TO PROMOTE AND DEVELOP PROFESSIONAL SOLID WASTE MANAGEMENT WORLDWIDE

ISWA TIMES

ISSUE NO 3 · 2001

The importance of environmental indicators

Household solid waste sampling in Mar del Plata City, Argentina

Assessing the value of a waste collection fleet

Report from ISWA's General Assembly and Annual Congress

THE INTERNATIONAL SOLID WASTE ASSOCIATION • THE INTERNATIONAL MAGAZINE OF WASTE MANAGEMENT

Editorial

Changes to ISWA and ISWA Times

A new structure for ISWA

One major outcome of the General Assembly in Stavanger was the approval of the proposal from the Scandinavian countries. The proposal suggests a review of the structure of ISWA as the present structure was established in 1993. The countries behind the proposal argue that many things have changed since then in the world surrounding ISWA – and ISWA itself has also changed. New National Members have joined ISWA and, with the regional focus introduced by the President, the association is to an increasing degree turning its focus towards the developing countries.

The National Members and Committee Members will meet in Copenhagen on 24–25 November this year to start discussions on the structure of the association. The results of the membership survey that was sent out to a number of Members have provided me with lots of very useful information for which I am most grateful – and these results will of course be used in connection with the review.

ISWA Times changes

In order to improve *ISWA Times* still further, we have decided to change the name of the magazine to *Waste Management World*. A change in name alone does not change the quality of the magazine. Therefore *Waste Management World* will merge with the *International Directory of Solid Waste Management - The ISWA Yearbook*, with effect from the December issue. This issue will include the classified listing as well as the Membership listing and other key information that used to be included in the Yearbook.

The circulation of *Waste Management World* will also be greater than the circulation of *ISWA Times*.

We have decided to make this change because, among other reasons, much of the information on ISWA that was presented in the Yearbook is now published in the ISWA Annual Report.

I look forward to presenting to you both the outcome of the discussions on the new structure for ISWA and, of course, *Waste Management World*!

Suzanne Arup Veltzé

Observations on waste management from the Press Conference at the ISWA annual conference

The ISWA annual conference was held in Stavanger, Norway from 3-5 September 2001. A report on the conference appears on page 15, and an abbreviated version of the speech given at the opening session by Norwegian Environment Minister Siri Bjerke appears on page 17. There was also a lively press conference after the opening session, with questions being put not only to the Minister, but also to Christoph Scharff, President of ISWA and Dominc Pin from SITA. A selection of the most pertinent questions and answers is reproduced here.

"How competitive can the waste management industry be in a small country like Norway?"

Siri Bjerke mentioned that Norway does not operate in isolation; there are an increasing number of globalising customers and Norway needs to ensure that its waste strategy does not impinge on its industrial competitiveness. There is general agreement among Norwegian political parties (even bearing in mind that an election campaign was running) on waste management strategies, including the potentially contentious issue of incineration. Christoph Scharff pointed out that much of the thrust of waste management is moving up the product chain; waste management is increasingly becoming a design issue, with products being designed with recycling in mind.

What impact will the landfill directive have in Norway?

The Minister outlined Norway's plans to double the fraction of waste that does not go to landfill. Dominic Pin described the importance of using a mix of different techniques to deal with the waste stream. The success of any particular policy will be heavily influenced by the economic and social conditions, the population density etc. In France, the quantity of landfill is still the same despite nearly 10 years of activity to try and reduce it. Converging regulations will not succeed unless they take into account different national outlooks.

Is incineration an appropriate treatment of waste?

Christoph Scharff answered this at some length. He pointed to the progress in incineration, particularly with wet organic material for instance. However, he emphasised that there is no single correct solution, that waste management has to be dealt with on a local or regional level, and the climate and population density in Norway give it different requirements from France or Germany. As a result, Norway has had significant good experience from incineration, while composting has been more problematic, and some of the landfills in Norway are not up to standard. He also noted that recycling is now the one main area of waste management without any technical standards; it has romantic adherents who would like to promote it under all circumstances, whether appropriate or not.

The key question for any waste manager is always what is the best benefit for money invested? The answer to this will inevitably be different from country to country, and developing countries will have an immediate problem simply getting control of waste, let alone dealing with it.

ISWA TIMES

INSTRUCTIONS TO AUTHORS:

ISWA Times is designed to keep members and other professionals dealing with solid waste management up-to-date on relevant issues. Articles of relevance include: legislation environmental auditing, risk analysis, techniques and management of solid waste. The articles should address how each of the above mentioned issues can be integrated in the development of effective waste policies and waste management practices.

Articles should be written with the interest and the international audience of the magazine in mind. Articles should be typed, double-spaced, single-sided, and submitted on diskette or by e-mail.

Tables and diagrams (up to three) are welcomed. Authors must provide at least one illustration, clearly drawn and labelled or provide photographs.

When submitting an article, the author's full name, address, telephone and fax number and e-mail address when available should be clearly shown.

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NOTICE TO ISWA MEMBERS:

The ISWA membership fees for 2002 are:

Gold Member	DDK	12,350
Silver Member	DDK	7,200
Individual Member	DDK	1,250
Individual Member from low income country	DDK	500
Student	DDK	300

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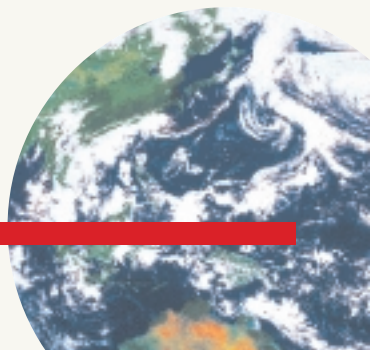
Cover photo: Household waste, ISWA General Secretatiat



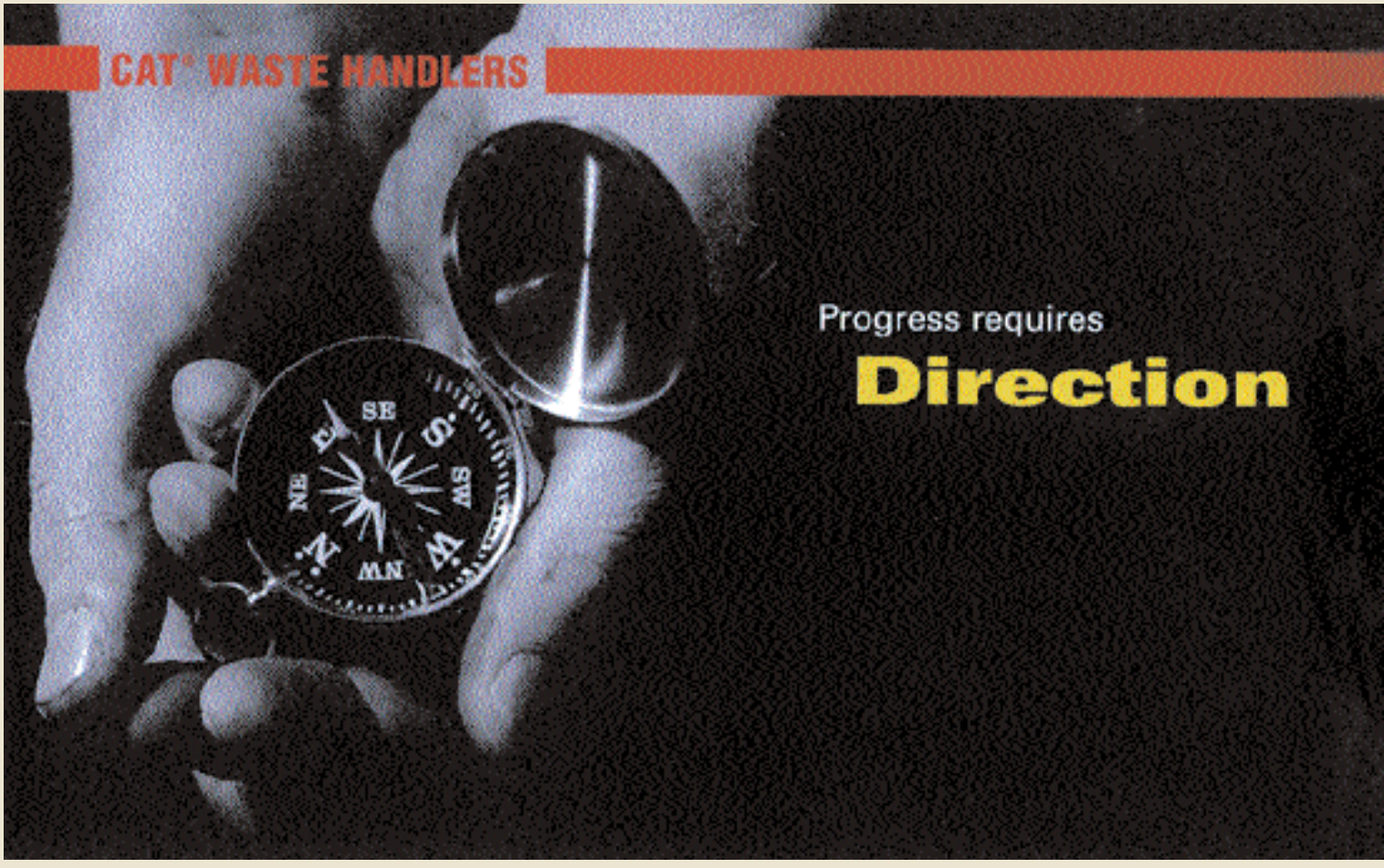
Environmental index: an overview

By Velma I Grover

The recent past has witnessed a rapidly increasing interest in, and applied work on, the use of indicators to monitor change. The development of useful environmental indicators requires not only an understanding of concepts and definitions, but also a good knowledge of policy needs. This paper will not only highlight the importance of environmental indicators, but will also outline these in the historical perspective – though only in a limited way because it is a colossal and complex subject. The paper will also describe the way these indicators are used by different groups. The examples that illustrate the use of indicators at different policy and project levels and show how differently they can be used, will be drawn from waste management projects.

Introduction

An indicator can be defined as a way of measuring progress, some sort of quantum or determinable quantity for measuring a specific goal. It shows the direction of progress and improvement or the lack thereof. Indicators are a way to measure goals – even in everyday life. For example, if we set a goal to buy a house and start saving, the money in our savings account is an indicator of how close we are to achieving our goal. Traditionally, indicators focused on a single aspect of community and were measured only in monetary terms. But now the relationship between community and environment is more complex and a deeper understanding of these links is needed – they are now not



necessarily measured in dollars, for example, air quality. Indicators are used in many spheres of life – for example, in economics and the stock market, as discussed below.

As society is changing and progressing at an unprecedented rate – and entering the Information era – the need for limited natural resources is ever growing. With diminishing natural resources, it is necessary to make decisions carefully on how to use these resources. Moreover, it is also important to see the impact of the growth in the use of these resources for industrialisation and globalization. For a holistic approach which integrates all these factors, decisions need to be taken based on information – which comes from indicators. For better planning and in order for the information to be used in policy making, the indicators need to be well defined; if not, the mass of data collected would be of no use, because the policy maker would not be able to use the information directly.

Classification of indicators

There are probably a number of ways in which indicators can be categorised. The author has chosen the following arbitrary scheme for illustrative purposes:

Level of application – project level, state level, national level, global level

Area of application – economics, environment. In the environmental field, it can be just the recording of the quality of air, water or environmental disaster episodes, or the depletion of natural resources or effect on health, the biosphere, or related economies
It can also be divided into four categories for every activity indicator – economics, efficiency, human resources and the impact on the environment

Qualitative or quantitative

Way of representation – can be in forms of data, graphs, maps, pictures or diagrams

The indicators – socio-economic or environmental indicators can be at one of these levels – like local level, regional level, national level and global level. Some of the economic and environmental indicators will be discussed in this paper.

Types of indicator

Economic indicators

Economic indicators were probably the first ones to be developed – they were developed by social scientists during the 1930s following the depression of the 1920s. Statistics have been refined, so that we now have accurate rates of employment (these were developed in the 1940s mainly as a response to the rampant unemployment during the 1930s), levels of living-cost, and industrial production totals for the nation and for metropolitan areas. Census data furnishes corresponding information on the demographic and housing aspects of environmental indicators. National income accounts summarize the status of the economy by aggregating related data into the gross national product, revealing whether the economy has grown or declined in balance. Some of the socio-economic indicators include GDP and population, consumption, transport, agriculture and expenditure.

It may be interesting to note that the green national account aggregates were started in 1946. These are still being refined and it will be a while before they are perfected and used more extensively.

Environmental Indicators

In contrast to the highly developed economic indices, environmental indices attracted attention in the late sixties and early seventies. At that time, knowledge about the environment was so rudimentary that identification and measurement of parameters for specific indices and indicators was extremely difficult.

Although, there have been records of air quality and temperature since the middle of 1800, there was no attempt to actually identify environmental indicators or an environmental quality index. After World War II,

there was an unprecedented growth of population and pollution, both in old industrialised developed nations and in newly liberated developing nations. The increase in pollution could be attributed to the smoke-stacks of industry, which started spewing more smoke into the air, untreated waste-water from industries and sewage which was being let out into the water estuaries. Smog hung over large cities and water was so polluted that it could not be used safely for cooking or drinking purposes without prior treatment. The Congress of the United States of America passed a law in 1968 making it mandatory to publish statistics on environmental quality.

For the first time, because of the law mentioned above, the U.S. National Wildlife Federation developed the Environmental Quality (EQ) Index in an effort to provide citizens and policy makers with a comprehensive review of published information on factors affecting environmental quality. This was presented in clear and simple text and graphics so that it could readily be understood by policy makers and the masses. When first published in the fall of 1969, the EQ Index evaluated six natural resources, namely air, water, soil, forests, wildlife and minerals. A seventh item, living space, was added to the list in 1970.

At the inception, it would have been premature to attempt to develop an overall index for the environment in any rigorous fashion. Because of the lack of objective measures, a subjective judgment, based on gut feeling, about the "state of environment" was more useful. Consequently, the first step in the development of environmental indices was to focus upon specific areas of concern. But as the knowledge of complex environmental issues became clearer and the importance of indicators was becoming more evident, much better and more focused indicators were developed. Now there are more than the above stated seven items in the list. Some of the other items which can be considered are acidification, eutrophication, dispersion of pesticides, toxic and climate change.

How the EQ Index is calculated

It is interesting to see, by looking at a factitious example, how the EQ Index was calculated way back in late sixties, early seventies. As discussed above, there were seven different resources which were taken into consideration to calculate the index. Tables 1 and 2 show these categories and their relative score and importance.

Table 1 Environmental categories and ratings

Category	1970 Score
Soil	77
Air	32
Water	42
Living space	58
Minerals	48
Wildlife	51
Timber	76

Table 2 Environmental categories and their relative importance

Category	Relative importance
Soil	31
Air	20
Water	20
Living space	12
Minerals	7
Wildlife	5
Timber	5
Total	**100**

"pressure – state – response" framework. This framework focuses on the three key variables: the pressure on the environment (such as population growth or economic growth), the state of the environment itself (extent of pollution) and the response of the society (government policies).

Indicators pertaining to solid waste:

When indicators have to be used, their development depends on the need and the project level. For example, if indicators of waste were being developed at a national level, only a few indicators would be used – perhaps a couple such as quantity of waste generated and quality of waste generated. But if it is down to a municipal level, the indicators can be more numerous, for example not only quality and quantity of waste generated, but also how much is being diverted away from landfill, how much is being recycled, how much goes to landfill, other methods of disposal, the cost per ton for the municipality, and others. When indicators are being developed at a micro level, for example for projects specifically for solid waste management, the number of indicators would increase further. For example, we would also like to include indicators for how many public awareness events took place, the participation rate in each event and maybe even develop these further on a gender basis.

Table 3 Development of a national EQ index

Category	1970 Score	Relative importance	EQ Points
Soil	77	31	23.87
Air	32	20	6.4
Water	42	20	8.4
Living space	58	12	6.96
Minerals	48	7	3.36
Wildlife	51	5	2.55
Timber	76	5	3.8
National EQ Index			55.34

The score is multiplied by the relative importance and the total divided by 100 to get the EQ points (Table 3). A national EQ index of 55 shows that things are not as good as they should be – the higher the national EQ index, the better the state of the environment.

It can be seen that EQ is a single number whose movement indicates whether and to what extent overall environmental quality is improving or deteriorating.

Relative importance, also known as weight, is carefully selected by a group of environmental scientists and statisticians. It can be added that methodologies that are more sophisticated than the one described above have been developed to calculate such indicators – both at a national and an international level. One such methodology was developed by OECD (the Organization of Economic Cooperation and Development) and is known as the

Furthermore, depending on the purpose of the indicators, if waste indicators are being developed to improve policy, then the quality and quantity of waste per month and seasonal variations need to be recorded, as these will affect routing and per month planning for waste collection and disposal services. For example, packaging waste might be more predominant during festival season or yard waste might outweigh any other type of waste in autumn. So indicators like these would reflect the need for different type of preparedness at different time of the year. They would also give an indication of what the best disposal method might be – for

example, higher quantity of organic matter would favour composting, while higher moisture level and low calorific value would mean incineration is not a good choice.

The quality of waste generation is also a symbol of the amount of industrialization or the degree of development of a nation or city. Waste generation increases with an increase in GDP. For example, an increase in per capita waste generation is believed to parallel increases in the degree of development. Similarly, it is observed that an increase in the concentration of paper in waste accompanies the development trend. Another important trend relates to biological waste management. As the country advances, the content of putrescible matter and ash decreases in municipal solid waste. As both short term (e.g. seasonal) and long term (e.g. 5 year periods) variations occur in solid waste, both need to be measured.

The composition of waste is actually a reflection of the community where the waste is generated because the kind of waste generated in a poor and a rich community will differ.

Also, a knowledge of the quantity of waste generated and its physical characteristics and chemical composition is essential for making rational decisions in solid waste management. This information plays an important role in determining key elements such as the method and type of storage, type and frequency of collection, staff size, type and number of pieces of equipment required and the method of disposal.

Per capita waste generation rates and average densities also play key roles in determining the number of vehicles and personnel required, as well as in selecting the appropriate equipment.

Data on the composition of waste are needed to make decisions on the type of storage and transport required, the potential for resource recovery and suitable methods of disposal and to determine the environmental impact if the waste is mismanaged.

When we are combining a waste management project with gender issues and poverty reduction schemes, it is important to have indicators for scavengers and their health and financial status.

So depending on which areas need to be addressed, indicators would be developed accordingly.

One of the innovative uses for indicators of waste management is to apply them at different project sites (of similar size) and set up a competition to see which one is doing better. These indicators can be used in such a way as to compare progress at different levels or in different cities. Such attempts have been made at an international level to compare pollution levels of different countries or to track improvements being achieved.

It must be pointed out, that establishing a baseline and indicators for monitoring, evaluation and policy-making are two different things. A baseline would be a bigger database which, for solid waste management projects for example, would include demographic information, climate conditions, geological and geographic data, as well as an inventory of equipment and vehicles and also information about the employees involved; indicators would be a smaller list.

Global level indicators

On the international level, impetus was given by the Brundland Commission in 1987 to develop indicators for sustainable development. These recommendations were forcefully endorsed at the Earth Summit by adoption of Agenda 21.

In this era of globalization, when environmental problems are also recognized as global issues (there are problems without national barriers, such as climate change), a new set of indicators have been developed as discussed below.

The increasing recognition of the trans-boundary nature of environmental and natural resource problems has led to calls for new institutional structures and mechanisms to effectively address these concerns. Several global initiatives have been launched over the past decade to manage and protect resources for the benefit of current and future generations. These include legal agreements such as the Montreal Protocol on Substances that Deplete the Ozone Layer, the Convention on Biological Diversity, the Framework Convention on Climate Change, as well as organizational structures such as the Commission on Sustainable Development and Global Environmental Facility (GEF). GEF decided to develop a new indicator, namely the Natural Capital Indicator. When the first attempt was made to compute the Natural Capital Indicator, it was based solely on a country's remaining natural areas (in hectares), and was adjusted by the ratio of actual bio-diversity and average bio-diversity. If a country's territory constituted 5 percent of sovereign territory of the world, its average (or "expected") bio-diversity share would also be 5 percent. The Natural Capital Indicator is thus calculated as each country's part of the world's total of remaining natural areas, adjusted for its bio-diversity richness.

Conclusion

The indicators available today are useful for depicting trends through time and for comparing environmental quality in different geographical areas. It is obviously much more helpful to learn in advance through these indicators what the expected environmental conditions will be, than to find out after the fact. Limitation on the use of indicators resulted from earlier collection methods and was not the inherent fault of the indicator concept – data collection was started without setting the objectives in advance. This limited the predictive capability of the indicators to permit preventive action when necessary. Sufficient data might not be available in the beginning, but by coordinating development techniques with expansion in the data collection system and preplanning, inefficiencies can be avoided. It has been learnt that rather than designing indices to use the available data, as was done earlier, data should be collected so that it can be used most advantageously in the indices. In this way, the indices themselves will show which data should be added or deleted from the system.

Household solid waste sampling for Mar del Plata City Argentina

by Máximo Menna, Susana Jacob, Gloria Plaza, Horacio DiVelz, Juan Carlos Cid and Osvaldo Pacheco

This work arises from an agreement between Universidad National de Mar del Plata (UNMDP) and the Municipality of Partido de General Pueyrredón, Buenos Aires Province, Argentina. A sampling was designed taking, as the starting point, data from a population and housing census (INDEC 1991) for the evaluation of home solid waste in Mar del Plata City. The sample type in study consists of stratification with replacement, according to social-economic-cultural variables. Waste was classified in origin in 6 fractions: paper/cardboard, glass, organic, plastic, metal and other. Waste weightings were obtained daily, according to housing, stratum and fraction components. Data obtained during the four seasons in 1997 are shown in the present work, from which the percentages of each waste type and the results of statistical calculations for the organic fraction and for the total of the housing solid waste were obtained

Introduction

The project designed by the LEA-CIUNSa-FI-UNSa and GEEAA-FI-UNMDP became Municipal Ordinance. It was carried out by MGP and GEEAA-FI-UNMDP, and executed during 1997 as the Home Solid Waste Sampling Program of Mar del Plata City.

Mar del Plata, head of the Partido de General Pueyrredón, situated on the East Atlantic coast of the Buenos Aires Province, Argentina, has a mild climate, with maximum temperatures reaching 30°C in the summer season. It has beaches and bays extending along 47 km that alternate with rocky cliffs, surrounded by an agricultural-cattle raising, hills and lakes. It has an attractive landscape along its 1,460 km^2 (EMTUR-MGP1996).

The problem of the final disposal of waste generated in a town requires an integral treatment and is a challenge for the municipal authorities. Population growth in the Mar del Plata community with 532,845 inhabitants and an increase of 23% in 11 years (INDEC 1991) adds to the final waste disposal problem.

It is important to know the proportion of solid waste that is generated by homes to allow on accurate study of feasibility which can lead to appropriate treatment, recycling and final disposal (Wat. Sci. Tech 1996). The diagnosis, therefore, directly affects the waste gathering system and the final waste disposal design.

It would be wrong to design solutions for house waste disposal using other cities' data, since home waste in each city has its own particular characteristics; especially in Mar del Plata where the population doubles for 60 days in summer. There are also peaks of population that exceed this figure in the tourist changeover periods and at weekends (EMTUR-MGP, 1996).

A reduction in the volume of waste lengthens the useful life of a landfill. It also reduces gathering time and frequency. This saving allows a larger gathering area, an improvement in the urban hygiene service and/or a cost reduction.

The importance of the sampling in origin, the details of the methods and the fraction evaluation interest for future recycling enterprises have been analyzed (Plaza G., et. al. 1994).

The sampling objective is to determine the daily and weekly average generation of solid waste in busy houses and to determine its composition, considering the following fractions: paper/cardboard, glass, organic, plastic, metal and other.

Materials and methods

The annual sampling was programmed in four three-month seasonal campaigns. Each

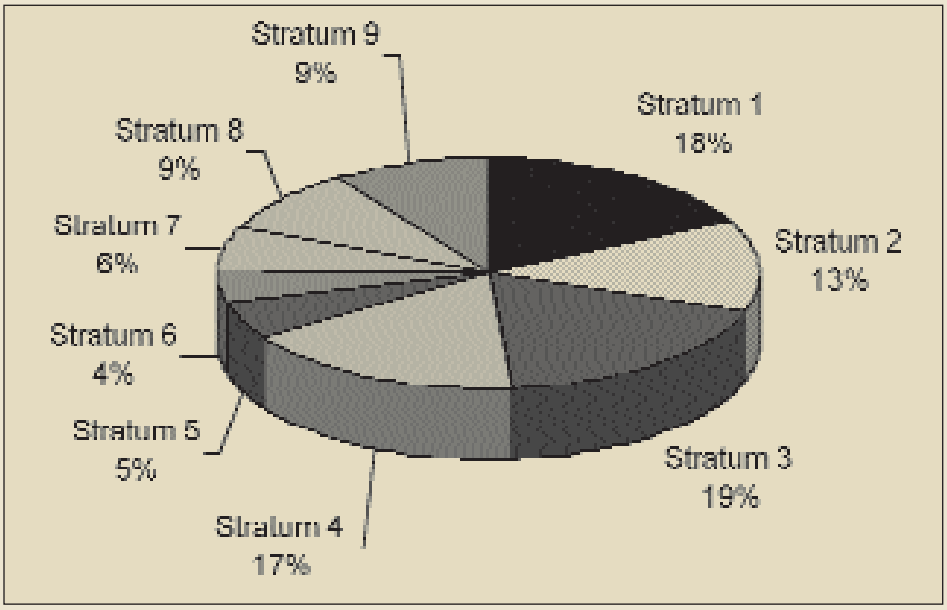


Figure 1 Stratified sample composition

campaign comprised 12 weeks, during which a total of 1,386 houses were sampled. Since 76% of the houses in Mar del Plata are busy (INDEC 1991), it was decided that a minimum of 1,053 houses should be sampled. The selected houses were taken at random from 9 strata into which the city's population was divided (Cid J.C. and Di Veltz H. 1996). Stratum 1 comprises the houses with the most favorable conditions; stratum 9 comprises those houses that could not be located in any of the other eight strata (this is a consequence of a Census 1991 mistake). The houses were located on a city map so that they could later be identified according to fraction, radius, block and house number.

Figure 1 shows the percentages of the sample composition resulting from the design of the stratified sampling. A minimum of 88 houses a week were sampled, the total of the percentages corresponding to each one of the 9 strata.

The sampling program was developed in the following stages:

1 Identification of the houses involved in the sampling.
2 Explanatory visits and invitations to the families inhabiting the houses to cooperate in the sampling. Delivery of the necessary materials to carry out the waste classification.
3 Incorporation of the houses to the sampling and gathering route design. Preparation of weekly route form.
4 Gathering of daily differentiated waste from the houses as part of the weekly sampling. Daily enquiries on the number of inhabitants generating waste and observation recording.
5 House code verification. Measuring and recording of waste fractions from each house as part of the weekly sampling. Recording of the number of inhabitants generating waste in each house.
6 Data processing and statistical calculations.

The families separated their waste each day for seven consecutive days into the six fractions already mentioned. For this, each day they were given different colour bags for each waste type.

Door to door gathering was carried out

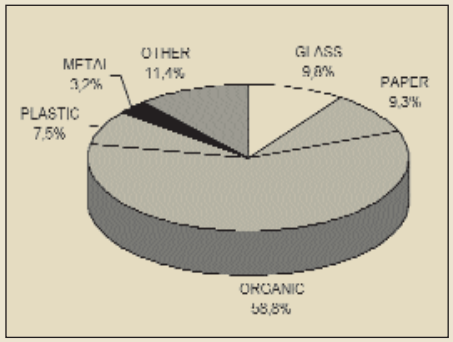


Figure 2 HSW percentage composition

daily with two waste-gathering trucks and their drivers provided by the municipality. A second person in each truck received the already used bags, placed them in a larger bag labeled with the house code number and handed out a new set of bags, inquiring about the number of inhabitants generating the gathered waste and recording the data on a specially designed form.

At the end of the gathering, the coded bags were taken to the GEEAA laboratory equipped for weighting and recording data with a PC type data processor. There, the organic fraction was crushed and mixed, then a sample from this fraction was taken for physical-chemical characterization.

Results and discussion

A total of 56 tons of home solid waste (HSW) generated by 114,300 inhabitants

Figure 3 Percentage HSW composition in each season

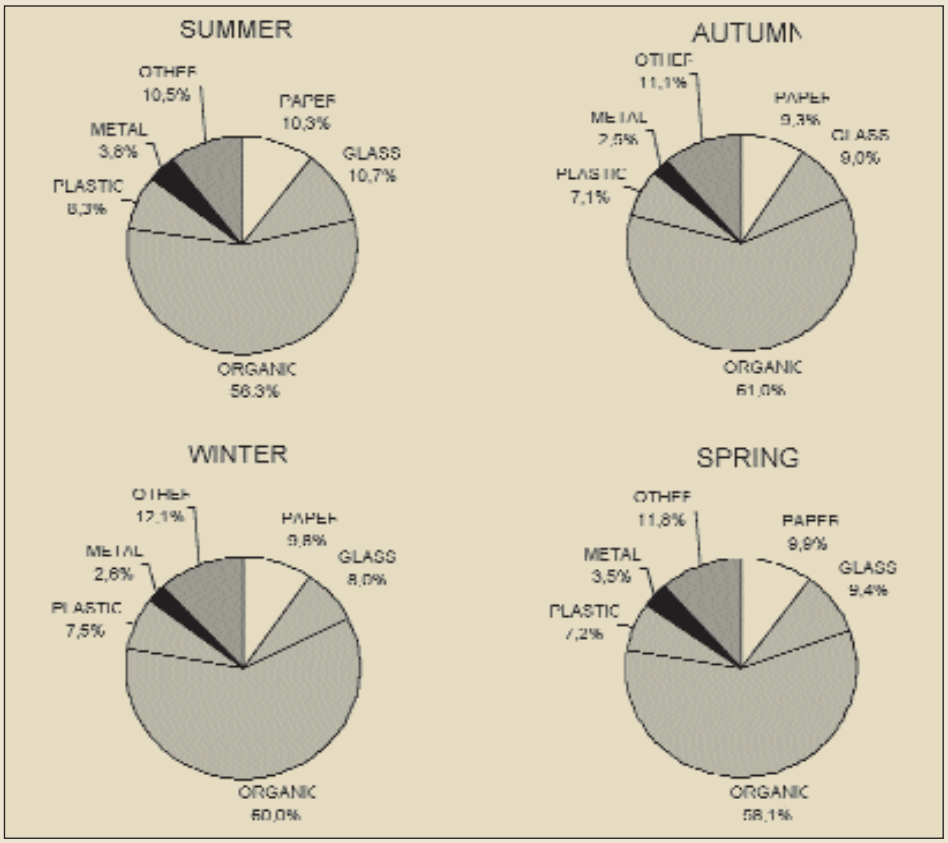


Table 1: Percentages of each fraction and the total HSW generated by each one of the nine strata in each season

Str	Season	Hous	Inhab	Paper	Glass	Organic	Plastic	Metal	Other	TOTAL
		%	%	%	%	%	%	%	%	%
1	summer	16.20	14.12	15.41	16.31	14.87	14.15	13.48	10.52	14.51
	autumn	17.39	15.74	17.05	15.39	15.50	15.15	11.99	14.01	15.35
	winter	16,66	15,18	16.44	19,41	14,54	12,89	14,03	9,87	14,41
	spring	16,51	14,43	15,26	13,77	13,91	12,69	13,65	13,13	13,84
2	summer	12.62	11.44	12.85	13.23	12.20	11.02	10.05	8.35	11.79
	autumn	12.75	11.55	12.85	15.28	12.06	11.18	10.36	9.26	12.00
	winter	12,22	11,16	12,05	16,84	11,60	11,00	7,61	10,91	11,83
	spring	12,11	11,31	12,32	17,25	12,20	11,39	11,65	9,96	12,34
3	summer	17.89	17.34	18.08	18.54	18.23	16.26	15.63	19.43	18.11
	autumn	17.78	16.02	19.98	22.32	17.29	18.96	22.73	18.60	18.41
	winter	17,78	16,90	16,95	15,26	16,19	14,87	13,65	16,15	16,02
	spring	17,61	15,89	19,42	14,18	16,04	14,19	18,40	13,95	15,90
4	summer	15.44	16.29	17.87	16.37	16.89	17.31	18.92	18.69	17.24
	autumn	17.39	18.13	16.07	16.07	20.13	20.33	20.05	19.23	19.29
	winter	17,78	18,25	18,71	17,78	20,93	20,90	23,35	21,67	20,61
	spring	17,61	19,17	16,49	17,26	21,00	19,90	20,17	18,95	19,85
5	summer	5.93	5.66	5.36	6.37	5.30	5.82	8.98	5.80	5.66
	autumn	5.80	5.49	6.45	5.91	5.63	5.06	4.14	5.06	5.59
	winter	5,55	5,24	6,25	5,30	5,25	5,70	3,80	4,64	5,27
	spring	5,50	5,15	4,88	7,55	5,55	5,82	4,70	7,19	5,86
6	summer	5.74	5.89	5.87	5.11	5.67	6.08	5.73	8.28	5.94
	autumn	4.64	4.77	5.58	4.64	4.60	5.57	5.94	6.97	5.07
	winter	4,44	4,90	5,40	5,90	4,72	6,30	5,53	5,40	5,10
	spring	4,40	4,75	5,04	8,24	3,81	4,97	4,28	6,91	4,82
7	summer	7.63	8.62	7.36	5.97	8.00	9.51	9.70	9.96	8.12
	autumn	5.80	6.56	5.72	5.63	5.63	6.79	8.68	7.63	6.03
	winter	7,78	8,34	8,90	6,75	7,31	9,94	9,46	12,17	8,26
	spring	7,71	8,81	8,84	6,47	7,91	9,88	8,23	10,32	8,31
8	summer	9.32	9.74	8.07	9.57	8.40	9.78	8.91	8.98	8.69
	autumn	9.18	9.59	7.68	6.69	9.09	8.81	8.11	11.81	9.00
	winter	8,88	9,30	6,85	5,13	9,01	8,91	9,60	10,67	8,70
	spring	8,81	9,33	8,21	6,99	9,11	10,51	8,39	8,98	8,88
9	summer	9.23	10.89	9.14	8.53	10.44	10.06	8.61	9.98	9.95
	autumn	9.28	12.15	8.61	8.08	10.07	8.15	7.99	7.43	9.26
	winter	8,88	10,72	8,44	7,63	10,45	9,49	12,97	8,53	9,79
	spring	9,72	11,15	9,53	8,30	10,48	10,66	10,52	10,60	10,21

was processed during the annual sampling development. Figure 2 shows the percentage composition of the HSW; of note is the organic fraction which accounted for 58.8% of the total, proving the necessity of its classification and treatment. The other fractions indicate the availability of an interesting volume of materials with market value. Their classification therefore becomes convenient for in origin supplementary classification programs of the organic fraction of the HSW.

The organization of the sampling in seasonal campaigns allowed a comparison of the results during the different seasons of the year. Figure 3 shows four pie charts detailing the HSW composition in each season – there is an insignificant seasonal variation in the generation of the different

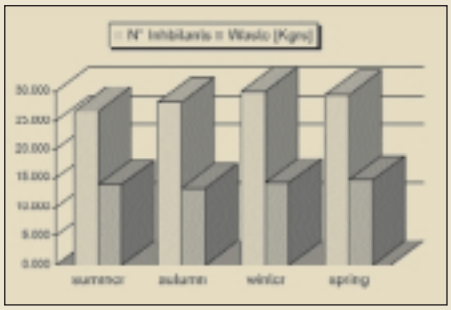


Figure 4 Comparative graph of the total seasonal generation of HSW and the number of inhabitants that generated it

HSW fractions. This assures, in case a program of classification of HSW is carried out, the collection of similar quantities of materials with market value throughout the year.

Figure 4 shows a comparative graph of the total seasonal generation of HSW and the number of inhabitants that generated it. On the ordinate axis, the same scale represents kg and the number of inhabitants, which allows a direct comparison and the immediate conclusion that 0.5 kg of waste is generated daily per inhabitant.

Table 1 presents the percentages of each fraction and the total HSW generated by each one of the nine strata in each season. It also shows the housing and inhabitant percentages of each stratum in each season. As was predicted when discussing Figure 3, analysis of this table proves the slight seasonal variation in the generation of the different fractions and in the total HSW, in this case, generated by each stratum. Figure 3 considers the total sample composition taking into account the nine strata.

Statistical calculations mean we can obtain the amount of weekly HSW per house. Table 2 presents the values of the tolerance interval of 95% for the stratified media estimator for the total HSW and for the organic fraction corresponding to each season. In both cases the level of accuracy obtained in the statistical calculations was below the specified value in the sampling design (< 4%).

The amount of weekly generated waste is obtained through the sample statistical calculations. The number of inhabitants per house generating the daily waste gives the media value of the number of inhabitants per house in each stratum and in each season, as well as the daily HSW generation per inhabitant. Basing our knowledge on the statistical results presented on Table 2, Table 3 presents the average media number of inhabitants per house, their seasonal waste generation and the daily total.

Figure 5 shows a comparative graph of the daily waste generation per inhabitant in the different HSW fractions in each season. It can be seen that there is a small quantitative difference between the seasons of the year in the generation of the different fractions in which HSW was classified.

Conclusions

The estimate variance is precise considering the tolerance interval of stratified media for the total waste and for the organic fraction. The same considerations are valid for other fractions.

The campaigns with their explanatory visits showed the importance of differentiated gathering and the need for a reduction in waste generation.

Table 2 Tolerance interval of 95% of the total waste and of the organic fraction, in grams for housing and per week for each season of the year.

Waste	Season	Estimator of the stratified media	Tolerance limit accuracy	Accuracy
		Grs.hous^{-1}.week-1	Grs.hous^{-1}.week^{-1}	%
Total	summer	13.081	± 387	± 2,9
	autumn	12.752	± 278	± 2,1
	winter	13.098	± 264	± 2,0
	spring	13.403	± 269	± 2,0
Organic	summer	7.379	± 271	± 3,7
	autumn	7.779	± 201	± 2,6
	winter	7.874	± 187	± 2,4
	spring	7.793	± 180	± 2,3

Table 3 Average media number of inhabitants per house and their daily waste generation

Season		Total HSW	Organic
	inhab.house-1	Grs.inhab-1.day-1	Grs.inhab-1.day-1
summer	3.6	522 ± 15	295 ± 11
autumn	3.9	472 ± 10	288 ± 7
winter	4.0	470 ± 9	283 ± 7
spring	3.9	497 ± 9	289 ± 7

Data analysis shows a slight seasonal variation in total waste generation. The same is valid for the different fractions.

The experience also allowed an analysis of the community cooperation level in the different social-economic-cultural strata in which the population was divided. This made it easier to select three neighborhoods in which to begin a classification experience in origin affecting approximately 10% of the population of Mar del Plata. The following characteristics of the neighborhoods were considered: homogeneous building structures, one or two floor single-family housings, residential areas, light traffic, no parking problems and few means of public transport.

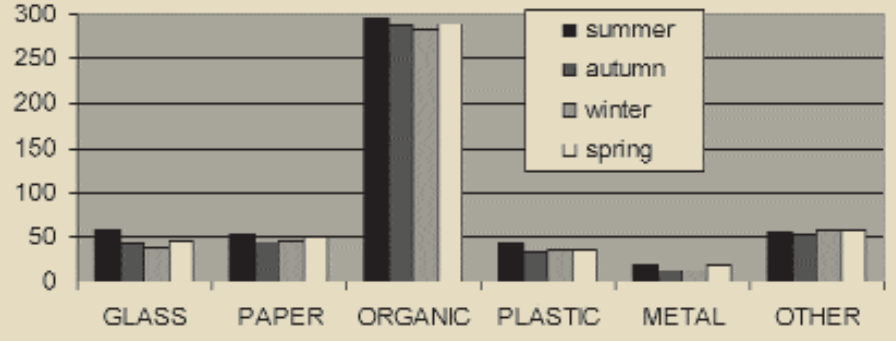
The organic fraction deserved a particular study for its outstanding and constant waste composition all the year round varying only with the seasonal population increase due to tourism.

The physical-chemical organic fraction was simultaneously characterized, which together with the statistical evaluation of the generated amount of waste allowed the adequate biological treatment design to be applied. The combined anaerobic-aerobic system is appropriate and versatile enough to deal with the total organic matter generated in the community (PLAZA G., et. al. 1998).

The Municipality of General Pueyrredón supports the present research, incorporating it in a requirement in the National and International Public Bid sheet for the Gathering, Treatment and Final Disposal Service of its Home Solid Waste.

The Environmental Impact generated by the urban solid waste of Mar del Plata city in the current frame and the positive changes the project adds, makes it possible to revert the present situation completely.

Figure 5 Comparative graph of the daily waste generation per inhabitant(Grs.inhab^{-1}day^{-1}) in the different HSW fractions in each season



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What is the value of a waste collection fleet?

By Martin Steiner

A change of ownership in waste management – such as in the case of "real" privatization – requires an assessment of capital assets. In a collection enterprise, the vehicle fleet is typically the largest of these "assets". This article is the "waste product" of the privatization of a municipal cleaning enterprise in the Emirate of Abu Dhabi. Servicing 680,000 "customers" (inhabitants) and a fleet of 180 collection vehicles foreseen to be taken over by private contractors (original value: approx. 15 million €), this enterprise was an ideal object for developing and testing a practical evaluation tool.

Apart from real estate property, the vehicle fleet is usually the largest asset in a waste collection enterprise, closely followed by the number of available collection containers. The latter are normally not difficult to assess in detail; without the need to seek external support, buyer and seller tend to agree on a simple list of items, including the purchase price and a depreciation of the value based on the service life of containers, as is done in bookkeeping. A vehicle fleet is much more difficult to assess in detail due to a great variety of influencing factors.

Requirements of an evaluation model

The main criteria for an evaluation model are listed below:

- **It needs to be applicable to a large number of vehicle types**, as operated by a vehicle fleet in charge of waste management and public cleaning services. In our case, the variety of vehicles ranged from simple industrial trucks, standard dumpers and skip trucks with different types of chassis, to conventional collection vehicles, semi-trailer trucks (for the transport of screening residues from the waste composting plant), collection trucks for slaughterhouse waste and a mobile workshop.

Collection truck for slaughterhouse waste

- **The source of data needs to be restricted to the vehicle to be inspected** – sometimes technical manuals, test reports and the like are simply not available. In the

Semi-trailer truck for the transport of rejects from the waste composting facility Abu Dhabi

present case, only the commissioning year and the purchase price of the individual vehicle were available. The first step was to check the plausibility of the latter by comparing market prices; in individual cases the price had to be corrected before data entry into the evaluation model described below.

- **Transparency and traceability are essential criteria**. This also applies to the evaluation of individual vehicles, for example in order to be able to portray changes in the vehicle fleet during the privatization procedure (discarding of vehicles) or – as was necessary in the present case – to be flexible when selling to several bidders (several lots).

Basic features of the evaluation model

Once all relevant parameters (manufacturer / type of chassis / truck body, wheel base, drive system as 4 x 2 or 4 x 4, dead weight, payload, engine output and truck condition) were recorded and added into an Excel database, the current value was calculated based on the simplified pattern detailed below. It takes approximately 20 minutes to record all the data of a single vehicle.

Plausibility check of the purchase price

First the plausibility of the purchase price needs to be checked (which may be a critical task in countries of the Middle East). The prejudice that publicly run enterprises do not negotiate prices charged to private companies for identical vehicles was up to 20 percent higher. However, the public enterprise exclusively used original spare parts (keyword "after sales services").

An example of truck use far below its design capacity. Heavy truck, used for the collection of street sweepings

Depreciation A: depending on age, product, wear

Figure 1 shows a key element of the described model: after the first year, a substantial share (here ¼) is deducted from the purchase price – a common procedure with technical commodities. Straight-line depreciations, as in bookkeeping (represented by the

Dumper, 6 x 6, truck with hood

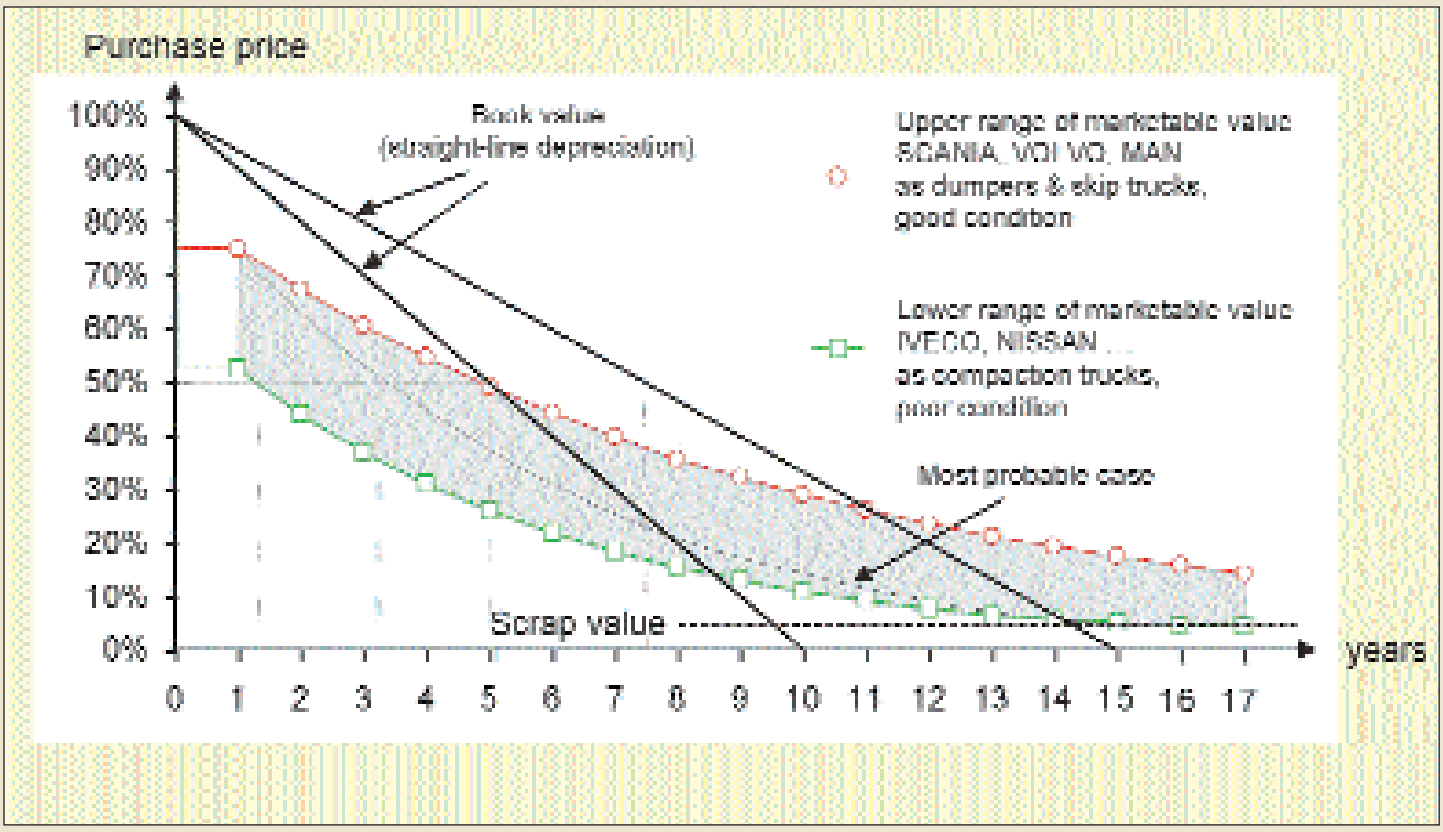

Figure 1 Depreciation depending on age, product, type of use and vehicle condition

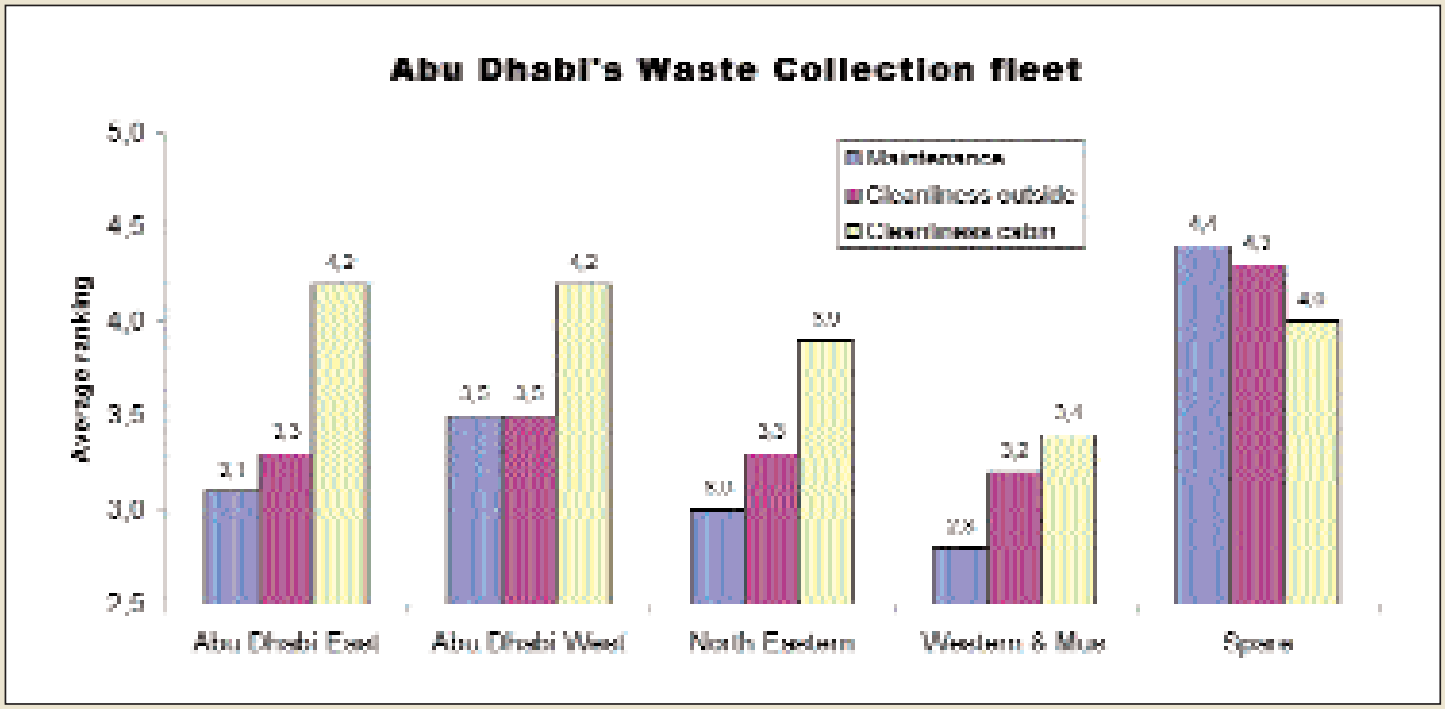

Figure 2 Regional differences of maintenance status. Scale ranging from 0 (excellent) to 6 (poor)

two straight lines in the chart), only inadequately represent the real useful value.

For every following year, a percentage is recursively deducted, which is lower for high-quality commodities with an acknowledged higher resale price than for commodities of an inferior quality. This percentage also includes the vehicle use as a measure for technical wear (a dumper designed for the shipment of gravel but used for the collection of lightweight bulky waste will have a lower depreciation than a compaction truck that is used to capacity).

Depreciation B: depending on vehicle condition

Vehicle condition is evaluated by means of a credit system, classified into "maintenance status and cleanliness of the vehicle" (as an indirect measure of careful handling) and "condition of tyres" (e.g. profile depth). "Mileage" as a vital criterion had to be neglected as many mileage indicators were found to be defective. A maximum of 30% of the residual value is deducted after A.

As "lower limit value" of the cost curve, 4% of the purchase price was defined as "qualified scrap value", which complies with European standards just like any of the other model components.

Achievements of the evaluation model

The model provides current values for the vehicle fleet and individual vehicles, as well as economic evaluations, such as age pyramids, average maintenance status of fleet parts, vehicle types, etc. (Figure 2) and is easy to adjust to different requirements.

Motor cart for universal collection

Compaction truck, 4 x 4, cab-over-engine

AUTHOR:

Martin Steiner graduated in Environmental Technology (specialisation: Solid Waste Management) at the Technical University Berlin. Since 1989 he has been General Manager of TBU European Environmental Consultants. Martin managed a lot of projects in Europe and Asia related to solid waste. In the project "Privatization of Solid Waste Collection in the Emirate of Abu Dhabi" performed by Fichtner IT Consulting / Stuttgart, he was responsible for such technical issues as, for example, upgrading the existing collection system.

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Waste in a competitive world

ISWA General Assembly and Annual Congress

ISWA held its General Assembly and Annual Congress in Stavanger, Norway, from 2–5 September. With more than 650 delegates from 45 countries the event was very successful. Furthermore, the Norwegian host NRF and the conference organisers did a tremendous job in ensuring everything ran smoothly and the participants were well looked after.

The General Assembly

Agenda

1.0. Call to order
2.0. Roll call and Quorum
2.1. Report from the General Secretariat on payment of dues from National Members as per 10 July 2001
2.2. Record from the General Secretariat on presence and number of votes carried by the National Representatives as per 10 July 2001
3.0. **Review** of the agenda, and procedures for decision making
4.0. **Approval** of new National Members
4.1. Greece
4.2. Israel
5.0. Welcome of new Incoming National Members:
Latvia
Russia
Thailand
6.0. Second roll call and quorum with reference to item 4
7.0. **Approval** of the minutes of the General Assembly in Paris, 2 July 2000
8.0. Report of the President,
8.1. Report of the Chair of MOC
8.2. Report of the Chair of PUC
8.3. Report of the Chair of STC
8.4. Report of the Chairs of the Working Groups
9.0. Report of the Managing Director
10.0. Report of the Treasurer
10.1. **Approval** of the Financial Statement for 2000
10.2. **Approval** of the 2002 budget
10.3. National Membership dues for 2002
11.0. **Election** of Chair of MOC
12.0. Report of the Norwegian National Member on the NRF ISWA Annual Congress 2001: "Waste in a Competitive World"
13.0. **Approval** of proposals
13.1. A review of the ISWA organisation
13.2. Changing the ISWA situation
13.3. Hosting the General Assembly 2006
13.4. Mission statement


Dominique Pin

14.0. Report on coming Annual Congresses
14.1. Melbourne 2003
14.2. Prague 2004
14.3. Buenos Aires 2005
15.0. Designation of Honorary Member
16.0. Miscellaneous
17.0. General Assembly in Istanbul, Turkey, 7 July 2002
18.0. Close of meeting


President Christoph Scharff

New National Members

The General Assembly approved the National Membership of Israel with effect from the General Assembly and Greece with effect from 2002. This means that ISWA now has 29 National Members. Furthermore the Assembly welcomed Latvia, Russia and Thailand as Incoming National Members.

The Report of the President

The President of ISWA said in his report to the General Assembly that the regional focus of ISWA had been very successful and that ISWA has more National and Incoming National Members than ever. Furthermore this development is taking place outside Europe and in that way ISWA is becoming a real international association. The National Members of ISWA now represent 48 % of the population of the world and 87% of the GNP in the world.

Furthermore, he said that as a result of regular consultations with the EU-Commission, the President has asked all the Working Groups to explain their visions of waste management within their specific area in a 10-year perspective. The outcome of this project will be presented at the General Assembly in Istanbul in 2002.


Publication Award


Honorary Member

Strategic Partnership

The co-operation with UNEP started one year ago in Stavanger and covers joint publications, co-operation on training courses and liaison with the secretariat of the Basle convention.

He concluded his report by stating that ISWA has to keep up with development within waste management and to develop new ideas. The President regarded ISWA as a meeting place for both practitioners and researchers – and this meeting place is a forum for this development.

The Report of the Managing Director

First of all ISWA has entered into co-operation with UNEP and IWA, which means that ISWA is expanding its activities – especially with regard to the establishment of training courses.

The Managing Director explained that the ISWA EU-Service provides subscribers with early-stage papers and that the subscribers find these papers very informative. The service was provided by a person working and located in Brussels.

Furthermore, the General Secretariat, in co-operation with the Working Group on Recycling and Waste Minimisation, organised a workshop on EU-policy making on 26–27 April 2001 in Brussels. The Workshop is planned to be repeated next year for all interested parties.

The Managing Director said that in order to improve contacts with Members and to streamline the structure of the Association, a questionnaire has been sent out to a large number of ISWA Members. The result of the survey is expected in autumn 2001 and will be presented and evaluated at the forthcoming ESPC meetings.

Finally, Beacon Conferences in Vienna, Malmø and Paris have been planned.

Other matters

The President asked Niels Jørn Hahn (Denmark) to present the proposal from the Scandinavian countries on the structure of ISWA. Furthermore he said that IWM and ATEGRUS – the National Members of UK and Spain – had supported the proposal.

Niels Jørn Hahn said that the present structure of the Association was established in 1993 and had been working well. However, as the world is changing, the Scandinavian countries proposed that the organisational structure of ISWA should be reviewed. He suggested setting up an open workshop on 24–25 November 2001 for all National Members and Members of the Standing Committees in order to discuss the future structure of the Association.

He suggested that the results of the workshop should be analysed by an ad hoc group and that the ad hoc group should report its findings to ESPC at the meeting on April 13, 2002, in Melbourne.


New Members Award

The Congress

The Annual Congress covered a wide range of waste management issues – from communication, to landfill, recycling and producer responsibility, waste to energy, legislation and composting. Furthermore special sessions were devoted to the special problems for waste management in the Scandinavian countries.

NRF had also arranged no less than 5 technical tours in connection with the Congress.

The opening session

Among the speakers of the opening session Siri Bjerke, Minister of the Environment in Norway, Rolf Annerberg, EU-Commission, and Dominique Pin, SITA addressed the participants. Their full speeches can be found on the ISWA web site.

In the opening session the ISWA Publication


Siri Bjerke

Award was dedicated to Mr. Derek Greedy, United Kingdom, for the publication "Operations Guidelines". He received the award on behalf of the ISWA Working Group on Sanitary Landfills.

Mr. Jean-Bernard Leroy, France, was nominated Honorary Member of ISWA.

A "New Members Award" was given to representatives from ISWA Italia, ISWA Austria and Dakofa, Denmark for their great efforts in providing ISWA with new members in 2001.


Rolf Annerberg

Social events

NRF had organised the opportunity to meet old friends and colleagues and establish new contacts at the get-together reception at the Rogaland Art Museum and during the Conference Dinner. From a personal point of view, such events are often just as important as the technical meetings, as they enable the participants to freely exchange points of view.

Norway's waste policy

from the speech by the Minister of the Environment, Siri Bjerke
3 September 2001, ISWA 2001 Annual Congress

The main elements of the Norwegian waste policy today

The strategic target of the Norwegian waste policy today is to minimise the damage caused by waste to human health and the environment. Socio-economic considerations should be used when achieving this target.

Further, the target is made operative through three main goals, regarding reduced growth in the volume of waste, increased recycling and safe and acceptable treatment of all hazardous waste.

In order to achieve these goals, the waste management sector in Norway has been regulated in various ways, and there is an interplay between regulation at the central and the local level. The central government through the Ministry of Environment and the State Pollution Control Authority (SFI) drafts policy documents and sets the general framework.

This framework is to a large extent set out in the Pollution Control Act. The law states as a general principle that it is illegal to pollute, including littering and dumping of waste. Further it gives the local authorities legal authority to order the "polluter" to clean up, in accordance with the principle of polluter-pays.

Within this framework the municipalities are given a very central role. The local authorities may be regarded as the "cornerstone" of the Norwegian waste policy. The local authorities have, amongst others, the responsibility for collecting and managing consumer waste. It is also the local authorities that regulate how waste collection and separation at source is to take place locally. To cover the expenses incurred by carrying out these operations, the local authorities are allowed and obliged to fix a waste tariff. Industry on their side is responsible for the management of production waste. Furthermore the Pollution Control Act forms the basis for the adoption of regulations which establish systems based on so called extended producer responsibility (EPR-systems). In this way industry is given a more active part in the Norwegian waste regime with regard to waste from its own products.

These systems have been regarded as efficient and environmentally beneficial, in order to secure collection and management of the specific waste fractions and give the producers an incentive to manufacture products with a lower potential of harming the environment. To enhance participation in these schemes, the majority of the companies running the different EPR-systems have established a foundation called LOOP. The aim of this foundation is to co-ordinate information about the different EPR-systems, in order to make such information more accessible to consumers. In my view this is a positive and important step towards increased re-use and recycling.

In 1998 Norway was the first country to adopt an EPR-system in relation to electrical and electronic equipment. It is therefore inspiring to see that the EC is in the process of adopting similar rules in this area after considerable consultations and investigations.

In addition, the present waste policy pays particular attention to the responsibility of the holder of hazardous waste. Such waste is made subject to special rules dealing with handling, collection/transport and treatment. No management of hazardous waste is allowed without special permission from the authorities. In order to ensure that hazardous waste is not mixed with ordinary waste, businesses are obliged to deliver such waste at least once a year to approved facilities. In addition the local authorities are obliged to ensure that sufficient facilities exist for the reception of such hazardous waste from household and smaller enterprises.

In Norwegian waste policy, as in EU waste policy, the recovery of waste by means of re-use, material recycling and energy utilisation is to be encouraged. Accordingly, in 1999, final treatment of waste was therefore made subject to a tax. The tax should reflect the environmental costs of the final treatment.

Studies indicate that the tax has increased recovery in form of re-use, material recycling and energy utilisation, but that the tax has had more effect in the industrial sector than in private households.

Future aims for the waste policy

In 1999 the government presented an extensive white paper on the state of the environment and the government's environmental policy. In relation to waste, the white paper shows that the overall aim of minimising the damage caused by waste is still the governing target. In addition the operative goals of waste reduction, enhanced recycling and securing safe treatment of hazardous waste were specified. The paper was further elaborated in a white paper earlier this year. The three goals are now as follows:

- The growth in the volume of waste that is generated should be significantly lower than the rate of the economic growth.
- Given the fact that the quantity of waste for final treatment is to be reduced to a socio-economical and environmentally reasonable level, the aim is that the quantity of waste dealt with by final treatment should, by the year 2010, be equal to approximately 25 % of the quantity of waste generated.
- Practically speaking all hazardous waste is to be dealt with in a safe and acceptable manner, and is either to be sent to recycling or is to be guaranteed sufficient national capacity for its treatment.

The intention of the government has been to follow the direction of the last decade and to further develop the instruments already in place. It has been seen as very important to secure a stable framework for the established systems, and thus make sure that these systems achieve full effect. In order to do so the government will focus on making the different regimes even more efficient, by adjusting them and securing compliance.

A specific example is that the government has started an assessment of the tax on final treatment of waste. The aim of this assessment is to determine whether to increase or change the structure of the tax, in order to achieve even better effect.

Furthermore the different EPR-systems will be kept under constant review. Revision is needed both in order to adapt to international development, such as the proposal for a directive on the waste electrical and electronic equipment and the new "end of life-vehicle"-directive, but also to make the systems even more efficient on the basis of national experience. Some of the EPR systems are troubled with what is often called "free-riders". "Free-riders" are producers and importers, who do not cover the costs of environmentally sound treatment of their discarded products which end up in the system. It will be very difficult to avoid all "free-riders", but it will be important to try to reduce the number as far as possible.

The government is also in the process of adjusting the agreements for recycling of packaging waste. Studies have shown that the established systems have had an overall positive effect, but that for certain fractions the recycling targets may have been set too high. Certain provisions in the agreements with industry should be amended to follow up these conclusions. Furthermore, an updating of technical aspects which are important for the operation of the system will be secured. This work is expected to be concluded within the year.

Waste from construction work is a category of waste which will have to be given special attention in the coming years. Such waste constitutes around 40 percent of the total amount of waste in Norway. It has a considerable potential for recovery and often contains different hazardous substances. To help secure environmentally sound handling of this waste, the government is in the process of delegating power to the municipalities, in order to enable them to request information concerning amounts and management of waste in connection with construction permits.

In addition the government recently sent a letter to everyone who handles building and demolition waste containing PCB, informing them of their duty to secure safe treatment of this waste. PCB has often been found in the windows installed in the period from 1965 to 1979. To secure the collection and safe treatment of these windows, the government has financially supported a company securing the safe treatment of such windows. All the measures will only have effect if the construction industry accepts their responsibility. I am confident that we will see new initiatives concerning this in the future.

At the international level, Norway has been a keen participant in developing the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposals. The Norwegian government is of the sound belief that a country should not transport its environmental problems to another country. Norway was therefore one of the first countries to ratify the ban on all exports of hazardous waste to developing countries under the convention. Together with the Netherlands and India, we are now in the process of developing draft guidelines for the environmentally sound scrapping of ships in developing countries.

In addition to improving the existing systems for managing the problems caused by products when discarded as waste, the government also has the challenge of handling the waste problem at the stage of the production of products. Ten years ago the main task was to reduce damage caused by waste and other pollution as an end of pipe solution. With tough requirements from the authorities and great effort from the local governments, industry and the public, most waste produced today is normally managed in an environmentally sound way. This is a general trend also in relation to other types of pollution. The government therefore sees it as increasingly important to focus on the environmental impacts of the entire product life cycle. In relation to waste management, this means for example, producing products of higher quality and thus with a longer life, producing products from recycled materials or products which are themselves recyclable. Such life cycle thinking is emphasised also at the international level, most recently through the green paper on Integrated Product Policy, which was presented by the European Commission in February this year.

To ensure such a development, it is crucial to enhance consumer awareness, and thus increase consumer demand for environmentally friendly products. This requires information about the environmental impact of a product. Such information may be facilitated through environmental labelling or through increased access to environmental information found elsewhere.

Norway has signed the international 1998 Aarhus Convention regarding environmental information, and has, together with the other Nordic countries, strong traditions for access to information from public authorities in environmental matters. The government is thus preparing the necessary legislatory amendments in order to further strengthen these rights and to ratify the convention. Hopefully a new Norwegian act on access to environmental information can be presented to Parliament later this year. The act should include a right to environmental information not only from public authorities, but also from private enterprises with impact on the environment.

In addition it is important to ensure that the State itself serves as a good example by running an environmentally sound management, and in that way contributes to increasing the demand for green products and minimising the amount of waste generated. Every year the Norwegian State purchases goods and services for 200 billion kroners, which is approximately 25 billion euros. This gives the State both a great power and a large responsibility in relation to increasing the demand for environmentally friendly products. The government recognises this power and responsibility, and has thus started a project towards greening the State - the so called "Green State-project". The aim of the project is to reduce the burden on the environment caused by the operation of public enterprises and to form a basis for assessing how integration of environmental considerations in the public sector can best take place. Reduced amounts of waste and increased separating at source are amongst the priorities that the enterprises will be working on, as well as the establishment of an environmentally conscious purchasing strategy.

As mentioned earlier, one of the main aims of the Norwegian waste policy is to make sure that the growth in the volume of waste that is generated should be significantly lower than the rate of economic growth. Statistics shows that to achieve such a decoupling is very difficult. To help itself find new approaches and instruments in this area, the government has established a committee with the task of producing supplementary or improved methods for minimising the amount of waste produced. The members of the committee represent local government, industry, research institutions, consumer organisations and other organisations. The committee was established in April this year, and has been asked to deliver a report within a year.

Hopefully this will give the government useful proposals for an improved approach to the question of how to reduce the amount of waste produced.

Concluding remarks

As is evident from this presentation, a lot has been done in relation to tackling the environmental problems caused by waste. Still it is an area in constant development, and it is therefore very important to continue to discuss different problems and solutions in relation to waste policy. To have meeting places like this conference is most useful in order to share thoughts and ideas and to gather inspiration. I would therefore again like to thank the organisers of the conference, and also wish you all good luck with the rest of the conference!

ISWA provides international training

Over 125 attendees participated in a Landfill Design and Practice in Environmentally Developing Countries training course held this past June at WASTETECH 2001 in Moscow, Russia. The three-day training course was held June 4–6, 2001, in Moscow City Hall. The training course was developed by the ISWA Working Group on Sanitary Landfills (WGSL) and put on in association with the United Nations Environment Programme (UNEP). SIBICO International Ltd. was responsible for organizing WASTETECH 2001, and hosting the ISWA trainers.

The training course was constructed of nineteen lessons covering topics including landfill regulations, siting of a landfill, landfill design and construction, leachate and landfill gas management, operations, closure and health and safety. The training course also touched on emerging technologies in the industry such as bioreactor landfills. The course was especially timely, as Russia will be welcomed as Incoming National Member in September at ISWA's General Assembly, Stavanger, Norway.

Alexander Gudyma, a representative of the United Nations Environment Programme, set the stage for the training course with his opening remarks on Monday morning. Six international experts in the field of solid waste management teamed up to bring this interactive and informative training course to Moscow. Instructors from Russia, the United Kingdom, Senegal and the United States participated in the event by sharing their knowledge and experience with attendees.

The faculty included: Greg Vogt, WGSL Chairman (USA); Derek Greedy, WGSL Vice-Chairman (UK); Alexander Lifshits (Russia); Isabelle Paris, WGSL Member (Senegal); Rick Watson, WGSL Member (USA); and Chris Voell, WGSL Member (USA).

This year's training course was a success not only for the IWSA WGSL and UNEP but also for the 125 attendees who helped make the classroom experience a learning experience for all involved.

In addition to the training course, Greg Vogt and Dr. Gunay Kocasoy (ISWA WGSL Members) addressed the Congress participants at their opening session, providing background on ISWA and the upcoming ISWA Congress in Turkey.

The ISWA General Secretariat attended the very successful WASTETECH 2001 exhibition together with the Turkish National Member of ISWA, who is organizing the ISWA Annual Congress 2002 in Istanbul. After attending WASTETECH 1999 it was a great pleasure to see the growing interest in Russia for participating in the international perspectives of solid waste management. ISWA is looking forward to welcoming the new Russian Association as Incoming National Member in Norway and hope that a great part of the Russian waste industry, professionals and individuals, will join the new association.

The International Solid Waste Association would like to thank SIBICO's management and staff for a very fruitful cooperation and is looking forward to WASTETECH 2003.

Training Course Faculty visiting one of the landfills serving the City of Moscow.

Israeli Institute for Waste Management dives into the country's garbage

by Meir Paltiel

The Israeli Institute for Waste Management (IIWM) held its inaugural conference on June 28, 2001 and it was very successful. IIWM serves as the link between Israel and the world for the advancement and application of best-management practices and advanced technologies in the field of solid waste management (SWM). The conference entitled "A Waste Revolution - A Recycling Treasure", not ordinarily an attractive topic, succeeded in bringing together national and local decision-makers, members of the business community, academics and researchers involved in SWM.

MP Nehama Ronen, IIWM National Committee Chairperson and former Managing Director of the Environment Ministry, opened the conference with a call for cooperation between the public and private sectors towards achieving SWM goals. This theme was driven home during the course of the day. In addition to MP Ronen, IIWM was represented by Mr. Adir Shapira, IIWM President and the Executive Committee: Mr. Tomer Sharet, Managing Director of the Governance of Jaffo, Dr. Ofira Ayalon, Technion University, Haifa, Mr. Rony Komar, Chairman of the Board, Environmental Services Co. and Yair Atzmon, Project Manager, Solid Waste and Wastewater Treatment, ATAT Ltd.

MP Nehama Ronen, IIWM National Committee Chairperson, former Managing Director of the Environment Ministry

Although dedicated to Israel's garbage, the day was certainly not wasted. Several major announcements were made which will have a dramatic effect on SWM in Israel. The Finance

Bill Townend, representing ISWA

Panel Discussion
(from left to right) Adir Shapira, IIWM President, Ze'ev Bilski, Mayor of Ranana, Yitzhak Goren, Managing Director, Ministry of Environment, Tzachi Hanegbi, Minister of Environment, Henri Starkman, Managing Director, Vivendi, Israel, Haggai Schefer, Managing Director, Milgam.

Tzachi Hanegbi, Minister of Environment

Minister, Silvan Shalom, pledged funding for innovative solid waste solutions and programs. The Minister of Environment, Tzachi Hanegbi, and the ministry's Managing Director, Yitzhak Goren, made clear that monies allocated for landfill and transportation subsidies are to be dedicated to funding recycling programs. New landfill tipping taxes will be implemented and incentives for materials recycled are being initiated. Minister Hanegbi declared a national goal of 40% recycling by the year 2005. Both the Finance and Environment Ministers expressed their desire to work together towards this end. This was a very positive day for SWM in Israel.

In addition, it was our great pleasure to have

Adir Shapira, IIWM President

Silvan Shalom, Minister of Finance and Adir Shapira, IIWM President

Mr Bill Townend, Chair of the International Solid Waste Association (ISWA) Working Group on Healthcare Waste, honor us as ISWA's representative. In the opening session, Mr Townend gave a presentation on the organization of ISWA, its scope of activities and goals, showing to the delegates the importance of being associated with such an active and influential international body. Mr. Townend then turned his more than 40 years of solid waste experience as a regulator, international consultant and business manager to a discussion of the ISWA Working Groups and the advanced storage, transport, treatment and disposal of municipal, health care and hazardous wastes. He also shed light on the already large and growing body of European and International environmental legislation, standards, guidelines and regulations.

The conference closed with a panel discussion highlighting the need for government and business to work together. Moderated by Adir Shapira, IIWM President, the panel included Minister of Environment, Tzachi Hanegbi, City of Ranana Mayor, Ze'ev Bilski, Managing Director of Vivendi, Israel, Henri Starkman Managing Director of Milgam, Haggai Scheffer and Managing Director of the Ministry of Environment, Yitzhak Goren. Minister Hanegbi clarified the ministry's position concerning SWM, where resources and energies are being dedicated to recycling alternatives. He called on business to work with government to achieve the ministry's goal of 40% recycling by 2005. "Only through cooperation can this be accomplished", he stated. The business leaders present expressed their desire to see the privatization trend continue in SWM but at an accelerated pace.

The time for change is now. IIWM, together with all those involved in SWM, will have a strong, positive and lasting impact on SWM and environmental issues facing Israel and, in the long run, our entire region.

Working Group meeting and workshop of the WGBTW

Helena Bergman, Secretary of the Working Group on Biological Treatment of Waste

Biological treatment in different forms as part of an integrated waste management system is receiving increasing attention. An old method invented by Nature itself is rediscovered! The interest in biological treatment is not limited to the European Union (with the directive restricting the landfilling of organic waste), but extends to other parts of the world for other reasons. The ISWA WGBTW has a large number of members and there is evidence that new members are also keen to participate. Currently, the main issues within the working group are the European Commission initiative on the treatment of biowaste, where the WG has contributed substantial input, the work undertaken in the subgroups and the Beacon Conference on Biological Treatment (which will take place in Paris on Dec 6–7, 2001).

The working group has been quite active during the first half of 2001. In January the Portuguese member, Valorsul, hosted a meeting and highly appreciated technical visits. Shortly afterwards, a successful workshop was arranged in Argentina in February 2001. There was no official working group meeting arranged in connection with the Argentina workshop, but our new members from ISWA Switzerland offered to host a meeting in Switzerland. On June 14–15, ISWA Switzerland and STRID SA hosted a working group meeting, a workshop and arranged technical visits. The meeting was also subsidised by the Swiss Federal Office of Energy.

While the meeting in itself unfortunately did not attract a large number of WG-members, the workshop was attended by almost 30 people. Six different presentations were given covering the following topics:

- The EU legislative initiative on the biodegradable treatment of waste
- Collection and treatment of biodegradable waste in Switzerland: the example of the canton of Vaud
- Anaerobic digestion in Switzerland
- Quality criteria for compost: the new guidelines of the Association of Swiss Compost Plants
- The use of compost and digestate in Europe
- Status of biological treatment in Europe

On the second day, technical visits were organised in the area of Lausanne and Geneva. The first visit was at a composting facility in a rural area – the Compostière de la Plaine de l'Orbe in Chavornay, where each year some 10,000 t of green waste from the neighbouring villages and small towns are treated in open-air windrows. During this visit the problems of biowaste collection and compost marketing in rural areas were discussed.

This was followed by a visit to a biogas plant for farm waste in Lully sur Morges. Some 400 tons of farm waste mixed with various domestic and industrial wastes are co-digested annually in four anaerobic batch reactors of 25 m^3 each. The 25,000 m^3 of biogas produced yearly are used for cogeneration.

Finally, in the afternoon, the working group members toured the biological treatment plant of Nant-de-Châtillon: this combines a composting unit (7000 t/yr) and an anaerobic digestion unit (10,000 t/yr) and serves a large part of the city and canton of Geneva. Biogas production presently amounts to some 119 m^3/ton of waste. The hosts and visitors appreciated the chance to compare their experiences of the launching of such a plant and how seemingly perfect set-ups on paper do not always hold up in practice! The canton of Geneva has set itself an ambitious target of increasing the recycling rate from 20% to 40% by 2002. This means, among other things, raising the amount of biowaste collected annually from 30 to 50 kg/hab.

Apart from the well-organised workshop and technical visits, the hosts had made a great effort to organise a pleasant stay for the visiting members of the working group. The hotel where the participants stayed is unusual in that the furniture is made of (very solid) cardboard, and is therefore entirely recyclable! The restaurant that was visited was an ecological restaurant with a delicious and innovative menu.

All the participants were charmed by their hosts, the city of Yverdon and impressed by the achievements regarding biological treatment that have been made in Switzerland. The members are also very pleased to have a representative from ISWA Switzerland in the group!

BICA

Biannual International Environmental Communication Conference

Promoted by FEDERAMBIENTE (the Italian Federation of Environmental Public Hygiene Services) with the patronage of ISWA ITALIA, the National Member of ISWA, the 2002 BICA-Biannual International Environmental Communication Conference will be held in Venice (Italy) March 20–23.

The event will also benefit from the patronage of the Presidency of the Council of Ministers and the main Italian ministries, as well as ANPA (National Environment Protection Agency), ENEA (National Body for Energy and Environment) and FISE Assoambiente (Association for Environmental Service Companies).

BICA

BICA is an event which will allow key players in the Italian system of environmental services, the Ministry for the Environment and the Ministry of Communications, as well as environmental companies and the media, to tackle current environmental communication topics while preparing for the next World Environmental Conference, which will be held ten years after the Rio de Janeiro conference.

BICA is a unique opportunity to bring together, in an exclusive arena, a variety of different players who wish to promote and share common goals, tools, and products - whether communicative or not - that are related to the environment.

An international event

BICA is committed to actively involving the most prominent environmental figures (the largest European companies and the principal institutions) in broadening the definition of the subject matter organised for the program, and to offering a leading meeting place on a number of different levels (regarding both relations and management).

Participation in BICA will provide access to an event in which external media and communications will enjoy a particularly attentive focus. Moreover, relations are already underway to secure the high patronage of the European Commission Presidency.

The value and substance of BICA

The process of the globalisation of economies and related forms of communication extends the broad scope of the environment to all industrial and social processes; environmental companies acquire ever greater value, and their intrinsic competence and expertise bolster their positions as leaders. The competitive market obligates companies to develop greater integration between the various business players, and BICA represents an important opportunity for discussion.

There is no other event of its kind in Italy

BICA is a much-awaited event, because at present in Italy there is no other accredited opportunity, which is also open to participation from the public, for the various forces that express their professional values, attention and interests on the subject of environmental communication.

BICA constitutes a unique occasion to expand

and deepen knowledge of the Italian system of environmental services and the communication strategies adopted in this specific sector.

BICA is the event many have been waiting for

Benchmark institutions, qualified members of the public, the world of business, company communication managers, and consumers themselves nurture the growing need to consider the subject of the environment from the point of view of communication. The media has undoubtedly become the principal vehicle of information, but also of education about the environment, and plays a decisive role in the formation of public opinion.

In order to be equal to the task of better understanding the new and appropriate interpretative key concepts, BICA will present and compare the most significant national and international experiences, thus providing the chance to consider the many potential interactions between various groups in the communications sector.

BICA conveys the quality of companies

The environment and related industrial processes constitute, for every growth-oriented company, an innovative chance for competition and for improving the quality of the services they provide. In this context, efficiently communicating the deep commitment of companies in this direction assumes a truly strategic importance.

Those businesses that are aware that a component value of their product is its environmental compatibility, and that consistently aim to improve their own performance in environmental terms, will find in BICA a solid communication partner.

Participants and sponsorships

At BICA, the highest levels of institutions, corporations, the complete sphere associated with Federambiente and the national media will come together to discuss and share goals, strategies and tools regarding the future of environmentally friendly development.

Themes and events

Within BICA, a range of subjects will be discussed related to sustainable environmental development and the strategic communications that must necessarily accompany it.

Conferences and workshops will provide opportunities for elaborating and discussing the relationship between technological innovation and environmental sustainability.

- Conference: “The Underground City: voices, services, structures and aesthetic values”. The conference will offer a presentation of the evolution of public utilities networks according to the logic of optimisation, also regarding the environment, through a reduction of the visual and non-visual impact they have on the country. The directors of the principal subway management companies of London, Paris, Milan and Moscow will also participate.
- Workshop: “Negotiation and Environmental Conflicts”. This workshop will focus on the transformations that will affect the Italian infrastructure pool in the immediate future (large-scale works, transportation networks, waste-to-energy plants, telecommunications, etc.) and the need for negotiation with citizens concerning means of implementation. Within the context created by the requests for involvement put forward by the citizens and consumers associations, Federambiente will present a new CD ROM entitled “Guidelines for improving the acceptability of environmental projects”.
- Conference: “Criteria for biologic cultivation and husbandry as a sustainable alternative and a health guarantee”. With the participation of representatives of the Ministry of Agricultural Policy and leaders of the major manufacturers and distributors of biological products, the most recent market studies on consumer attitudes to organic food products will be presented.
- Exhibit/Conference/Contest: “The BICA Award for the best national system communication campaign”. The participants in the contest will be the Regions, APTs (Tourism Promotion Agencies) and promotional agencies for specific areas (parks, oases, etc.).
- Seminar: “Beware: Green Area! Seminar on environmental signage”. The aim of this seminar is to overcome the clear inconsistencies that still persist today in the country’s non-verbal communications: the use of different colours for similar types of signage, and warning signs that are often difficult to understand. The goal is to achieve uniformity in the proposition of graphic signs and the colours used in all countries of the European Union.

The seminar intends to involve a cross-party group of Parliament members who wish to put themselves forward as supporters of an EC bill addressing this topic.

The present, but above all, the future

BICA does not focus solely on the present; participation implies an ability to look to the future, and a capacity to contribute to identifying and seizing the opportunities offered by the new trends in environmental communications.

Location and accessibility

BICA 2002 will be held in the celebrated Padiglione Italia, the customary home of the Venice Biennale Art Exhibition. This is a prestigious location, offering great visibility and charm.

The Pavilion, which is surrounded by a beautiful garden, encloses a vast area divided into two floors and arranged into numerous different spaces. This layout allows the conference to be enlivened with an impressive number of meetings and events aimed at capturing the attention of different sectors of the public, without, however, creating inconvenient overlaps.

The Padiglione Italia can be easily reached thanks to its regular and frequent connections with the train station and Piazzale Roma, where the main parking lots for city visitors are located. BICA also avails itself of a shuttle service connecting it to the SEP Eco-Technologies Exibition, The International Trade Fair for Anti-Pollution Technologies and Public Services, which will take place at the same time in the city of Padova.

Official language

The official language of the conference will be Italian. Simultaneous translation from Italian to English and other languages will be provided.

Information

More information is available at www.bicaonline.com

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The Ten Commandments of waste management

By Jean-Bernard Leroy

1) Remember that production generates waste

A product is developed from a raw material, but only a part of this raw material is used; the rest is waste. Before making a soup, you peel the potatoes.

2) Remember that every product eventually becomes waste

Particularly end products. Advertisements continually claim that products are "old fashioned" or "outdated". For example a computer is obsolete after two or three years of use, and an obsolete computer is waste whatever name you give it.

3) Be aware that recycling always generates waste

Scrap sometimes contains useful material, but it always contains unusable elements that have to be separated. If you recover some old material, some of it can be used as rags but some of the pieces will be too small or too dirty and will remain as waste.

4) Don't forget the price of treatment

Some operations are very costly and getting rid of the last bits of any unwanted substance is the most costly. As far as recycling is concerned, if it is economically attractive, there is no need for laws or standards; if not (as is generally the case), you have to be prepared to pay the price corresponding to the standards. Consequently, if standards are not established, price will be the dominant factor. If the price of repairing a device is too high, you put it in the dustbin.

5) Don't forget the price of transport

It makes no sense to transport a bottle hundreds of kilometres for recycling; this is also true of your own car. "Nearest is best" with regard to waste-disposal facilities.

6) Remember that big ideas are not the same as strategies

Some ideas sound fantastic but are completely impossible to carry out. Technically it would be possible to collect all the dead leaves in autumn and burn them to produce some electricity ... but in practice this would be a ridiculous undertaking.

7) Be aware that the technicians in waste management know more than those making big predictions

Admittedly, the technicians are sometimes less easy to understand. They do not always have the ability to present issues to the public. Their language is not so attractive and they are generally not so skilful in the matter of public relations, but they know their job.

8) Be aware that time is needed to realise an installation or to finalise a new process

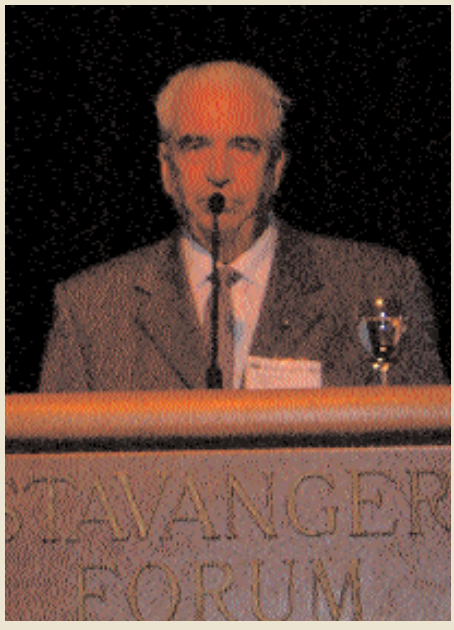
The issue of time is important not only when you have an immediate issue to address – for instance, in the case of a disaster – but also when new legislation is enacted. To construct a new plant (for example, to treat hundreds of thousands of tons of animal meal per year), you will need at least one year for project planning, six months for the administrative authorisations and another year for the construction, i.e. two and a half years. It doesn't happen with a click of the fingers.

9) Remember that mistakes are part of the learning process

Especially when new methods of treatment, analysis, sampling and other procedures have to be implemented. Some people never make mistakes – they are lucky, but perhaps they also don't do that much!

10) Be aware of what you discard where, as it may represent a hazard

Medicines are important within the home, but discarded carelessly, left where they could be handled without precaution, they become hazardous waste.



Speech from the opening ceremony of the International Conference on Municipal Solid Waste Treatment and Recycling 2001, Guangzhou, China

by Hao Shengkun, President of China Association of Urban Environmental Sanitation (CAUES)

President of ISWA, dear delegates:

At the beginning of the new century, Guangzhou, the time-honored city in Southern China, welcomes the International Conference on Municipal Waste Treatment and Recycling and its delegates from all around the world. Please allow me on behalf of China Association of Urban Environmental Sanitation to extend a rousing welcome to all the delegates.

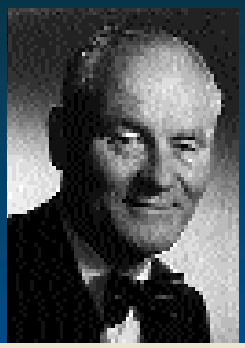
Environment and development is an important issue engaging the international attention nowadays. Solid waste is among the ten environmental constraints that demand mutual attention and urgent solution since it occupies farmland, contaminates water, soil and air, spreads illness and endangers the health of human beings. The International Conference being held in Guangzhou presents a great opportunity to meet the requirements for solid waste treatment throughout the world.

The treatment of municipal solid waste shall aim to accelerate the sustainable development of economy, society and population, resources and environment by way of minimising environmental contamination and economising natural resources through recycling. Subsequently, municipal solid waste treatment, being an important chain of the economic society, requires more than end-disposal; instead, waste producing shall be controlled from its sources and waste reducing, recycling and transforming is to be reinforced to form a virtuous circle for natural resource reuse. The current Conference, which will investigate, with a view to sustainable development, the techniques and strategies for solid waste treatment and recycling from various aspects, is expected to offer inspiration for municipal solid waste treatment and recycling in the new century.

China Association of Urban Environmental Sanitation is a nationwide organisation in the environmental sanitation industry, aiming to promote research and development of waste treatment techniques and equipment, improve management on treatment facility constructing and operation, reinforce municipal environmental sanitation administration and accelerate sustainable social, economic and environmental development. As a member of the International Solid Waste Association, the Association is also responsible for exchange and co-operation with other members and we sincerely hope that mutual understanding will be established and friendship and co-operation advanced with experts from different countries and regions through the current Conference for a better world in the 21st century.

May the conference be a great success!

Svend Seitzberg, *founding father and gentle pioneer in ISWA*



Memorial by Jens Aage Hansen and Robert B Dean

Before ISWA there was INTAPUC, an association for annual meetings of the top Public Cleansing executives of major cities in Europe and United States. Svend Seitzberg was the Copenhagen member of INTAPUC. But he also felt the need for a wider scope of activities in terms of more environmental concern and academic work to impact the future development of waste management. In 1972 he therefore became one of the founding fathers of ISWA, The International Solid Waste Association. He served on its governing boards until retirement in 1988, both as responsible for finances and as the nestor from whom at least four presidents got advice and support throughout their terms of office. The combined issue of more environmental concern and more academic work as real foundation stones in ISWA materialized in 1983 with the first issue of *Waste Management and Research* (*WMR*), a new scientific and professional journal owned by ISWA and published by Academic Press, London.

Svend Seitzberg played an important key role in the founding and nursing of *WMR*. ISWA had had its own newspaper published in Switzerland by Professor Rudolf Braun at EAWAG in Zürich, but he had stopped publication some two years earlier. There were strong disagreements among ISWA members regarding the format of a new journal. Should it be a place for personal news with advertisements to pay the costs or should it be a "long hair" scientific journal that only specialists could understand? Svend Seitzberg understood that the proper management of wastes would have to be improved from the "dump it or burn it – just get rid of it" approach. Scientific knowledge, high technology and good management would be necessary to avoid and restore the bad effects of poor management and political nepotism that had plagued past behaviour.

Svend Seitzberg had seen and liked the journal of the International Association for Water Pollution Research, *Water Research*. He called a meeting in Copenhagen in early 1982 that recommended that the new ISWA journal should be modelled on *Water Research*. He had been able to get both potential editors and professionals in the waste business to help decide what should be included and what should be left out. One decision went against Svend Seitzberg's initial suggestion. He thought that ISWA's Scientific Board could be very helpful. His suggestion caused almost unanimous disagreement. The scientists at the meeting wanted an Editorial Board that would help in attracting papers. Svend Seitzberg backed down.

Once Svend Seitzberg saw that he had found people who were really interested in the new journal, the most important contribution he could make was to take care of the initial financial problems. He did this so quietly that the editors did not see until much later how much he had contributed, both in finding sources of money and persuading the Danish Engineering Society to ease the way for the new journal. Svend Seitzberg was one of those rare managers who knew that the best way to get a job done is to find the people who know how to do the job, let them know what has to be done, and let them do it.

In the early 80s it also became clear that ISWA needed a better individual and institutional representation of academia, management and administration dealing with waste and environment in the individual member countries. In 1982 Svend Seitzberg therefore initiated DAKOFA, the Danish Association on Solid Waste Management, to comprise all relevant Danish professional interests from government to municipalities and from practice to academia. DAKOFA is a non-profit organisation, offering information service and professional opinion as well as facilitation of meetings and hearings on solid waste management issues in Denmark. By the same token, all DAKOFA members became ISWA members, thereby suggesting a model case to be adopted by other ISWA member countries. The concept of DAKOFA as a national ISWA membership model was a special innovative effort, reflecting Seitzberg's dedication to ISWA and his vision of local management of waste and environment with an international perspective. To ISWA, the DAKOFA model is also economically attractive, because ever since its introduction, Denmark has paid the highest annual per capita fee to ISWA. Needless to say, Svend Seitzberg had to work hard at home to convince DAKOFA members that such long-term investment was necessary in order to pioneer better solid waste and environmental management in a global context.

To junior professionals in practice, administration, education and research, Svend Seitzberg was both nestor and neighbour. You would get his attention when asking advice, but his full devotion when offering food for thought, e.g. a problem to analyse by asking the right questions rather than offering the immediate answers. It has been to the benefit of both DAKOFA and ISWA that reorganisation and new challenges have often been adopted and initiated based on work by crews of junior professionals, with terms of reference and members chosen after recommendations from not least Svend Seitzberg.

The presidential chain was donated to ISWA in 1988 as a gift from Svend Seitzberg and his company, the Copenhagen Waste Management Association, R-98. The front of the chain shows white enamel Marguerite flowers, selected by donor and artist because of the beauty of the flower. Since then the Marguerite has actually been part of the ISWA logo. The back of the chain gives the names of all the ISWA presidents – and of the donor. Svend Seitzberg earned and got his place as "primus inter pares".

Svend Seitzberg passed away at 84, but his memory stays strong and live.

Bob Dean remembers the birth of WMR

By Bob Dean

I was working part time at the WHO office in Copenhagen in February 1980 when my good friend, Jens Aage Hansen, asked me if I would be interested in becoming editor of a professional journal for ISWA. Jens had recently moved to the field of solid waste from water pollution where I had been working. My first question was "What is ISWA?".

What is ISWA?

I learned that ISWA was an "umbrella" organization whose members consisted of the top executives of organizations in the solid waste field. In Denmark the National Member was DAKOFA, an association consisting of municipalities and companies who were responsible for taking care of solid waste or who sold equipment and other services to them. I was told that ISWA had once had a newsletter in newspaper format, edited by a Swiss professor. He had recently given up the job because he was getting too old and ISWA let the newsletter die. I later found out that he was not as old as I was! Jens told me that he wanted ISWA to have an international professional journal on the pattern of *Water Research*. He persuaded me that I had a good chance of becoming an editor if he could persuade ISWA that it needed a good professional journal.

The beginning

Jens went ahead and rounded up a number of solid waste experts to meet with Svend Seitzberg, the manager of R 98, the company that collects all the domestic solid waste in Copenhagen. He had been the founder of DAKOFA and was treasurer of ISWA. He told us that he knew that an international professional journal dealing with solid waste was important for the development of the industry. He felt that ISWA should publish such a journal and he hoped to promote it at their meeting the following month. Then he turned us loose to give our own opinions. We spent the rest of the day discussing our various points of view and ended up by recommending an ISWA professional journal resembling *Water Research*. Thomas Christensen, who had been studying solid waste at the University of Washington in Seattle, and I expressed an interest in becoming editors. Jens wanted me as Editor in Chief and he felt that I would need some help from someone who was up to date in the field. After the meeting, Seitzberg took us all to dinner at Krogh's Fish Restaurant and treated us to fine bottles of Burgundy.

In June of 1981 Jens called me about my availability to become Editor in Chief of the possible ISWA solid waste journal. I agreed to try and a month later my wife and I toured Denmark, going all the way up to the northern tip of the country at Skagen. On the way we visited Jens at his home in the country south of Aalborg where he was now a Professor at the new Aalborg University. At Jens' home we met Professor Aarne Vesilind from Duke University in America. He became an active member of our Editorial Board and a valuable Referee. We were all able to go with Jens to the Danish Fourth of July celebration of American Independence Day. A couple of months later, in September, Jens, Seitzberg, and I got together to start active work on ISWA's new solid waste journal.

Seitzberg and Jens must have been busy lining up support for ISWA's Solid Waste journal because at the end of September Jens invited me to join him on a trip to London to visit potential publishers. We started first with Academic Press as I had already worked with them on the publication of a book on water reuse that my wife and I had written. This time we worked with their Periodicals Editor, Anthony Watkinson, who gave us much useful advice about problems to avoid. He agreed with our proposed format of four issues of 96 pages a year. Jens pointed out that ISWA's Executive committee would meet in January and asked for promotional material from Academic Press to be supplied in good time.

That evening we took advantage of London's theatrical life and went to see "Evita". The next morning we visited Applied Science at the Royal Institution. Peter Lanagan pointed out many aspects of our proposed journal that did not fit in with their normal procedures. The greatest difference was on languages. He said they only published in English and did not use American idioms or spelling. ISWA also wanted to offer publication in all of the official ISWA languages, German, French and probably Spanish. We already had a protocol for the use of foreign languages with an extra Abstract in English and the use of both languages for titles of

Tables and Figures. Watkinson had been agreeable to the use of either English or American but not a mixture of both in any one paper. He told us they could also print in German or French.

That afternoon, convinced that Academic Press was our best bet, we returned to Anthony Watkinson to discuss *WMR* in more detail with some of the people who would be directly involved. Philip Shaw would be handling promotion and Joan Fujimoto, an English woman, would be in charge of copy-editing and contacts with their out-of-house printers. In early December Jens met me with Thomas Christensen at the Danish Engineers Building where Seitzberg later found us space for an office. Early in '82 the three of us were busy at the new office getting things in shape to start work. By March we were ready to meet with Watkinson to discuss the new journal. Our ISWA party in the Engineers Building on the 11th of March began at 4 PM and lasted until midnight according to my diary. A month later Jens called Thomas and me to a meeting where we got an official "OK, Go Ahead" from the Chairman of the Publications Committee of ISWA, Jens Aage Hansen, himself.

A week later Seitzberg invited me to his office to draft my contract as Editor in Chief of the new journal, now christened *Waste Management and Research* even before it was born. It took many years before I would consent to use the abbreviation *WMR*. My contract was actually between ISWA and my own LunDean Environmental Co. in the USA. My little consulting company was otherwise not making as much money as it cost me to run it.

The rest of the year was filled with editorial duties and problems with part time secretarial help. Sometimes I had a secretary in the office, occasionally I had to depend on a typing service. Home computers were not available in those days. My contract was signed in Seitzberg's office on the 17th of June. I actually put in less than half time for ISWA but what mattered was that Thomas and I got together enough manuscripts for the first issue, got them refereed and sent to London in time for *Waste Management and Research* to come out on time in March 1983.

New ISWA Members:

Since ISWA Times no 2 2001 the following have joined ISWA.

Gold Members

A.N.P.A
Italy

Silver Members

Silver Members
UEG Umwelt- und Entsorgungstechnik AG
Austria

Österreichischer Wasser und Abfallwirtschaftsverband
Austria

W.L. Gore & Associates
Germany

Consorzio Italiano
Italy

Fratelli Mazzocchia srl
Italy

Individual Members

27 persons have joined ISWA as Individual Members:
2 from Austria
1 from Australia
3 from Brazil
1 from Denmark
6 from France
10 from Italy
1 from Japan
1 from Lebanon
1 from P.R. China
1 from USA

Student Members

2 persons have joined ISWA as Student Members
1 from Canada
1 from Portugal

Working Group Meeting schedule 2001 and 2002

Biological Treatment of Waste
November 2001
The Netherlands

Collection & Transportation Technology
4-5 April 2002
Vienna, Austria

Developing Country Issues
None set

Communication & Social Issues
30 November–
1 December 2001
Manchester, United Kingdom
22 March 2002
Italy

Hazardous Waste
4-5 October 2001
Paris, France
18-19 February 2002
Finland
6 July 2002
Istanbul, Turkey
7-8 October 2002
Brussels, Belgium

Health Care Waste
October 2001
Washington DC, USA

Legal Issues
None set

Recycling & Waste Minimisation
25-26 March 2002
Madrid, Spain
10 July 2002
Istanbul, Turkey
19-20 September 2002
Florence, Italy

Sanitary Landfill
18-19 October 2001
Baltimore, USA

Sewage & Waterworks Sludge
None set

Thermal Treatment of Waste
25 October 2001
Malmø, Sweden
18-19 April 2002
Belgium
10-11 October 2002
Portugal

Economic Analyses for Sustainable Development
28 November 2001
Brussels, Belgium

Conferences 2001

Waste Management 2001 Conference & Exhibition
16-17 October 2001
Kowloon Shangri-La Hotel
Hong Kong
Web: http://www.adal.com

Ategrus Annual Congress
16-19 October 2001
Lleida, Spain
Tel: +34 94 424 9941
Fax: +34 94 424 3854
E-mail: ategrus@ategrus.org

The Seventeenth International Conference on Solid Waste Technology and Management
21-24 October 2001
Philadelphia, USA
E-mail: Solid.Waste@widener.edu
Web site:
www.widener.edu/solid.waste

The WasteMINZ 13th Annual 2001 Conference and Trade Exhibition
31 October– 2 November 2001
Hotel Grand Chancellor,
Christchurch, New Zealand
Tel: +64 9 4866722
Fax: +64 9 4863722
E-mail: wasteminz@xtra.co.nz
Web site: www.wasteminz.org.nz

BRE conference on the management of construction and demolition waste
2 November 2001
BRE, Watford, England
Tel: +44 1923 664775
Fax: +44 1923 664790
E-mail: mondaira@bre.co.uk
Web site: www.bre.co.uk/events

Renewable Energy Indonesia 2001
7-10 November 2001
Kemayoran, Indonesia
Tel: +44 20 7862 2090/2000
Fax: +44 20 7862 2098/2001
E-mail: indonesia@montnet.com
Web site: www.montnet.com

Eco-2001 Strategies - Sustainable Development
3-5 December
Paris, France
Tel: +33 1 44 64 15 15
Fax: +33 1 44 64 15 16

Pollutec 2001
4-7 December 2001
Paris-Nord Villepinte, France
Tel: +33 147 56 50 97
Fax: +33 147 56 21 10/20

2001 Pacific Basin Conference on Hazardous Waste
5-7 December 2001
Okayama, Japan
Fax: 632 9271 745
E-mail: pbchw@mozcom.com
Web site: www.pbchw.com.ph

2nd Specialized Conference "Biological Treatment of Waste: A Solution for Tomorrow"
6-7 December 2001
Pollutec Paris/Nord
Villepinte, France
Tel: +33 1 53 70 13 53/55
Fax: +33 1 53 70 13 40
www.aghtm.org

6th Recycla Europe
6-8 December 2001
Frankfurt, Germany
Tel: +49 611 951 6638
Fax: +49 611 951 6623
E-mail: Sylvia.pfeifer@
mfa.messefrankfurt.com

Waste to Energy
11-12 December 2001
Radisson SAS Hotel, Brussels
E-mail: gore@gbnuk.com
Web site: www.gbnuk.com

Conferences 2002

International Electronics Recycling Congress

9-11 January 2002
Davos, Switzerland
Tel: +41 56 664 72 50
Fax: +41 56 664 72 52
E-mail: info@icm.ch

R'02 – Integrated Resources Management

12-15 February 2002
Geneva, Switzerland
Tel: +41 1 982 10 00
Fax: +41 1982 10 01
E-mail: barrage@peak.ch

Chemtex & Corrosion Middle East 2002

12-14 March 2002
Dubai World Trade Center, UAE
Tel: +97 14 343 5777
Fax: +97 14 343 6115
E-mail: iec@emirates.net.ae

International Automobile Recycling Congress

13-15 March 2002
Geneva, Switzerland
Tel: +41 56 664 72 50
Fax: +41 56 664 72 52
E-mail: info@icm.ch

BICA Biannual International Environmental Communication Conference

20-23 March 2002
Venice, Italy
Tel: +39 0532 20 54 55
Tel: +39 0647 86 53 00
E-mail: info@segest.com
E-mail: borzi@federambiente.it
Web site: www.bicaonline.com

IFAT 2002-13th International Trade Fair for environment, waste water & waste disposal: water, sewage, refuse & recycling

13-17 May 2002
Munich, Germany
Tel: +49 89 949 202 60
Fax: +49 89 949 202 59
E-mail: info@messe-muenchen.de

Committee Meeting Schedule 2001 and 2002

Executive & Strategic Planning Committee (ESPC)

24 November 2001
Copenhagen, Denmark
16 February 2002
Vienna, Austria
13 April 2002
Melbourne, Australia
6 July 2002
Istanbul, Turkey
5 October 2002
Copenhagen, Denmark

Finance Committee (FIC)

22 March 2002
Copenhagen, Denmark

Membership & Organisation Committee (MOC)

23 November 2001
Copenhagen, Denmark

Scientific & Technical Committee (STC)

23 November 2001
Copenhagen, Denmark
15 February 2002
Vienna, Austria
12 April 2002
Melbourne, Australia
5 July 2002
Istanbul, Turkey
4 October 2002
Copenhagen, Denmark

Publication Committee (PUC)

23 November 2001
Copenhagen, Denmark

Managing Editors (ME)

7 March 2002
Washington, USA

Editorial Board (EB)

None set

Managing Directors Network (MD)

8-9 March 2002
Washington, USA

Launching

November 2001...

Waste Management World

– a new international magazine to promote and develop professional solid waste management worldwide

COVERING:

- **Biological Waste Treatment**
- **Collection and Transportation**
- **Recycling and Waste Minimization**
- **Sanitary Landfill**
- **Thermal Treatment of Waste**

and more ...

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(Science Publishers) Ltd
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London, NW1 3ER UK

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