

Beyond the Waste Bin:

A Waste Management Continuum



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Ask any City Mayor on Waste ...

- Inefficient collection system / No collection system
- Financial constraints
- Apathy and/or Lack of participation of citizens on programmes
- Set-up and alternatives to sanitary land-fill system
- Waste segregation at source
- Recycling of solid waste
- Disposal of hospital and/or hazardous solid waste
- Treatment of food waste and/or biodegradables
- High cost of establishing new and modern disposal system such as plasma technology
- Concept that "waste management" is a municipal responsibility
- No standard for management of solid waste in country
- Amount of waste increases with urbanization
- Disposal of plastic dishware



Waste action in Japan

- Recycle tote bag - Sapporo City and the local Lions Club designed and distributed special tote bags to encourage people to carry recyclables to market with them when they go shopping. Many supermarkets collect styrofoam trays, paper milk cartons, plastic grocery bags and even empty cans.
- Ibaraki recycling - Pay by the bag garbage collection is catching on all over the country. In Ibaraki prefecture a coalition of seven communities is improving their recycling and waste handling by requiring residents to put out garbage in special bags.
- Citizen payoff - In Kumamoto City in Kyushu, the city has been paying registered citizen groups 3 yen/kg for collecting paper, glass, cans, etc. The 586 registered groups collected over 7300 tons in the ten month period ending last June. In addition, since the program's introduction, the city's regular recycling collection service has experienced a 20% jump in volume. Officials feel the program has been successful not only in reducing waste but in changing the public's awareness regarding recycling.



Waste action in Japan

- Waste reduction coalition - In Yokohama, the nation's third largest city, a coalition of 38 groups representing citizens, business and government formed a city-wide group for waste reduction and recycling promotion. It's the first of its kind in the nation. The city already has ward-level groups with a similar purpose so the new group will serve as an umbrella and help coordinate activities among the ward-level groups.
- Waste Exchange - As of 1991 there were fourteen industrial waste exchanges in Japan, the first one having been established in Kanagawa prefecture in 1987. Hokkaido came on line with it's program last year and already has had over 1000 inquiries. The exchange, a prefecture-sponsored project, publishes a booklet twice a year and provides a telephone referral service.
- Alternate pulp - Paper products made from waste corn and sugar cane are slowly finding their way into conventional markets. Stores in Kyoto are stocking notepaper and stationery made from corn waste and some department stores are using sugar cane paper for shopping bags.



Waste action in Japan

- Waste reduction - Aichi prefecture has joined the ranks of government entities forming Garbage Reduction Commissions. The Aichi version is made up of various local governments and citizen groups and plans to undertake at least five different projects including: utilization of collected household recyclables, litter, especially empty cans, appropriate disposal methods for large garbage items, and using special garbage bags.
- Construction waste - The Construction Ministry is setting up an information service for the re-use of waste construction materials. They are starting out with concrete and if that is successful, they will add more materials. Other major components are asphalt, dirt and wood. In 1990, the industry generated 76 million tons of waste nationally, which represents 20% of the entire industrial waste stream.
- Buy green - The Environment Ministry has been providing assistance for governmental agencies to join the Buy Green Network to buy "earth-friendly" recycled items, including toilet paper, copy paper, paper clips, pencils, soap, vacuum bags, etc.



Waste generation

A per capita waste generation of 1 kg or more per day has exasperated waste disposal measures in Asian and other countries. Most disposal is made either by incineration, or by land disposal.



Four key trends of waste generation

We can see the following trends with respect to waste generation:

- increase in sheer volume of waste generated by urban residents
- change in the quality or make-up of waste generated
- different disposal method of waste collected, by land-fill, incineration et al.
- efforts to reduce and recycle waste through different means

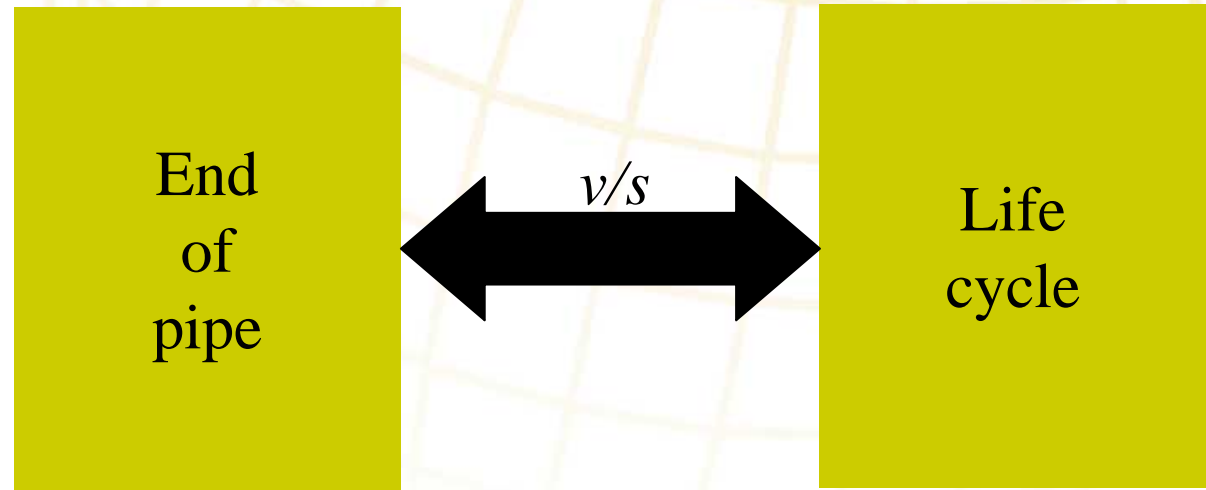


There are many causes for waste generation:

- urban lifestyles
- resource consumption patterns
- jobs and income levels
- socio-economic issues
- cultural issues

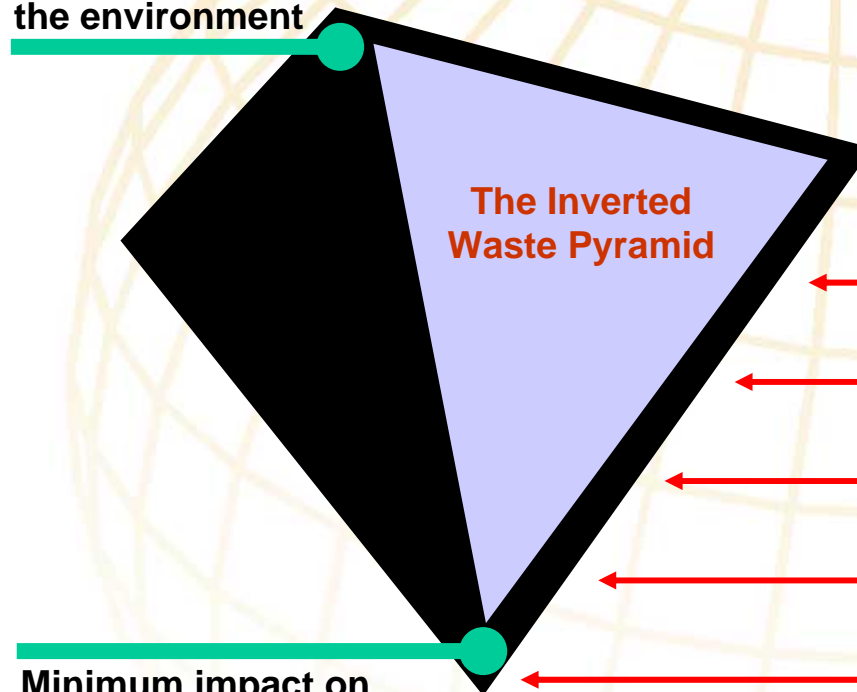


There is a constant battle
between 'end-of-pipe' policies
and 'life cycle' policies in waste
management



The Inverted Waste Pyramid

Maximum impact on the environment



Landfill

Incineration without Energy Recovery

Incineration with Energy Recovery

Recycle

Reuse

Waste minimization at source

Minimum impact on the environment



Waste generation Matrix

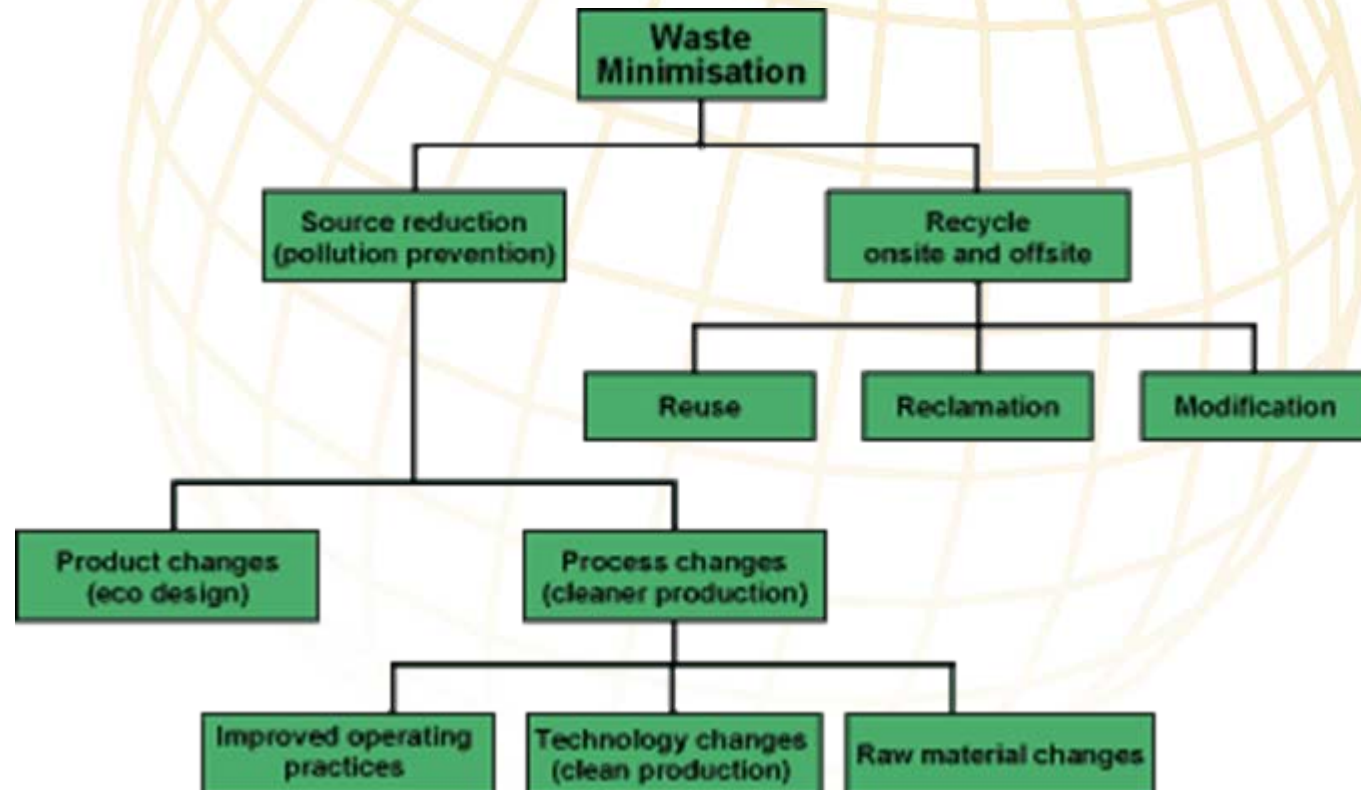
The matrix that links the dimensions of decision-making (social, technology, economic, political and administrative) with the levels of decision-making (household, neighbourhood, city, and nation) - helps in categorizing the decisions, action and related activities to be undertaken.

	Household	Community	City	Nation
Social				
Technological				
Economic				
Political				
Administrative				



Waste generation

- improved bottom line through improved process efficiency
- reduced burden on the environment, with improved public image and compliance with legislation
- better communication and involvement of employees and therefore greater commitment to the business



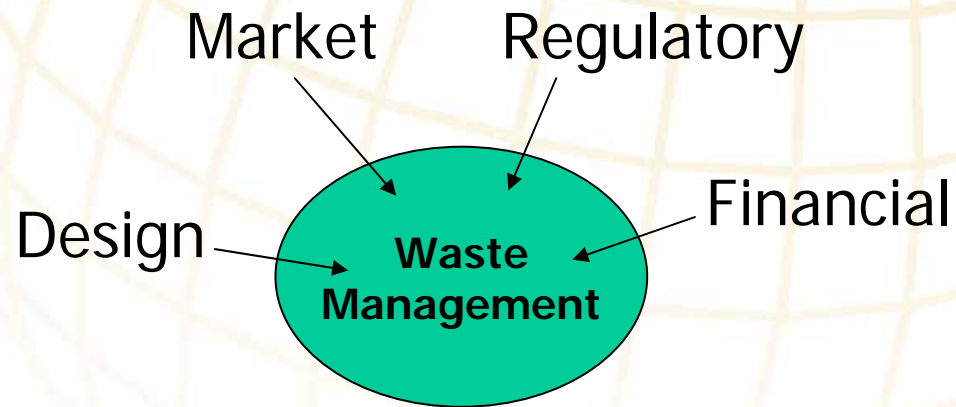
Waste management processes

It is critical to adopt a broad approach in developing a working framework for waste management. This covers the social, economic, technology, political and administrative dimensions.



Waste management drivers

A number of drivers will have to be activated for effective waste management. These are multi-faceted in themselves, but they are also driven by different stakeholders.

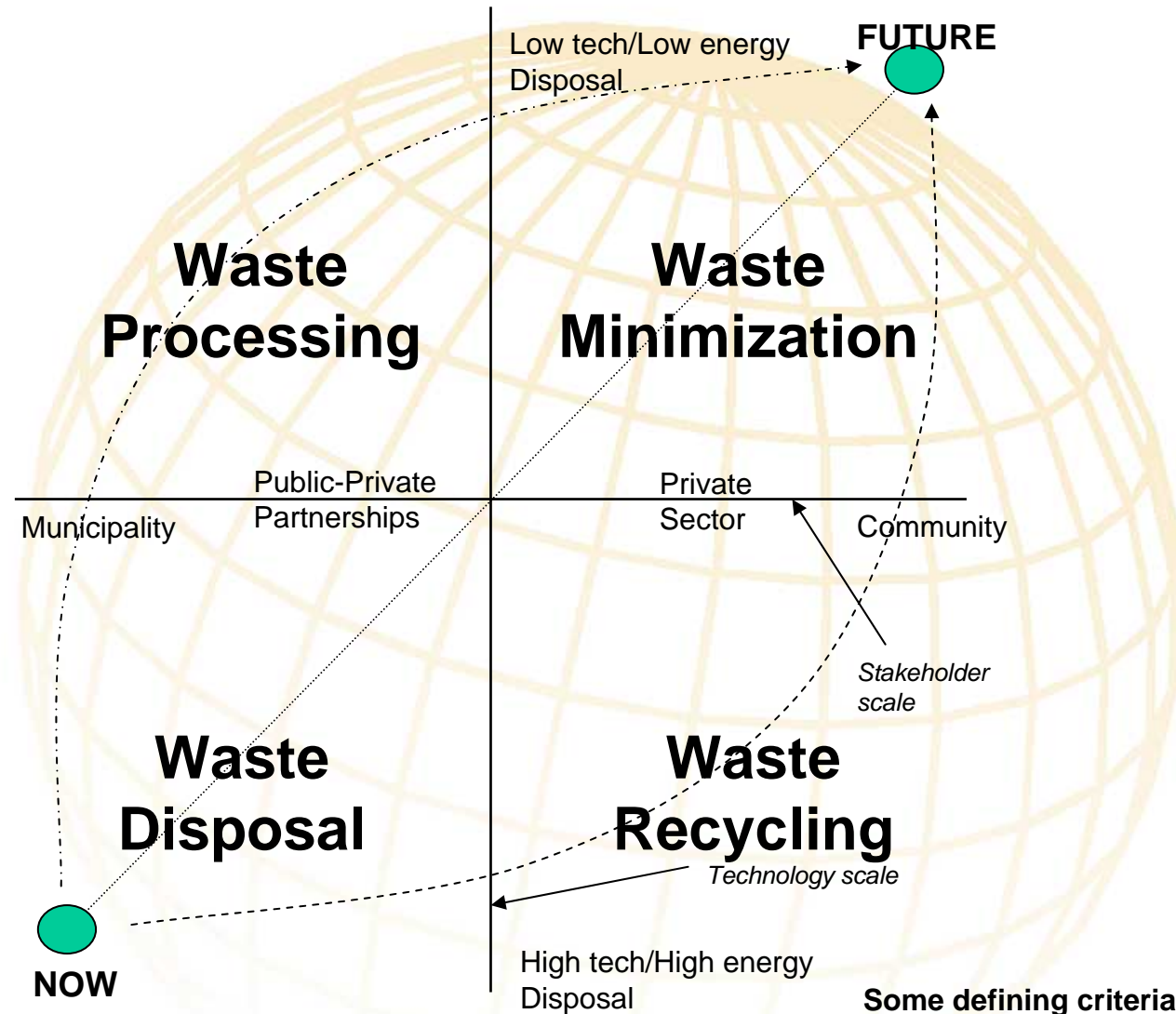


What are the drivers??



Waste Management Continuum

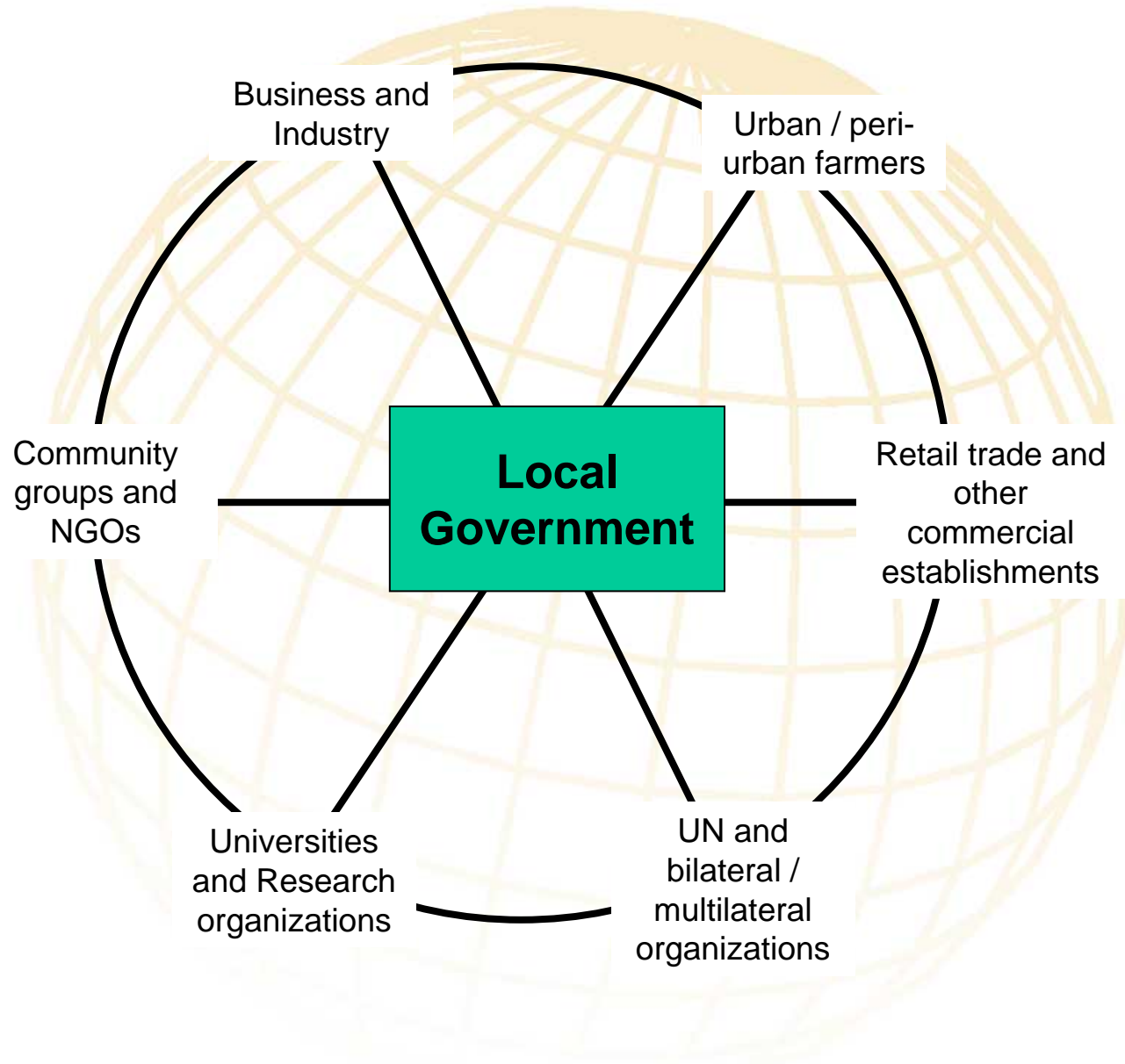
A continuum of waste management



- Some defining criteria**
- Community participation
 - Economic benefits/recovery
 - LCA v/s End-of-pipe
 - Decentralized administration
 - Environmental impact
 - Investment costs

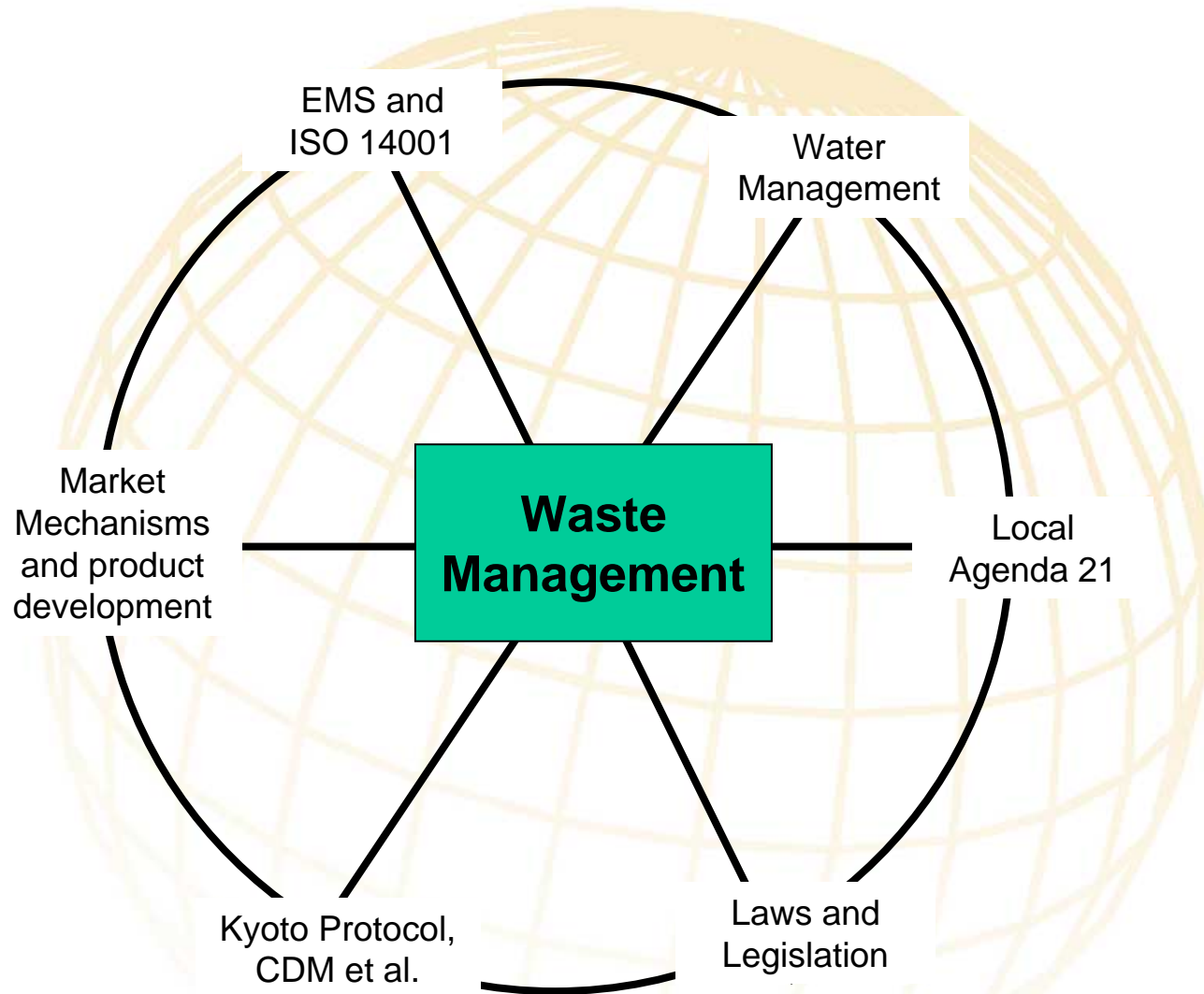


Stakeholder Partnerships



Waste Management Continuum

Upscaling Waste Action



Waste Management Continuum

Waste management matrix

Waste Management Hierarchy \ Types of Waste	Avoid Waste	Reduce Waste	Reuse	Recycle	Sanitary Disposal
Municipal Solid Waste					
Municipal Wastewater					
Industrial Solid Waste					
Industrial Wastewater					
Stormwater					
Toxic Substances and Hazardous Waste (POPs)					
Special Waste (Medical, oil, nuclear waste; construction, earthquake, other debris)					





Lessons from UNEP's work in the field of waste management:

- Need to understand the unique nature of waste management
- Partners will need to develop a common understanding of the issues involved, a conceptual framework
- There is a need for policy development and dialogue - Who will be the targets? How to approach them?
- The design of policy and research projects needs to be done carefully to reflect reality and need from users.



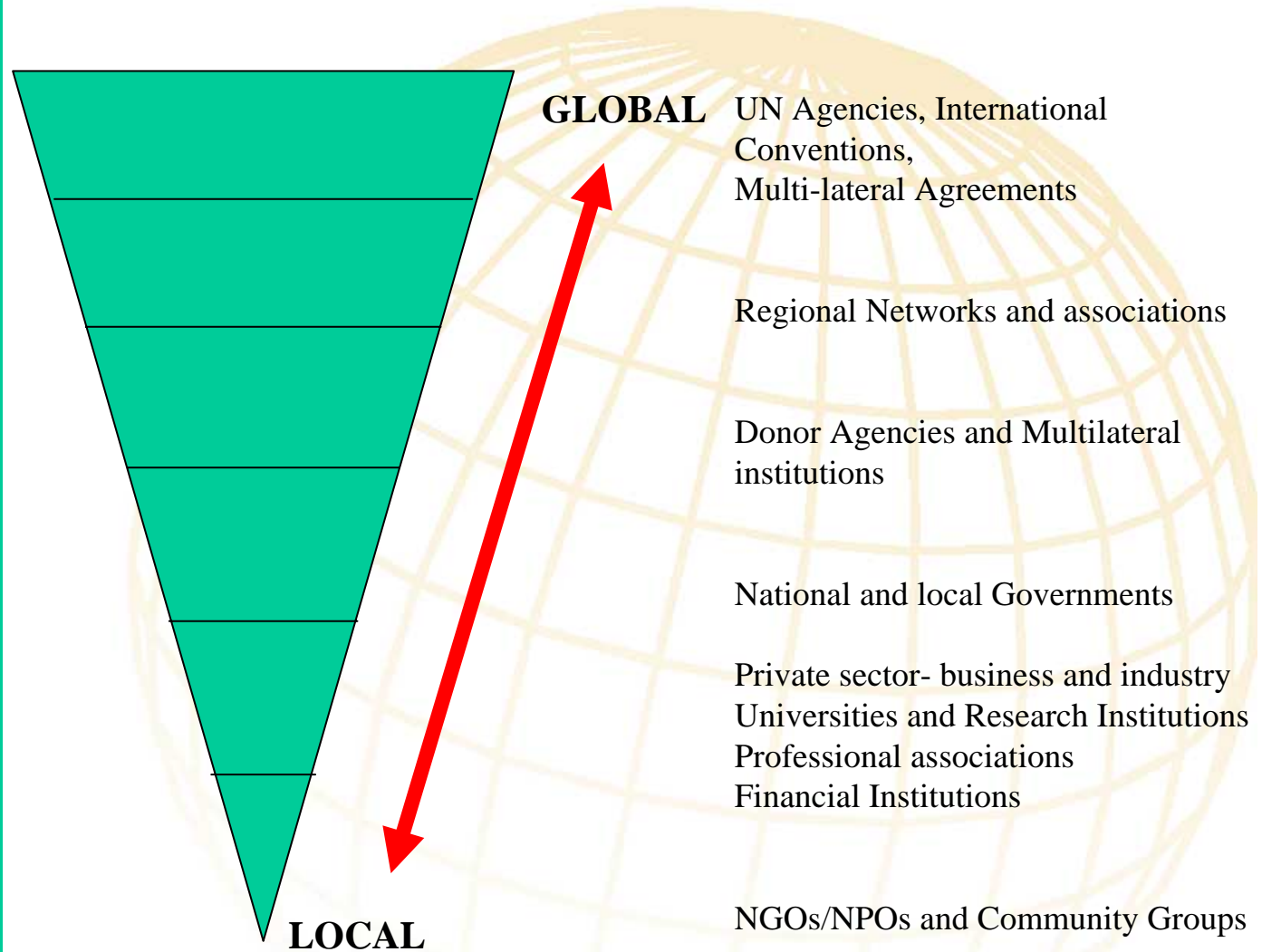
Waste management strategies

- Actively engage with other networks and actors
- Incorporate participatory management issues in terms of access to information.
- Take a non-technical approach to dissemination of results and support informed decisions
- Coordinate, link and cross-pollinate between concepts, ideas and approaches ...
- Create an incubator function that will generate new ideas and approaches, and learning from each other
- Have an intelligence gathering activity to see who is doing what

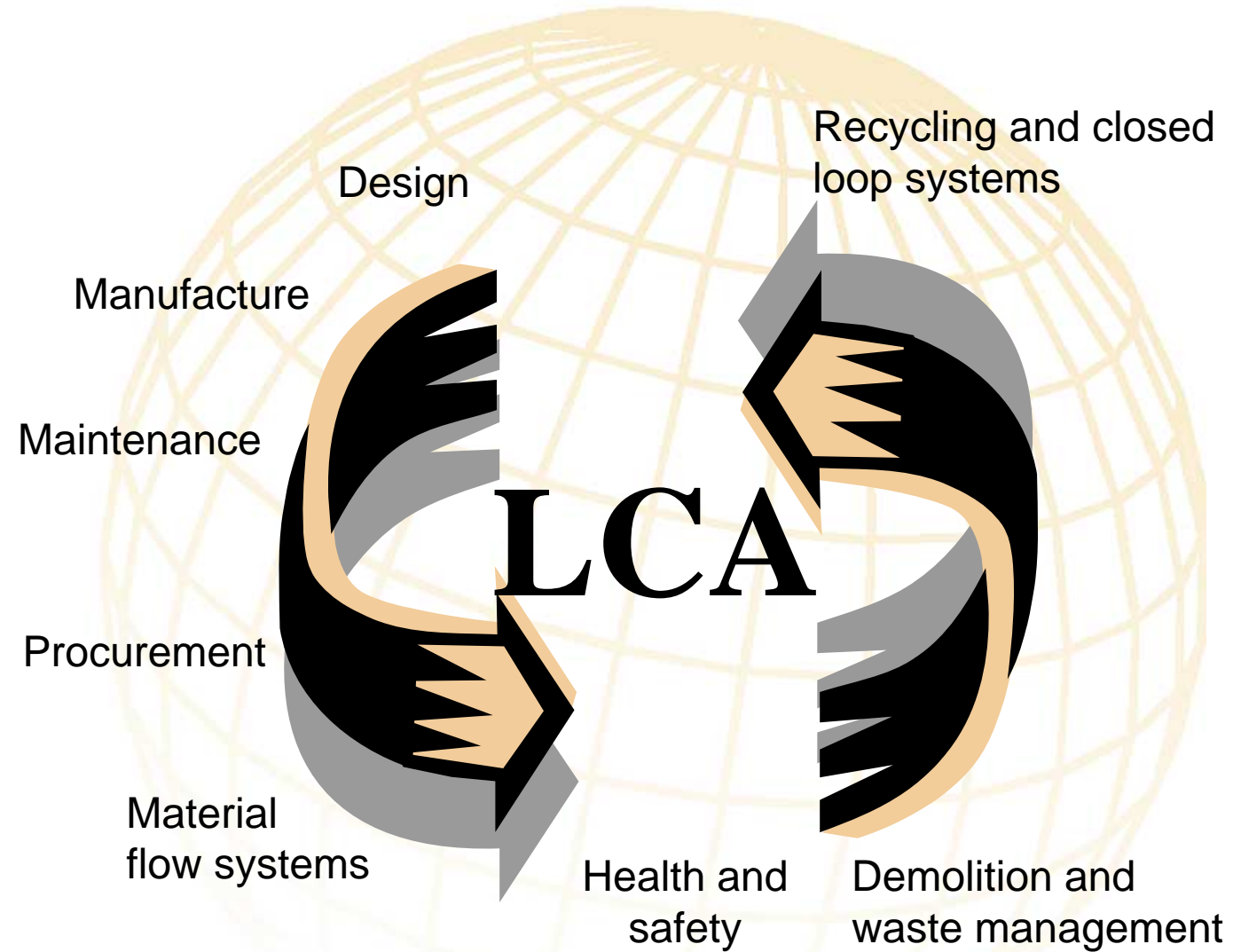


Waste Management Continuum

Waste management strategies

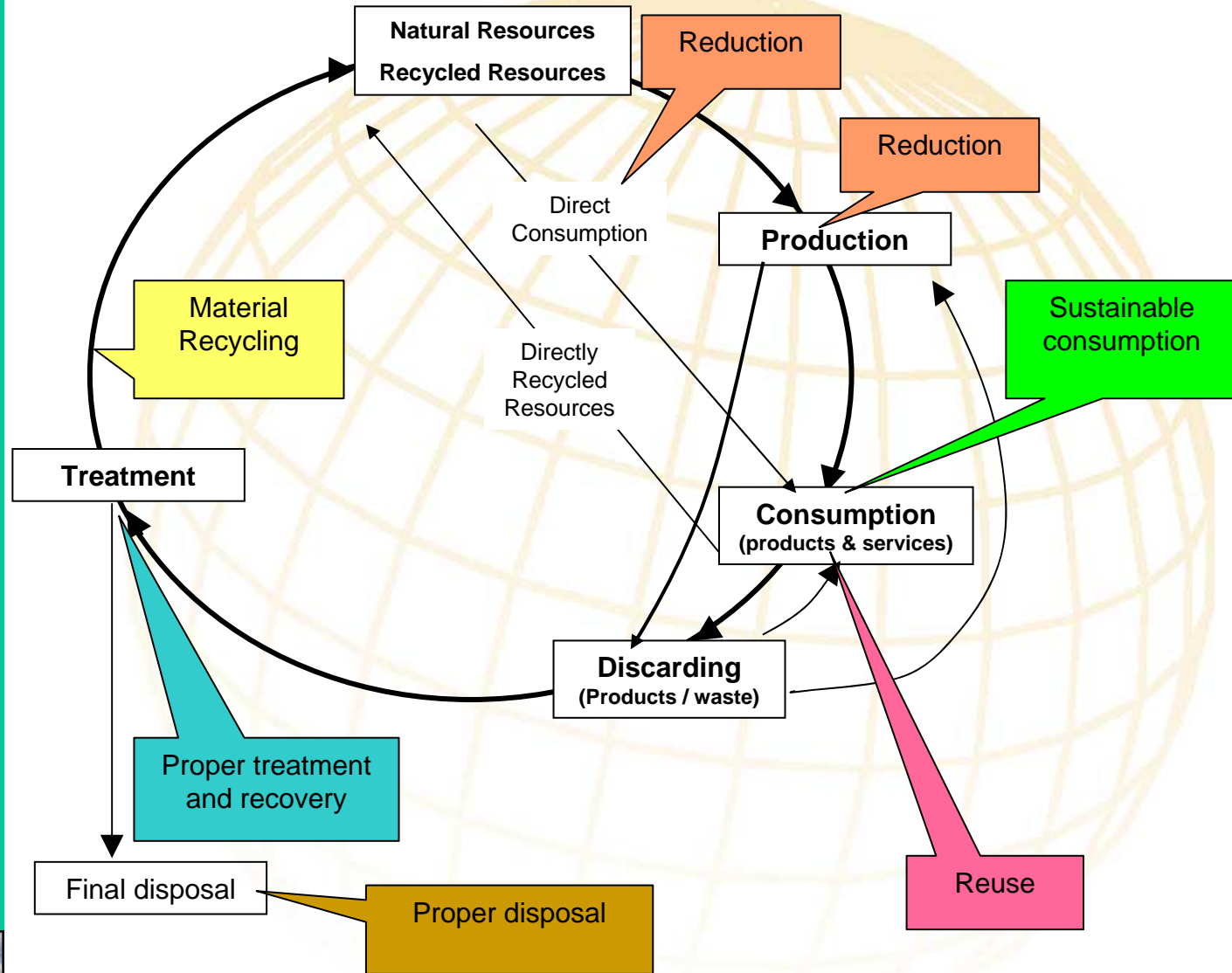


Waste management strategies



Waste Management Continuum

Waste management strategies

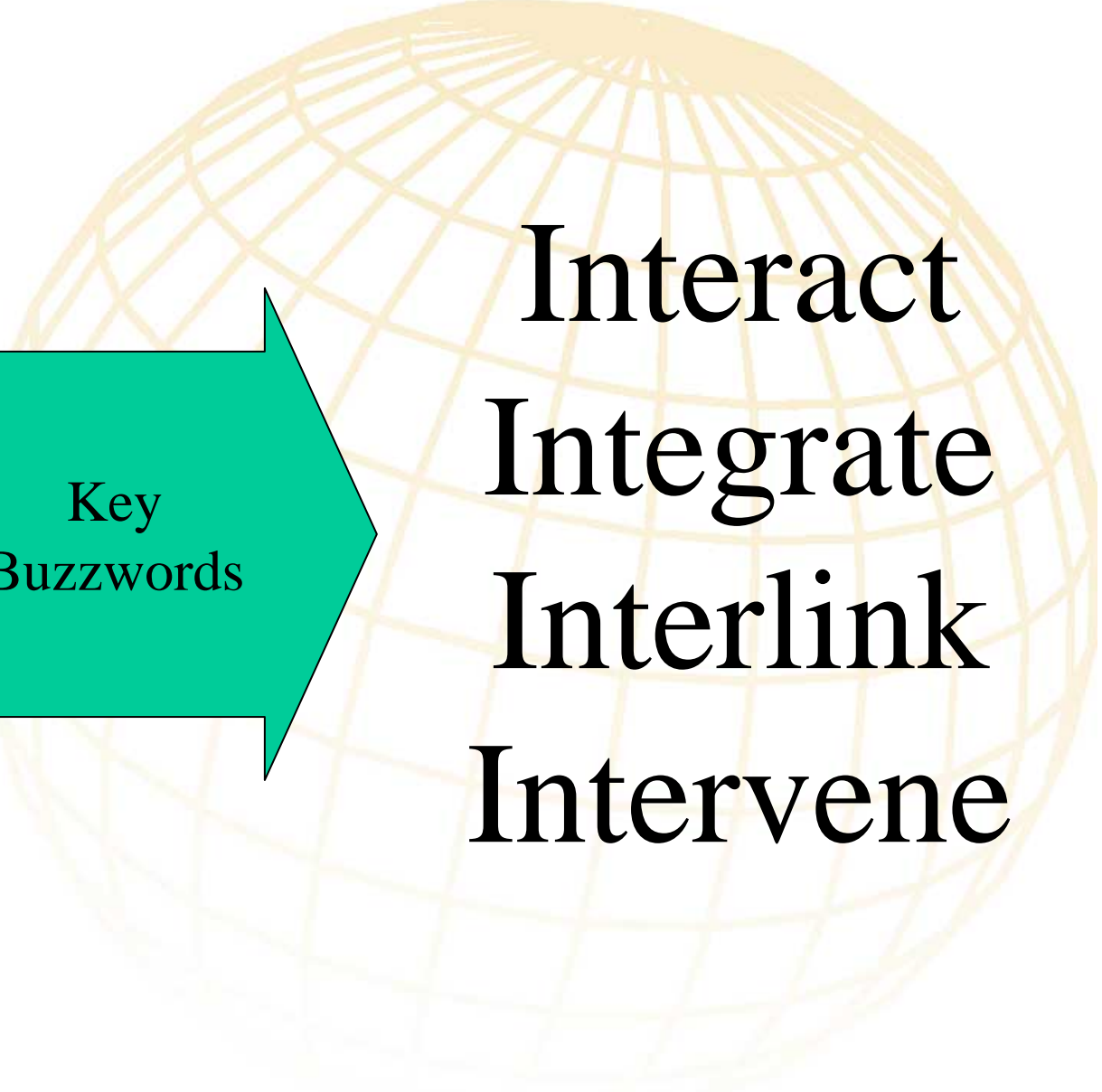


Life-cycle Perspective





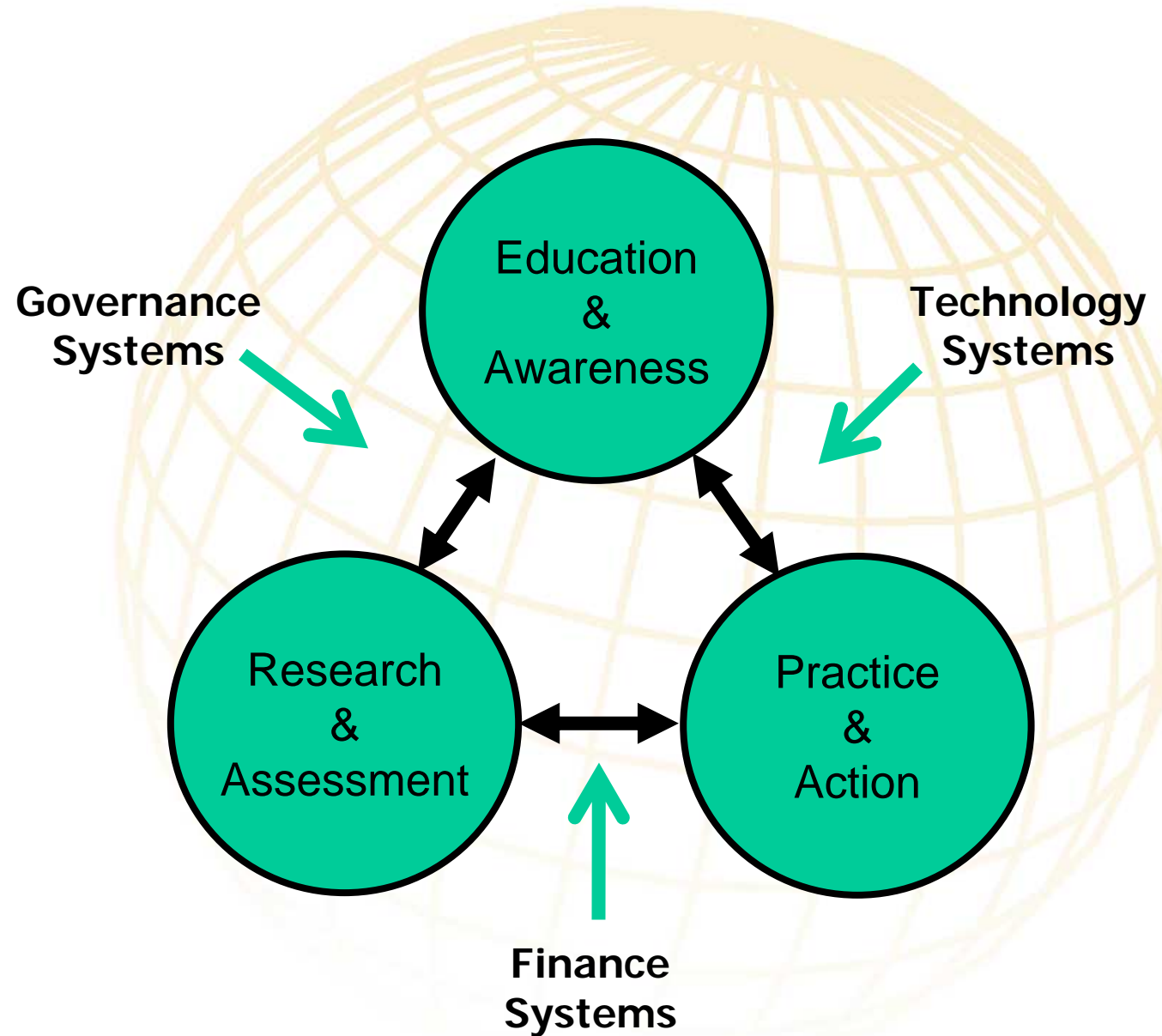
Key
Buzzwords



Interact
Integrate
Interlink
Intervene

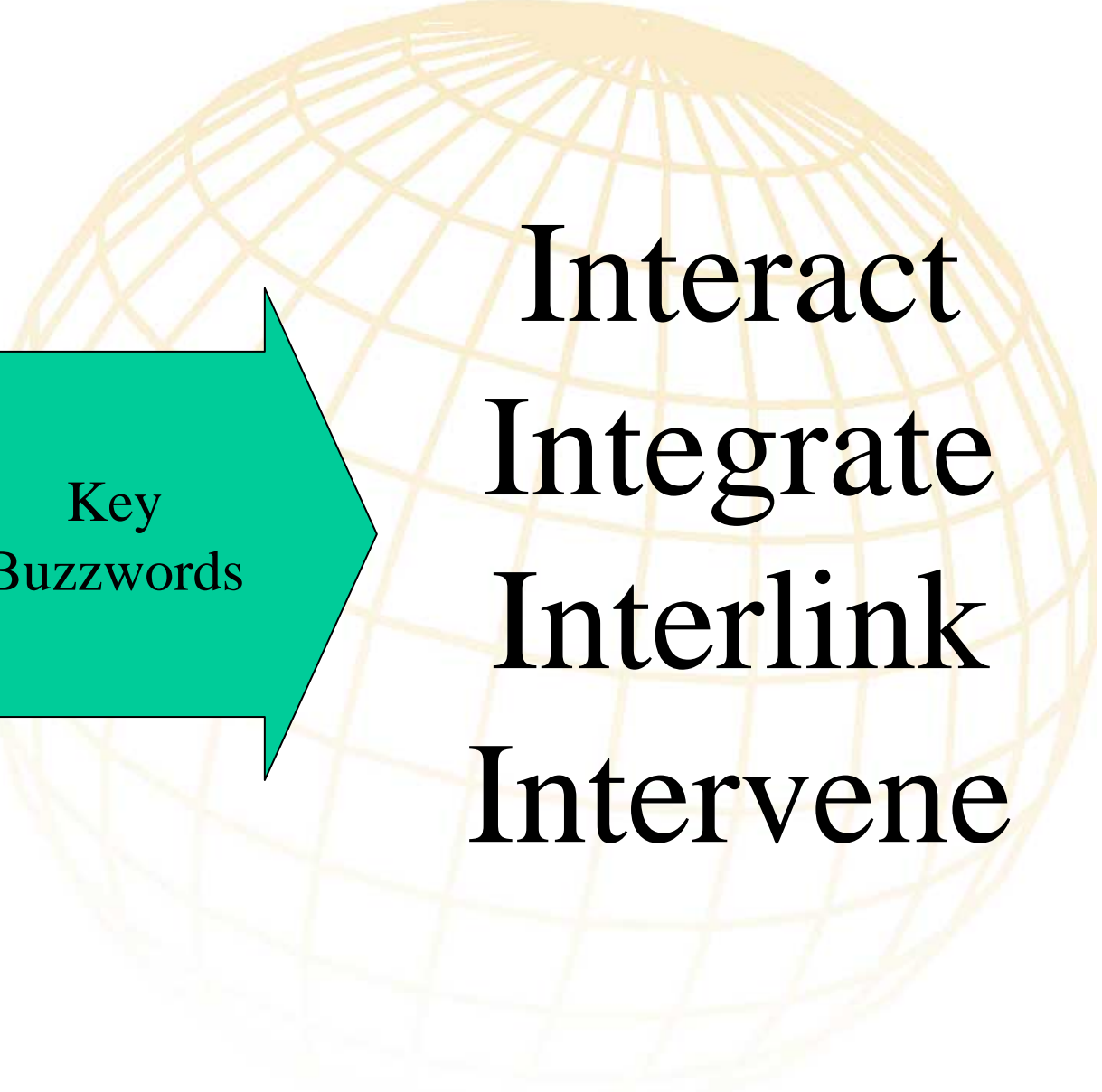


Waste management strategies





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Thank you!

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