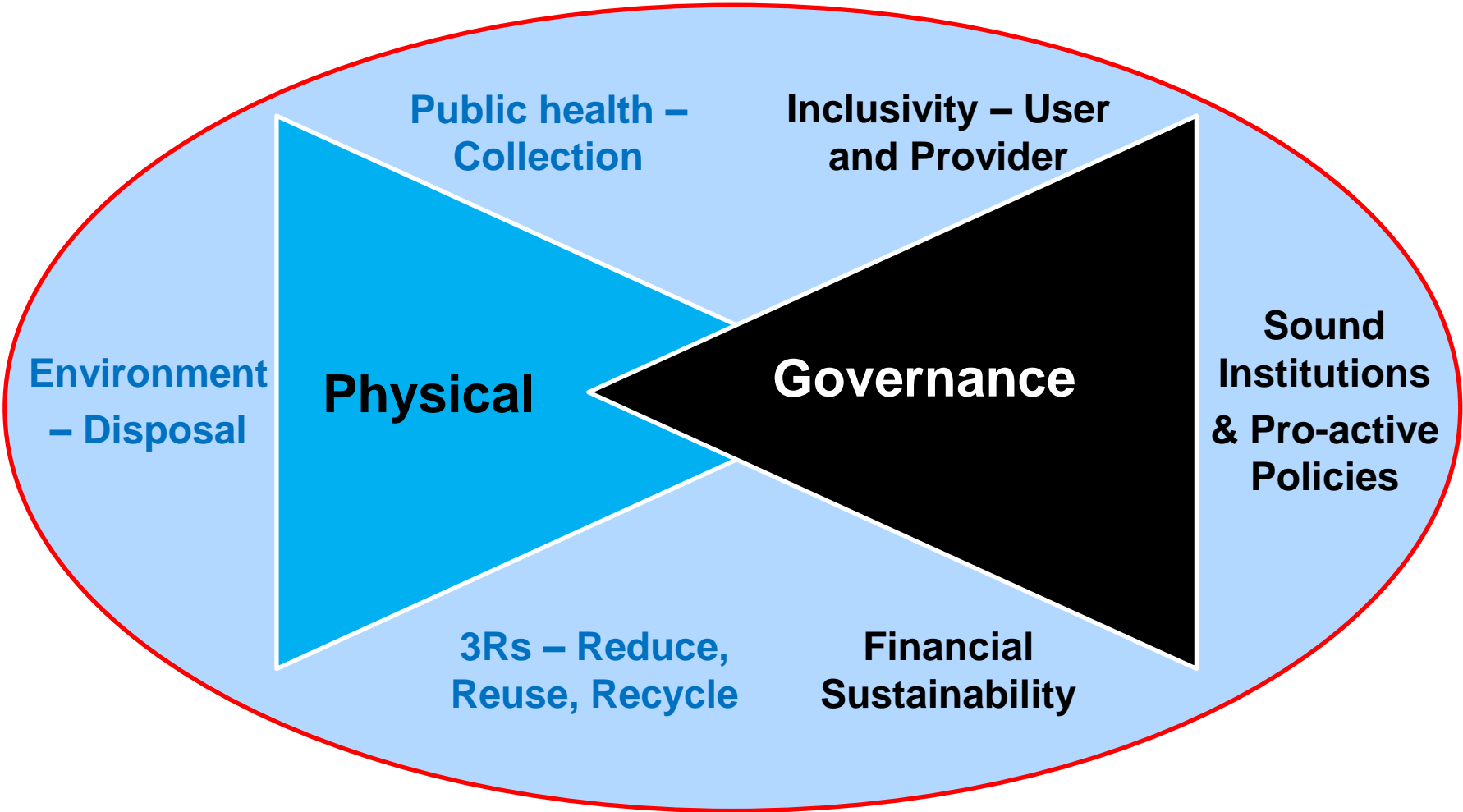
Least Environmental Option



Components of Municipal Waste Management System



The conceptual framework



Scheinberg A, Wilson D.C. and Rodic L. (2010). *Solid Waste Management in the World's Cities*

The '5 Messages of Strategic SWM'

1. Need for Strategic Planning
2. Better Institutional Arrangements
3. More Efficient Operations
4. More Effective Financial Management
5. Environmentally Safe Disposal

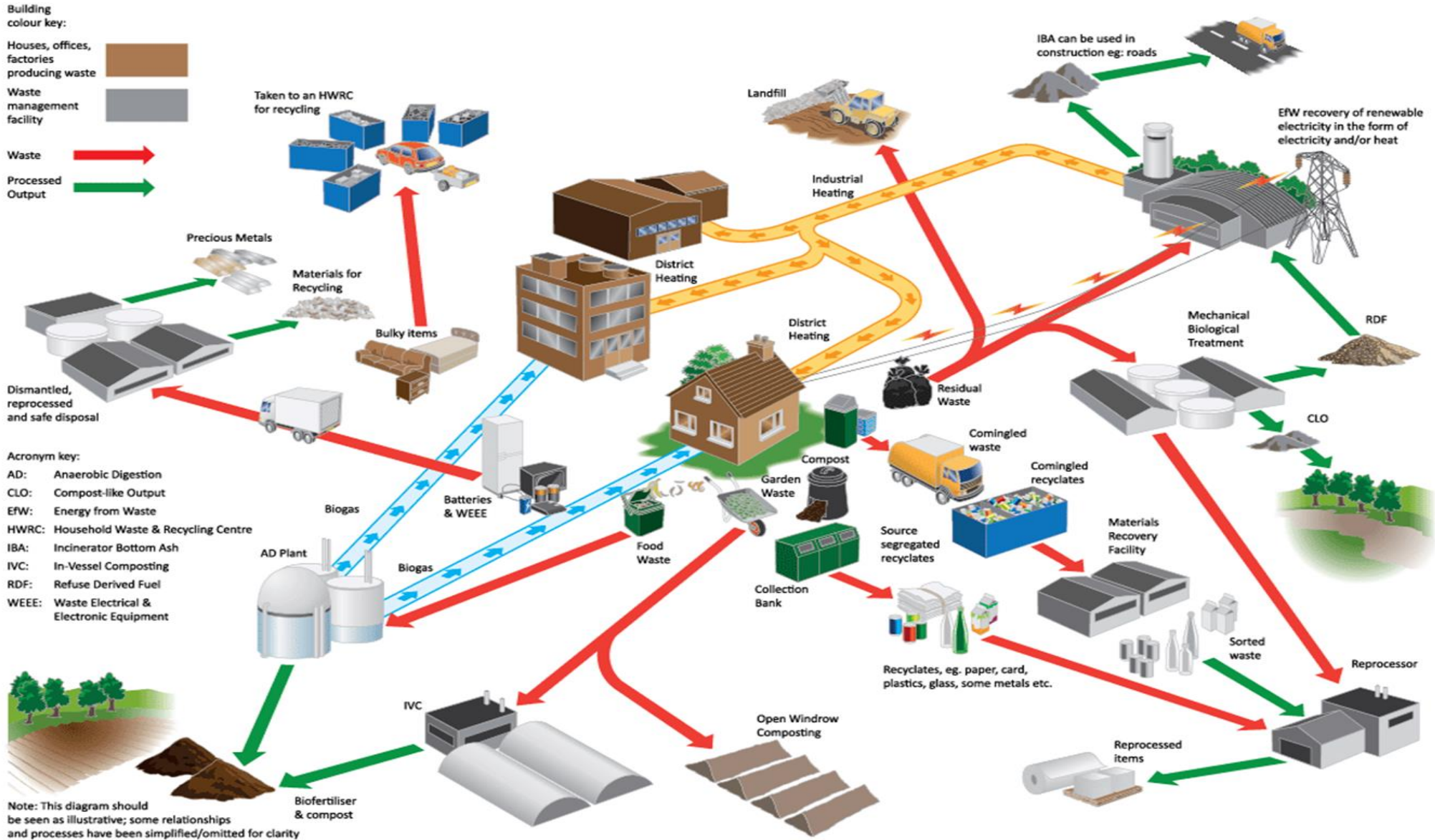


The '5 Messages of Strategic SWM'

- Supplementary Messages
 - *Develop Partnerships*
 - between neighbouring authorities
 - public & private sectors
 - *Improve Cost Recovery*
 - *Strengthen Institutions & Build Capacity*
 - *Extend Services to Low Income Communities*
 - *Deal with Health Care and other Hazardous Wastes*



Modern cities flows of resources



- Waste Strategies for Modern Cities will:
 - *Enable the Resource Supply Loops (at different scales) to develop as appropriate*
 - *Solve Waste Management Problems*
 - *Partially solve Energy Problems*
 - *Will supply fuels for transportation (Ethanol / Biodiesel)*
 - *Will support Nutrient recovery for agricultural supply chains (feed the people)*
 - ***Waste Management strategies will help underpin modern cities, their growth and sustainability***