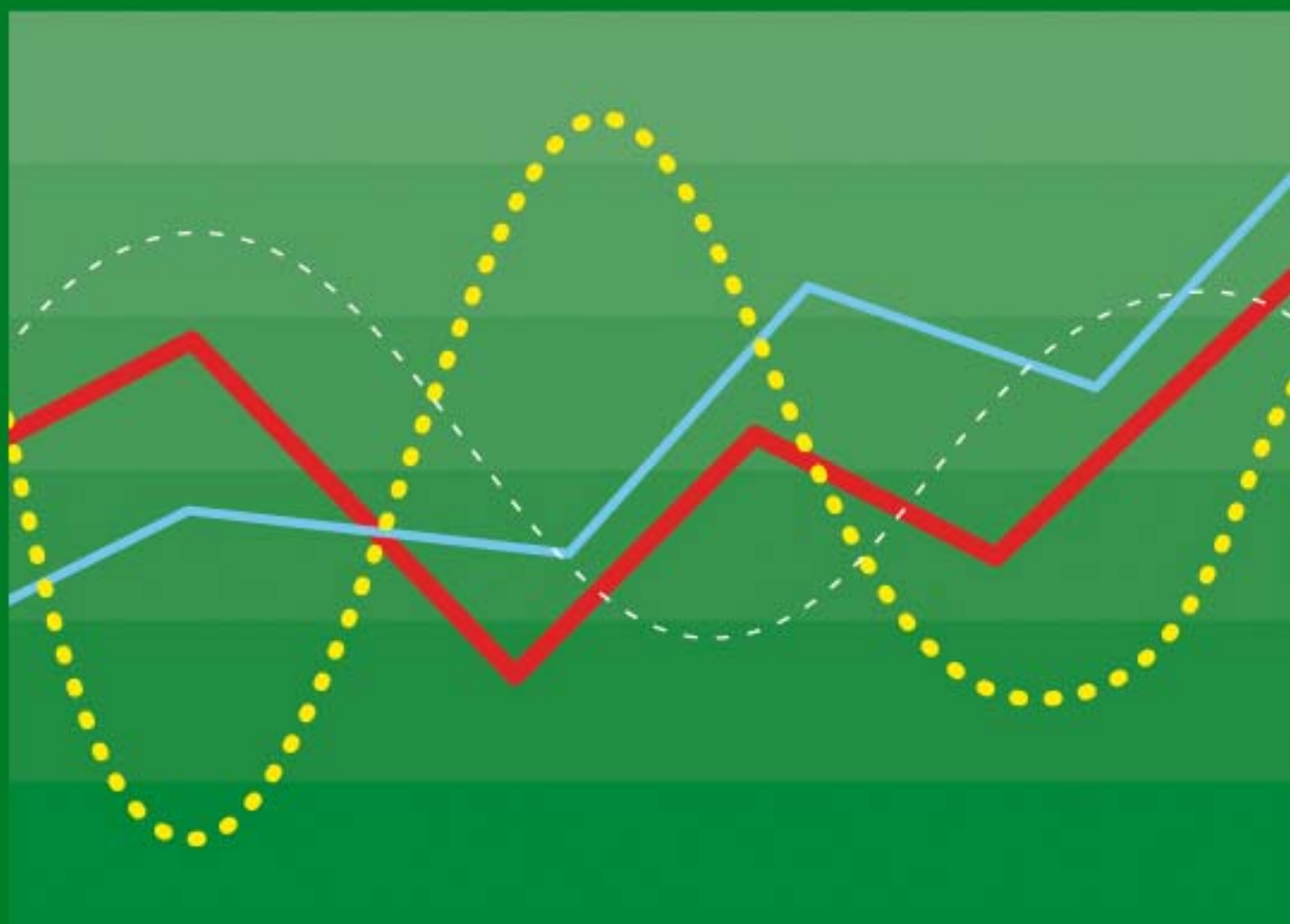




WORLD TOURISM ORGANIZATION
ORGANISATION MONDIALE DU TOURISME
ORGANIZACIÓ MUNDIAL DEL TURISME
ORGANIZACIÃO MUNDIAL DO TURISMO
مُنظمة السياحة العالمية

Indicators of Sustainable Development for Tourism Destinations

A Guidebook



3.9.2 Solid Waste Management ➤ Baseline Issue

Garbage, Reduction, Reuse, Recycling, Deposit, Collection, Hazardous Substances

Solid waste is a major source of pollution for the planet. Waste is generated in nearly all activities that humans undertake. To date, the main solution to managing this waste has been to throw it away – most frequently where there is a waste collection system to bury it under the ground in a landfill. Used or waste materials sent to landfill represent a loss of resources, and their replacement will increase greenhouse gases during both their production and transport. In places where there is no system, waste material is frequently just abandoned where it is created, or someone is paid to take it “away”.

Due to problems of contamination and negative impacts on both the environment and often the image of the destination, it is increasingly necessary for destinations to measure waste production and to manage its treatment. The ‘out of sight, out of mind’ solution has not been very effective and has created a new set of problems that need to be dealt with. Problems with old-style rubbish heaps and landfills include the:

1. Production of offensive odours;
2. Generation of leachate, which can contaminate nearby waterways;
3. Emission of greenhouse gases;
4. Attraction of vermin and concomitant disease.

All of these can damage tourism and the destination.

There is a widely recognised hierarchy for minimising waste: reduce, reuse, recycle, residual treatment, residual disposal. Destinations need to quantify waste volumes, and identify sources and destinations, so effectiveness of future management strategies can be monitored. That is, you need to measure your waste in order to manage it. This can be done at many scales (See results of one audit in the destination section on Convention Centres p. 286)

A **waste audit** is simply an assessment of waste. It is valuable as it tells you:

1. How much waste there is in total;
2. What the waste actually consists of and the quantities of each type of material;
3. Where the waste was generated;
4. Where it ends up (e.g. landfill, composting plants, incineration, etc).

Using this information it is possible to target activities and industries (such as tourism) producing significant amounts of waste going to landfill. It also helps to identify where reducing waste at the source is going to be most practicable and effective. Waste assessments also identify environmentally viable alternatives to landfill for the waste that cannot be eliminated. The first step for the destination should be to look to reduce quantities of materials consumed (including packaging), to then consider reuse, or if not possible, recycle. Consideration should be given to the options that have the best local environmental impact. While on vacation, people tend to use more disposable products than at home; food bought may be heavily packaged. Recycling may not always be the best option (e.g. no local facility) and waste used for energy generation systems may be a better route for some destinations, obtaining both energy and a reduction in the weight of waste disposed. Tourism establishments can also seek means to substitute less wasteful procedures (e.g. serving in edible containers, recyclable bottles etc.).

Components of the issue	Indicators
Managing total waste collected in a destination	<ul style="list-style-type: none"> • Total amount of waste collected; • Waste volume produced by the destination (tonnes) pa / Person years pa (by month) ➤ Baseline Indicator; • Waste disposed by different methods (specify, e.g. incinerated, deposited in landfill, etc.); • Waste attributable (by month or season) to tourism.
Reducing waste produced	<ul style="list-style-type: none"> • Volume of waste recycled (m³) / Total volume of waste (m³) (specify by different types) ➤ Baseline Indicator; • Number of tourism establishments collecting waste separately, capacity of collecting separated waste from local residents; • Number of tourism establishments recycling their own waste (e.g. composting).
Providing waste collection services	<ul style="list-style-type: none"> • % of destination area (especially in urban sites) covered by solid waste collection services; • Percentage of tourism establishments covered by waste collection programs.

Components of the issue	Indicators
Hazardous substances (reduction, handling)	<ul style="list-style-type: none"> • Number and volume of hazardous substances in use (for key substances, volume of use over time); • % of these substances for which appropriate management and disposal policies and programs are in place; • % of employees informed and trained in the use and disposal of the substances they use (e.g., cleaners knowledgeable of how to deal with waste cleaning fluids, engineers trained in emergency spill handling).
Maintaining clean image for the destination	<ul style="list-style-type: none"> • Quantity of waste collected from public areas and streets; • Quantity of waste strewn in public areas (garbage counts) ➤ Baseline Indicator; • Image of cleanliness of destination (questionnaire based).

Municipal services of waste collection and processing have to be coordinated well with accommodation, catering and other tourism establishments to reduce, reuse and recycle waste. Recycling and reuse should start at the source of waste (establishments), by collecting different types of waste separately. Tourism establishments can also have their own waste processing facilities (e.g. composting organic waste). Without adequate municipal infrastructure, however, efforts of tourism facilities are diminished. There are examples of hotels with excellent environmental management systems, where the carefully separated waste ends up in the same landfill, due to lack of processing capacity at the local destination. There are also examples where the hotel maintains a good relationship with the local community, and residents reuse specific waste items (e.g. bins, bottles) in their households. For the above reasons, it is also important to collect information on waste generation and processing from tourism establishments as well, and inform them adequately on municipal activities.

Indicators of waste production:

- **Total amount of waste collected;**
- **Waste volume produced by the destination (tonnes) pa / Person years pa (by month)**
➤ **Baseline Indicator;**
- **Waste disposed by different methods (specify, e.g. incinerated, deposited in landfill, etc.);**
- **Waste volume attributable (by month or season) to tourism.**

Indicators relating to consumption of resources and production of waste, which are calculated on a per person per annum basis, need to take into account both the resident and the transient (tourist) populations.

Box 3.33 Solid waste reduction - Douglas Shire, Queensland, Australia

Douglas Shire is a local authority on the Queensland coast where tourism is a major part of the economy. Douglas Shire Council actively encourages a reduction in the quantity of solid wastes being generated through approaches such as avoiding excess packaging, reuse of packaging where possible, recycling waste where possible and committing waste to landfill only as a last resort. Recycling includes old tires and grease trap waste. Results are monitored.

An integrated waste management project was put into operation in 2002 to provide best practice waste management and aims to reduce landfill by up to 65%. As well, effluent from the sewage facility is used for golf course irrigation. The program is targeted at all sectors, with tourism as a major participant.

Reason for use of these indicators: Used or waste materials sent to landfill represent a loss of resources, and their replacement will increase greenhouse gases during both their production and transport. The first step for the destination should be to look to reduce quantities of materials consumed (including packaging), to then consider reuse, or if not possible, recycle.

Source(s) of data: The information which the destination needs to collect is the weight of solid waste being sent to landfill. This can be done in a number of ways depending on what facilities are available in the area. If the local refuse transfer station has a weigh bridge the weight of waste can be sourced from here. If there is no weighbridge, other methods of calculation include calculating the volume of waste being sent to the landfill; this can then be converted to a weight using weight to volume conversion factors depending on the amount of compaction. Where there is no official collection, it may be necessary to survey properties to obtain estimates of volumes, or access private waste audits.

Means to use these indicators: These indicators are useful to display trends in solid waste production and allow the destination to monitor and act on their performance. They can sometimes be used as a proxy measure for other stressors, such as total pressures on a particular site, although the relationship is not always easy to show.

Benchmarking: This indicator can be benchmarked in two ways: over time for the individual destination or by using comparative data from other destinations.

Indicators of waste reduction:

- **Volume of waste recycled (m³) / Total volume of waste (m³) ➤ Baseline Indicator;**
- **Number of tourism establishments collecting waste separately, capacity of collecting separated waste from local residents;**
- **Number of tourism establishments recycling their own waste (e.g. composting).**

Reason for use of these indicators: The first step for the community should be to look to reduce quantities of materials consumed (including packaging), to then consider reuse, or if not possible, recycle. The basis of recycling is separating different types of waste, which is best to start at the source. Therefore, it is important to monitor, whether separate waste collection is conducted at tourism establishments, or if there are facilities (bins) that allow local residents to deposit their waste separately, and subsequently to collect waste separately.

Source(s) of data: The information can be sourced from the data collected during a waste audit. If an audit has not been carried out it will need to be collected from records from recycle operators, disposal firms and also from the local disposal sites. Tourism establishments can be also, good sources of information, especially where waste collection and recycling is not organized centrally at the destination.

Means to use these indicators: This indicator is useful for displaying trends in recycling allowing the destination to monitor and control their performance.

Benchmarking: This indicator can be benchmarked over time for the individual destination or by using comparative data from other sources such as regional or national authorities. Note that waste volumes can also be used as rough indicators to measure levels of activity if there is no direct indicator (in some WTO case applications, the change in number of trucks collected for the destination or for a particular site have been suggested as a potential indicator of tourist volumes in season).

Indicators of adequacy of waste collection services:

- **% of destination area (especially in urban sites) covered by solid waste collection services;**
- **Percentage of tourism establishments covered by waste collection programs.**

Reason for use of these indicators: Some destinations do not have waste collection services. Particularly in new destinations or destinations where attractions and accommodation are widely scattered, there may be no local authorities, and therefore little regulation or service provision.

Source(s) of data: Local authorities where they exist, or poll of establishments.

Means to use the indicator: Shows development of waste services, or demonstrates need.

Benchmarking: Ideal is 100%. This may be provided through local authorities or private collection services.

Indicators relating to handling and disposal of hazardous substances:

- **Number and volume of hazardous substances in use (for key substances, volume of use over time);**
- **% of these substances for which appropriate management and disposal policies and programs are in place;**
- **% of employees informed and trained in the use and disposal of the substances they use (e.g., cleaners knowledgeable of how to deal with waste cleaning fluids, engineers trained in emergency spill handling).**

Other potential indicators:

- **Whether or not the enterprise or attraction has an environmental management system (see p. 241) or a hazardous waste program;**
- **For destinations, percentage of enterprises with toxic waste management programs;**
- **% of hazardous waste generated in the community which is collected in a special waste program.**

Reason for use of these indicators: Compared to other industries, tourism generates little hazardous waste, although some toxic substances are in use, mainly as cleaners, ingredients in fire control devices, pesticides used on lawns, gardens (and some attractions such as golf courses) and in some cases, lubricants, fuels, paint, and occasional biologically hazardous materials (for example waste from clinics in hotels or cruise ships). It can also include ash from boilers and heating systems and sewage sludge from cesspools and septic systems.

Source(s) of data: The key to waste management of hazardous substances is a thorough inventory of the substances in use or produced. (See for example the box in the section on Convention Centres p. 286 where such an inventory is included in their environmental management system). Once a thorough inventory is done, it is possible to monitor (and hopefully reduce through substitution and efficiency) the use of such substances.



Besides the contamination effects, inappropriately and illegally deposited waste has severe visual impact at tourism destinations, contributing to poor image.

Means to use these indicators: These indicators can be used to show compliance with laws and regulations and as a signal of risks.

Benchmarking: Guidelines for hazardous waste management are available from on-line sources. Specific chemical safety fact sheets for most commonly used toxics are available in many languages on line at <http://www.cdc.gov/niosh/ipcs/icstart.html>.

Indicators of impact of waste on the destination:

- Quantity of waste collected from public areas and streets;
- Quantity of waste strewn in public areas (Garbage counts on key sites) ➤ **Baseline indicator;**
- Image of cleanliness of the destination (questionnaire based).

Reason for use of these indicators: Waste that is not managed can accumulate, creating environmental and health issues and also disturbing tourists and affecting the image of the destination.

Source(s) of data: Debris counts in public areas. Measure collection volumes from collectors. (loads of waste from streets and public areas).

Means to use these indicators: Can measure both effects of programs to reduce litter and dumping and results of cleanup programs.

Benchmarking: Measure changes over time for one destination or for different sites within a destination. Compare to other sites: - note that some destinations have effectively achieved near zero waste in public areas. (e.g., Northern Europe, Canada) through a combination of public education and cleanup programs.



Few tourists are prepared to enter or leave the water via the sewage outlet

Box 3.34 Waste management through multi-stakeholder partnership in Side, Turkey

The Tour Operators Initiative (TOI), comprising over 20 inbound and outbound tour operators, organized a workshop in the Municipality of Side in Turkey's Antalya region, where TOI members and their local partners bring approximately 300,000 tourists each year. The meeting was attended by the Mayor of Side, representatives of WWF Turkey, and representatives of the private sector, individual hoteliers, excursion providers and local travel agencies as well as UNEP, UNESCO and WTO. The meeting gave the participants the opportunity to share their views on the main threats to sustainability in the Side region and ways to address these. Among the three priority actions waste management (with a focus on waste separation and recycling), was identified as an urgent matter. During follow up meetings with local stakeholders, a detailed plan of action was developed, and a locally based coordinator was appointed, financed by the Side administration and the Side Tourism Association (TUDER).

Activities implemented in the two-year program include:

- A waste separation scheme for the municipality of Side. It is in operation, recycling companies have been identified and pick-up times set for participating hotels;
- The local recycling company posts signs on its vehicles to promote the Side initiative, and hotels and restaurants post signs at their entrances;
- The Side Tourism Association has placed containers for collecting used batteries in every Side hotel, in the Ali Ihsan Barut elementary school and in the Tourism Hotel Vocational High School;
- Waste separation bins for organic and recyclable waste have been placed in Side for use by residents and tourists;
- Training sessions on solid waste management and waste separation techniques, organized with technical input and background material from UNEP, were held for managers and staff at hotels, apartment hotels and pensions, Side Municipality sanitation workers, sanitation managers and association presidents; members of the Garment Association and of the Bar and Restaurant Association.

Indicators demonstrate the significant progress achieved in waste management:

- Over 100 hotels and all local shops and restaurants participate in the waste separation scheme;
- Waste collected during the last seven months of 2003:
 - 276 tons of inorganic waste;
 - 11,978 batteries collected from hotel desks, hotel technical services and primary school;
 - 102 storage batteries collected from hotels.

Moreover, the new land fill area has been identified and approved and it will be in operation in Fall 2004. For more information on TOI and its indicators program see Box 3.47 p. 243.

Source: UNEP, www.toinitiative.org



Twenty waste bins were placed in the town of Side to separate organic and inorganic waste

Indicator of perception of destination cleanliness

- **Image of cleanliness of destination (questionnaire based).**

Reason for use of this indicator: If a destination has a poor reputation for cleanliness, some travellers may avoid it. Reaction to garbage can be very individual, and is related to conditions in the tourists' place of origin. Perception of cleanliness may figure more strongly in the decision regarding whether to return to a destination or recommend it to others than actual conditions.

Source(s) of data: Exit questionnaire (Annex C).

Means to use the indicator: This is an indicator of risk to the destination deriving from tourist reactions to garbage.

Benchmarking: This should be compared over time to exit survey results for the same destination. If there is a strong negative response, further questions should be used to pinpoint problem areas, or specific reasons for negative reactions.