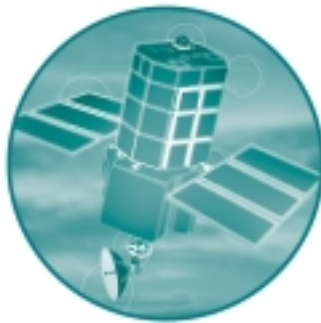


Review of Options for a National Waste



**Research and Development
Technical Report
P254**



ENVIRONMENT AGENCY

Review of Options for a National Waste Exchange

R&D Technical Report P254

D. Luscombe

Research Contractor:
Tebodin UK Ltd

Further copies of this report are available from:
Environment Agency R&D Dissemination Centre, c/o
WRc, Frankland Road, Swindon, Wilts SN5 8YF



tel: 01793-865000 fax: 01793-514562 e-mail: publications@wreplc.co.uk

Publishing Organisation:

Environment Agency
Rio House
Waterside Drive
Aztec West
Bristol
BS32 4UD

Tel: 01454 624400

Fax: 01454 624409

© Environment Agency 2000

ISBN: 1 85705 376 1

CWM: 182/99

All rights reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the Environment Agency.

The views expressed in this document are not necessarily those of the Environment Agency. Its officers, servant or agents accept no liability whatsoever for any loss or damage arising from the interpretation or use of the information or reliance upon views contained herein.

Dissemination status:

Internal: Released to Regions

External: Public Domain

Statement of use:

The findings of these reports will be used to assist in the formulation of the Agency's Policy on Waste Exchanges. The report provides a review of recent and current waste exchanges in the UK and Europe, and is disseminated for information. This report will be of interest to Agency staff involved with waste strategy and waste minimisation, as well as waste management practitioners, Local Authority Planning Departments, and consultants.

Research Contractor:

This document was produced under R&D Project P1-238 by:

Tebodin UK Ltd
29 The Green
West Drayton
Middlesex
UB7 7PN

Environment Agency's Project Manager:

The Environment Agency's Project Manager for R&D Project P1-238 was:
Brian Jones – Southern Region

CONTENTS

	Page
LIST OF TABLES	ii
EXECUTIVE SUMMARY	iii
KEY WORDS	iv
1. INTRODUCTION	1
2. REVIEW OF INFORMATION AND CONSULTATION	3
2.1 Introduction	3
2.2 Waste Exchanges in the UK	3
2.3 The Environment Agency's North American work	5
2.4 Waste exchanges in mainland Europe	6
2.5 UK consultation	8
2.6 Seminar feedback	9
3. WASTE EXCHANGE FORMAT OPTIONS	11
3.1 Introduction	11
3.2 Option one: Minimum	12
3.3 Option two: Maximum	13
3.4 Option three: Workshop	14
3.5 Option four: Workshop plus	15
3.6 Option format summary	16
4. OPTION ASSESSMENT	17
4.1 Introduction	17
4.2 General issues	17
4.3 Option one: Minimum	17
4.4 Option two: Maximum	18
4.5 Option three: Workshop	20
4.6 Option four: Workshop plus	21
5. CONCLUSIONS AND RECOMMENDATIONS	25
5.1 Conclusions	25
5.2 Recommendations	25

APPENDIX 1: Review of waste exchanges in mainland Europe

LIST OF TABLES

Table 1. Minimum option – promotion of waste exchanges	12
Table 2. Maximum option – an active waste exchange	13
Table 3. Workshop option – passive exchange	14
Table 4. Workshop plus option – passive exchange and promotion	15
Table 5. Option format summary	16
Table 6. Summary of pros and cons for minimum	18
Table 7. Summary of pros and cons for maximum	20
Table 8. Summary of pros and cons for workshop	21
Table 9. Summary of pros and cons for workshop plus	23

EXECUTIVE SUMMARY

A review of waste exchanges in the UK and Mainland Europe has been undertaken. In addition, consultation with industry and organisations in the UK, and discussions at the May 1998 waste exchange seminar, has led to the development of options for the development of waste exchange. The following four options for a National Waste Exchange have been defined:

1. *Minimum*: not an operational exchange but active promotion of waste exchange and waste exchanges;
2. *Maximum*: an active exchange which would include the marketing of the exchange, sourcing and linkage of material suppliers and consumers and co-ordination of a range of support services;
3. *Workshop*: formulated on the basis of comments and feedback from the workshop, this option would operate a passive exchange and would actively promote itself; and
4. *Workshop plus*: taking *Workshop* a step further, this option would operate a passive exchange and in addition, would actively promote itself, waste exchange and waste exchanges.

Following detailed description and assessment of the consultation and options, the following conclusions have been made:

- there is support for an exchange;
- there is a need for a co-ordinated approach;
- although support and interest has been expressed, no approaches have been made regarding running an exchange;
- existing exchanges are concerned about the Environment Agency developing an active exchange; any exchange developed should not compromise existing exchanges but aim to assist them;
- the exchange developed should cover its operational costs (and possibly recoup all or part of its set-up costs) through charges;
- the exchange developed should not be limited to reusable materials but should include the exchange recyclable materials;
- there is a need for a body to co-ordinate existing exchanges and to increase the profile of the concept of waste exchange generally;
- provision of a central directory of recyclers, reprocessors, Waste Carriers and advisory services would be a useful additional function of the waste exchange; and
- marketing and promotion is critical.

As a result of these conclusions and consideration of the options the following it is considered that:

- *Minimum* will not provide sufficient awareness raising and development of waste exchange;
- *Maximum*, whilst having a higher potential penetration, presents a high risk and conflicts with existing commercial waste exchanges;
- *Workshop* presents a positive compromise to *Minimum* and *Maximum* by avoiding financial and legal risk and conflict with existing exchanges whilst developing and promoting exchange; and
- *Workshop plus*, (like *Workshop*) presents a positive compromise to *Minimum* and *Maximum* by avoiding risk and conflict and developing and promoting waste exchanges; in addition, the option promotes the development of existing and new waste exchanges.

It is recommended that either *Workshop* or *Workshop plus* are considered for detailed design and budget costing and an implementation plan is formulated for the selected option. It is also recommended that the option is developed not as a stand alone project but within the context of a suite of integrated initiatives regarding issues such as waste minimisation and pollution prevention.

KEYWORDS

Waste exchange; waste exchanges; waste minimisation; recycling.

1. INTRODUCTION

This report presents a review of options for the development of a National Waste Exchange. This work has been carried out as part of the Environment Agency R&D Project P1-238 'Waste reduction and re-use programme – feasibility of a National Waste Exchange'.

The report presents:

- a review of information and consultation;
- descriptions of waste exchange format options; and
- assessment of the options.

This review has drawn on work undertaken by the Environment Agency in North America, consultation with over 50 organisations in the UK, a review of waste exchanges in the UK and mainland Europe and information and feedback from the National Waste Exchange Seminar held in May 1998. The UK consultation, UK and mainland Europe review and seminar formed parts of this project.

2. REVIEW OF INFORMATION AND CONSULTATION

2.1 Introduction

The following sections provide a summary of information and consultation considered in the definition and assessment of the options for a waste exchange. The information includes work undertaken by the Environment Agency in North America and information from three aspects of this project, a review of mainland Europe waste exchanges, consultation of UK organisations and feedback from the May 1998 seminar.

2.2 Waste Exchanges in the UK

Summaries of existing and discontinued waste exchanges in the UK is provided below. The summaries are constructed from interviews with waste exchange operators and available reports.

2.2.1 Existing exchanges

BRE Exchange

The Building Research Establishment (BRE) set up an exchange funded by the Department of the Environment, Transport and the Regions; subsequent funding is to be established through an Environmental Body. The exchange was launched at the Interbuild exhibition in November 1997 and has subsequently been promoted at appropriate events and with various organisations. The exchange is a free, passive system using a website and fax-back service for posting and retrieving information on wastes. Wastes are split into four categories on the website (secondary materials, unutilised primary materials, materials wanted and forthcoming materials). Search engines are available to interrogate the databases. Monitoring is to be undertaken in 1998 to gauge success.

Green-base Exchange

The Green-base Exchange was established in 1989 to provide an on-line exchange and information service using a Bulletin Board System. The service is no longer operational however, Green-base Exchange is currently in the process of trying to raise finance and restructure the service to utilise the internet. Green-base Exchange hopes to provide an on-line waste exchange, information service, links to government web sites and other waste exchanges in the service.

National Network for Material Exchange

The National Network for Material Exchange (NNME) is currently being established in the Lothian area. The NNME will operate on a membership basis with various fees relating to different levels of service (e.g. advice, auditing, waste exchange, environmental management). The NNME will provide information and briefings together with the waste exchange service. The NNME is first targeting industry sectors rather than broad cross-sections although realises that exchanges may be across sectors. The NNME hopes to develop a series of local initiatives which link nationally.

The Point

The Point is operated by the Industrial Research & Technology Unit (IRTU) in Northern Ireland. The exchange was established in 1993. The Point is a free magazine which provides information on waste minimisation and management and integrates a list of wastes available for exchange which is updated annually. Persons interested in any wastes listed contact The Point and information regarding the waste generator is provided. The Point has no contact with either party following the provision of information.

Waste Exchange Services

Waste Exchange Services (WES) is probably the most widely known commercial waste exchange in the UK. WES uses an internal computer database which currently has approximately 6,000 companies registered as either potential waste generators or customers. Approximately 3,000 wastes are registered. A catalogue is distributed free of charge twice a year to companies on the database. WES is approached with 30-60 new wastes per month. Details of wastes are printed out and forwarded to interested parties. Two specialists spend a considerable amount of time visiting waste generators and potential customers. Typically, samples are requested and trials are carried out prior to exchanges being agreed. Charges are made to the waste generator on a commission basis and vary depending on whether the exchange is a one-off or long term.

Other exchanges

Other exchanges have come to light during the latter stages of the project including the Surrey County Council Waste Exchange Scheme (now effectively non-operational), the West Oxfordshire District Council exchange (under discussion to establish) and the South London Waste Exchange (small scale local exchange). These have not been investigated in detail.

2.2.2 Discontinued exchanges

Berkshire Waste Exchange

The Berkshire Waste Exchange was established in August 1997 by Babbie as part of Berkshire's waste management strategy. The exchange was free to use and incorporated a website with wastes posted either directly or by fax. The exchange is no longer operational due to a combination of a lack of momentum, uncertainty regarding funding, insufficient promotion and lack of interest from industry.

UK Waste Materials Exchange

The UK Waste Materials Exchange was operational 1974-1979 and was managed by Warren Spring Laboratory. The exchange received approximately £180,000 of funding over five years from the Department for Trade and Industry but was discontinued following withdrawal of the funding. It is estimated that staff and support services accounted for 70 % of costs, advertising and promotion 16 %, bulletin printing and distribution 11 % and other costs 3 %. The exchange received over 24,000 enquires in respect of 85 % of the 2,800 items listed; successful exchanges were made for 20 % of these items. The exchange issued bulletins which listed wastes available; items were deleted following one year of advertising.

West Midlands Waste Exchange

The West Midland Waste Exchange (WMWE) was operated by the West Midland County Council between 1975-1985. The exchange arose out of a realisation that certain wastes were reusable. No charge was made for linking up waste generators and customers. Information

was typically collected through inspections during which inspectors would highlight opportunities for waste exchange and a list of wastes available for exchange was published. The exchange was operated as and when staff had available time; as resources became more pressed, the service was gradually discontinued.

2.3 The Environment Agency's North American work

The following key points should be noted from the Environment Agency's report 'Materials exchanges: report on the need for further feasibility studies following visits to US exchanges in October 1996' (draft document, 31st January 1997, Avis Greenwell).

General:

- the United States Environmental Protection Agency (USEPA) has found material exchanges a valuable service which can benefit state and local economies;
- the evidence regarding the effectiveness of exchanges in the US is impressive but not completely rigorous. The USEPA has not checked the success claimed by exchanges; and
- exchanges appear to be more effective where no existing market is established.

National co-ordinating bodies:

- whilst the USEPA has been in favour of a national co-ordinating body to support the local work of state exchanges, the development of a national network has not been successful due to poor technology, the large variety of systems used, limited benefits to systems set up to assist locally and suspicion of a national commercial network;
- there would appear to be potential for a national co-ordinating body in the UK, helping with the formation of other exchanges and sharing information and technology with them and interested parties;
- one of the key roles of a national organisation in the UK would be to encourage and assist the development of exchanges; and
- since there are fewer exchanges in the UK, it should be easier to support a national facility on the internet which could assist other exchanges by providing information, marketing and provision of common databases etc..

Services and economics:

- many exchanges provide services other than waste exchange (e.g. advice, consultancy, telephone hotlines, recycling services, waste haulage, broker contacts);
- both profit and non-profit exchanges operate in North America;
- it is suggested that commercial exchanges do not make money out of waste exchange but the ancillary services provided; and
- many exchanges have closed due to lack of funds.

Summary of the reports' conclusions:

- it is unclear whether it would be disadvantageous for the Environment Agency to operate an exchange. It is suggested that an Environment Agency-industry exchange is piloted;
- a variety of media are suggested for the format including internet, fax and catalogue. A purely internet based system may present problems of access;
- monitoring of the success of exchanges is vital. It is essential that funds and staff resource allow for effective monitoring;

- it is important to undertake marketing; and
- the exchange should form alliances and/or partnerships to provide publicity.

The following key points should be noted from the Energy and Technology Support Unit's report 'Notes from the North American Materials Exchange Managers Workshop held in Nashville, Tennessee, October 1996' (9th January 1997, Stephen Burnley).

General:

- the most successful exchanges are those which receive public sector funding;
- exchanges do not usually become involved in financial transactions between suppliers and users but some exchanges expect payment for each match made;
- exchanges run by state authorities can lead to acceptance problems due to close links with regulatory functions;
- securing industrial funding is difficult and charging for the service can reduce its effectiveness hence financial support from the public sector is important; and
- the National Industrial Waste Database currently being developed by the Environment Agency should be utilised to provide information regarding the waste generation rates and waste profiles of industrial sectors.

Summary of the report's recommends:

- a waste exchange should be established that is active;
- the exchange should receive strong support from the Environment Agency;
- the exchange should be fully funded by the public sector; and
- an exchange should have access to the National Industrial Waste Database.

2.4 Waste exchanges in mainland Europe

The key observations from the review of waste exchanges in mainland Europe are noted below. Full details of the exchanges are provided in Appendix 1.

General:

- waste exchanges have been in operation within Europe since the 1970s and have experienced a varying degree of success;
- only La Bourse des Dechets Industriels d'île de France operates an 'active' exchange, Reststoffbeurs was initially an active exchange but now operates a 'passive' system. Reststoffbeurs the could not comment whether it is necessary to be active prior to being a successful passive exchange to be successful;
- the majority of exchanges, which also tend to be the older exchanges, are non-profit making. Only two exchanges, Euwid Recyclingbörse and Reststoffbeurs, are commercial enterprises;
- the various waste exchanges in France, including La Bourse des Dechets Industriels d'île de France, are currently examining how they can integrate their operations;
- the majority of exchanges operate both nationally and internationally, only the Camara de Comercio de Valencia operates on just a national basis; and
- Reststoffbeurs and Euwid Recyclingbörse are generally regarded as more successful and pro-active but without monitoring the quantities of waste exchanged, this can not be substantiated.

User information:

- all but the Reststoffenbeurs, which excludes demolition, hospital and radioactive waste, deal with all industry sectors and wastes.

Information requirements and liaison:

- all exchanges operate as third party mediators, with a preference for the suppliers and customers to remain anonymous. Only Belgische Afvalbeurs and Reststoffenbeurs will provide, on request and approval, supplier and customer details;
- information required from both suppliers and customers regarding wastes include composition, amount, frequency, location, packaging, company name, address, waste classification, physical form, contamination and analysis report;
- information collection is through the internet and mailing; and
- only Euwid Recyclingbörse asks the supplier which search area they require.

Transportation and storage:

- none of the exchanges become involved in transportation or storage of wastes.

Marketing:

- the internet, specialist magazines and trade fairs are the main medium used to promote the exchanges; and
- promotion via the internet was stated by La Bourse des Dechets Industriels d'île de France to result in a 40% increase in contacts.

Catalogues and information technology:

- all exchanges store supplier and customer data electronically; and
- only Reststoffenbeurs relies solely on the internet to gather and publish waste data, all the other exchanges also use a publication and it is only Belgische Afvalbeurs that is yet to use the internet.

Monitoring

- monitoring of both the success of the exchanges and resource use has been limited or non-existent for all of the exchanges;
- the Camara de Comercio de Valencia suggests the lack of monitoring causes the exchanges main problems and is an inherent problem of a passive system; and
- Reststoffenbeurs had initially conducted some monitoring on success but have since regarded it as too costly.

Resources:

- details on resource use is limited although both Belgische Afvalbeurs and Reststoffenbeurs utilise two personnel and La Bourse des Dechets Industriels d'île de France utilise one but requires more.

Legal issues:

- none of the exchanges experience any legal issues, however the Camara de Comercio de Valencia does state all waste related activities must meet relevant criteria and licensing requirements.

Financial incentives, grants, etc.:

- both of the commercial waste exchanges, Euwid Recyclingbörse and Reststoffenbeurs, are self financing; and
- the non-profit exchanges receive government or Chamber of Commerce funding.

Charging systems

- a variety of charging systems are used including charges for obtaining addresses of waste suppliers, annual and monthly advertisement rates and customer registration.

2.5 UK consultation

Over fifty organisations were consulted in the UK drawn from a mixture of waste exchange operators, trade associations, waste management companies, manufacturing and construction industry, the Environment Agency and local and national government. The key points from the consultation exercise are indicated below.

Involvement and support:

- there was strong support for a waste exchange;
- certain reservations/conditions were highlighted (see below);
- linkage/promotion of existing exchanges was suggested;
- the waste exchange could be an opportunity to provide other integrated services; and
- there is opportunity to work within existing structures.

Commonly mentioned barriers:

- not all of the target audience will have access to an electronic format;
- quality, consistency and continuity of wastes;
- waste must be competitive with raw materials;
- current legislation is perceived as constraining;
- example contracts need to be supplied;
- generally, there is not a culture of viewing waste as a resource; and
- awareness of the possibilities to use waste is low.

Format:

- preference for the format (active versus passive) was unclear;
- a number of features were suggested (internet with fax back-up, hyperlinks between web sites, quick search facilities, clear classification of wastes, industries, quality etc.); and
- linkage with the Environmental Technology Best Practice Programme (ETBPP).

Transportation and storage:

- the exchange should have no involvement in transportation and storage;
- information and advice regarding legal responsibilities would be useful; and
- there is an opportunity to provide advertising space for services providers.

Marketing and publicity:

- marketing and publicity is seen as a key issue for success or failure; and
- routes suggested included journals, mailings, conferences, using Business Links, bingo cards, trade associations, the Business Environment Association, ETBPP, recycling guides.

Geographical coverage:

- national;
- local focus would be useful; and
- local exchanges should be encouraged.

Ownership:

- a number of preferences were expressed regarding ownership including public, private, public then private, joint public/private, Environment Agency, not Environment Agency, trade association and waste management industry.

Funding and charging:

- a number of preferences were expressed regarding funding sources including Environment Agency, Department of Industry, Department of Environment, Transport and Regions and private sector; and
- various mechanisms and combinations for charging were suggested.

2.6 Seminar feedback

The seminar held on 19th May 1998 included syndicate sessions in which a range of issues were discussed the key points of which are noted below. The points listed are not agreed recommendations from the seminar and represent a wide and often conflicting range of views. A full list of delegates and notes from the seminar are included in the document 'Proceedings of the National Waste Exchange Seminar' (Tebodin, May 1998).

General:

- the term 'waste exchange' is a barrier;
- the lack of a market is a barrier;
- the aims and targets of a national waste exchange, or any waste exchange, need to be established and measurable;
- the greatest demand from industry is to get rid of waste, there is little demand to re-use it;
- a national waste exchange would need to address the issue of 'closing the loop'. To do this it would need to focus on education to raise awareness and improve the image of using secondary materials; and
- ensure the exchange does not compromise commercial waste exchanges but assists them.

Need and development:

- there is a need for a national source of information;
- there is a need for a national waste exchange, to act as an 'umbrella', to assist with standardisation, facilitate access to information, assist with cross industry waste exchanges and generally promote waste exchange activities;
- there is a need for co-ordinate existing waste exchanges, notably activities and databases;
- there is a need for a body to promote and develop waste exchanges such as a National Association of Material Exchanges (NAMES);
- a broad spectrum of activities including exchange, recycling and recovery should be covered; and
- a national waste exchange would have to be passive.

Environment Agency's role:

- the Environment Agency to provide the information system and the private sector the brokerage, transportation and exchange services;
- facilitate the creation of demand - through information and education;
- develop waste materials specifications; and
- promotion of waste exchanges and links between existing exchanges.

Funding and charging:

- public and private funding (e.g., grants and landfill tax) is required;
- a simple flat rate charge should be used;
- market research of industries is required before any funding or charging system is suggested or decided upon; and
- continuous funding could include company subscriptions, industry partnerships and funding or advertising.

Key materials:

- those for which no markets currently exist;
- waste which is obviously commercial;
- 'problem' wastes;
- waste of large volumes, e.g., construction/agriculture; and
- not restricted to re-use, i.e., recyclable wastes also.

Other services to be included:

- directory of recyclers and reprocessors;
- directory of licensed waste carriers; and
- signpost to other advisory services.

Format for access:

- internet and fax.

Where to focus efforts:

- initiating markets for high value waste materials;
- classification systems needs to be standardised and integrated with existing UK/EU systems;
- providing a central register for materials available; and
- using the Environment Agency's National Industrial Waste Database to provide additional information.

Marketing:

- need to use marketing professionals to 're-package' waste with a better image. The image of recycling is good but the image of re-use is bad;
- marketing should be co-ordinated centrally, possibly launch a brand name;
- accurate descriptions of waste would increase the possibilities of re-using waste;
- an exchange could be successfully promoted and developed through several relevant organisations (particularly ETBPP, NAMES, Environment Agency, Institute of Waste Management and Environmental Services Association)

3. WASTE EXCHANGE FORMAT OPTIONS

3.1 Introduction

This section presents the formats of four proposed waste exchange options. The options were formulated by the Environment Agency and Tebodin following consideration of comments from the consultation exercise, research undertaken and views expressed at the May 1998 seminar. The options may be summarised as:

1. *Minimum*: not an operational exchange but active promotion of waste exchange and waste exchanges;
2. *Maximum*: an active exchange which would include the marketing of the exchange, sourcing and linkage of material suppliers and consumers and co-ordination of a range of support services;
3. *Workshop*: formulated on the basis of comments and feedback from the workshop, this option would operate a passive exchange and would actively promote itself; and
4. *Workshop plus*: taking *Workshop* a step further, this option would operate a passive exchange and in addition, would actively promote itself, waste exchange and exchanges.

3.2 Option one: Minimum

Option one, *Minimum*, would not operate an exchange but would act to actively promote waste exchange and waste exchanges. The format of *Minimum* is summarised in Table 1.

Table 1. Minimum option – promotion of waste exchanges

Aspect	Description
Geographical area covered	National coverage.
Industrial sectors covered	All.
Wastes and materials covered	All.
Type of exchange	Not applicable. The exchange would not actively participate in the exchange of materials but would act as a vehicle for promotion of exchange and exchanges.
Format	The exchange would concentrate on promotional material through a website, the Environment Agency's 'Ecofax' service and marketing literature.
Charging system	Not applicable. Information would be freely available.
Marketing style	Active links with existing commercial and not-for-profit exchanges would be formed. Assistance with the development of the exchanges through awareness raising and integration with other Environment Agency campaigns (e.g., the 3 Es and Making Waste Work) and through links with relevant organisations such as the ETBPP and the ESA.
Ownership	Environment Agency owned and co-ordinated.
Funding source/s	Primarily Environment Agency but with possible support for set up costs from the Department of Environment, Transport and the Regions (DETR).
Additional functions and services	None.
Monitoring	Monitoring of awareness of industry of waste exchange would be integrated into other areas of Environment Agency market research. Monitoring of waste exchange needs and their development.
Other issues	Encourage operational exchanges in establishing a national representative body for waste exchanges, the National Association for Materials Exchanges (NAMES).

3.3 Option two: Maximum

Option two, *Maximum*, would operate a fully fledged, active exchange and in addition, would actively promote waste exchange. The format of *Maximum* is summarised in Table 2.

Table 2. Maximum option – an active waste exchange

Aspect	Description
Geographical area covered	National coverage.
Industrial sectors covered	All.
Wastes and materials covered	All.
Type of exchange	The exchange would be a highly active exchange employing a team (>5) of full-time staff. The exchange's activities would include the marketing of the exchange, sourcing and linking of material suppliers and consumers, co-ordination of necessary analysis and trials, contract negotiation and promotion of the exchange.
Format	The exchange would combine a website, fax-back service, materials catalogue and people on the ground to source and exchange materials.
Charging system	Charges would be made for the service. Charges will need to aim to cover the costs of the ongoing operation of the exchange. The format of the charging system has not been finalised.
Marketing style	The marketing and promotion of the exchange would be extensive and intensive; it is anticipated that it would include literature, national and local launches, involvement in industry seminars and/or meetings, advertisement and other appropriate marketing techniques. Assistance with the development of the exchange through awareness raising and integration with Environment Agency campaigns (e.g., the 3 Es and Making Waste Work) and through links with relevant organisations such as the ETBPP and the ESA would be encouraged.
Ownership	Environment Agency owned and co-ordinated.
Funding source/s	Primarily Environment Agency but with possible support for set up costs from the DETR. Sponsorship and/or advertising from industry and trade associations would be sought.
Additional functions and services	Linkage with other relevant sections of the Environment Agency (e.g., Campaigns and Special Projects) to enable issues such as waste minimisation and pollution prevention to be promoted and increase the penetration of the exchange's exposure.
Monitoring	Monitoring of the effect of marketing on the awareness of industry. Monitoring of exchange success based on parameters such as volume, mass and value exchanged, repeat/long-term exchanges, problems, market opportunities and industry penetration (both vertical within industry sectors and lateral across industry sectors).
Other issues	Establish and assist in running a national representative body for waste exchanges, NAMES.

3.4 Option three: Workshop

Option three, *Workshop*, would operate a passive exchange and would actively promote waste exchange. The format of *Workshop* is summarised in Table 3.

Table 3. Workshop option – passive exchange

Aspect	Description
Geographical area covered	National coverage
Industrial sectors covered	All
Wastes and materials covered	All
Type of exchange	The exchange would be a passive exchange employing a small team (1-2) of full-time staff. The exchange would concentrate on developing a central and national database on materials available and wanted for exchange including both reusable and recyclable materials. The exchange would be accessible to all and would be supported by marketing and promotion.
Format	The exchange would combine a website, fax-back and a summary materials catalogue for the posting and sourcing of waste through the exchange.
Charging system	Charges would be made for posting and/or obtaining information from the exchange. Charges would be nominal and aim to cover the costs of the ongoing operation of the exchange. The format of the charging system has not been finalised.
Marketing style	The marketing and promotion of the exchange would include literature, involvement in industry seminars and/or meetings, advertisement and other appropriate marketing techniques. Marketing of the exchange to waste brokers and materials reprocessors would be included. Assistance with the development of the exchange through awareness raising and integration with other Environment Agency campaigns (e.g., the 3 Es and Making Waste Work) and through links with relevant organisations such as the ETBPP and the ESA would be encouraged.
Ownership	Environment Agency owned and co-ordinated.
Funding source/s	Primarily Environment Agency but with possible support for set up costs from the DETR. Sponsorship and/or advertising from industry and trade associations would be sought.
Additional functions and services	Linkage with other relevant sections of the Environment Agency (e.g., Campaigns and Special Projects) to enable issues such as waste minimisation and pollution prevention to be promoted and increase the penetration of the exchange's exposure. Provision of information regarding relevant legislation effecting exchanges and regarding organisations such as the ETBPP and environment business clubs.
Monitoring	Monitoring of the effect of marketing on the awareness of industry. Monitoring of the success of exchange through the system based on parameters such as volume, mass and value exchanged, repeat/long-term exchanges, problems, market opportunities and industry penetration (both vertical within industry sectors and lateral across industry sectors).
Other issues	Establish and assist in running a national representative body for waste exchanges, NAMES.

3.5 Option four: Workshop plus

Option four, *Workshop plus*, would operate a passive exchange and in addition, would actively promote waste exchange and exchanges. The format of *Workshop plus* is summarised in Table 4.

Table 4. Workshop plus option – passive exchange and promotion

Aspect	Description
Geographical area covered	National coverage.
Industrial sectors covered	All.
Wastes and materials covered	All.
Type of exchange	The exchange would be a passive exchange employing a small team (1-2) of full-time staff. The exchange would concentrate on developing a central and national database on materials available and wanted for exchange including both reusable and recyclable materials. The exchange would be accessible to all and would be supported by marketing and promotion.
Format	The exchange would combine a website, fax-back and a summary materials catalogue for the posting and sourcing of waste through the exchange.
Charging system	Charges would be made for posting and/or obtaining information from the exchange. Charges would be nominal and aim to cover the costs of the ongoing operation of the exchange. The format of the charging system has not been finalised.
Marketing style	The marketing and promotion of the exchange <u>and</u> operational waste exchanges would be extensive and intensive; it is anticipated that it would include literature, national and local launches, involvement in industry seminars and/or meetings, advertisement and other appropriate marketing techniques. Marketing to waste brokers and materials reprocessors would be included. Assistance with the development of the exchange and exchanges through awareness raising and integration with other Environment Agency campaigns (e.g., the 3 Es and Making Waste Work) and through links with relevant organisations such as the ETBPP and the ESA would be encouraged.
Ownership	Environment Agency owned and co-ordinated.
Funding source/s	Primarily Environment Agency but with possible support for set up costs from the DETR. Sponsorship and/or advertising from waste exchanges, industry and trade associations would be sought.
Additional functions and services	Linkage with other relevant sections of the Environment Agency (e.g., Campaigns and Special Projects) to enable issues such as waste minimisation and pollution prevention to be promoted and increase the penetration of the exchange's exposure. Linkage to operational exchanges through website hyperlinks. Provision of information regarding relevant organisations such as the ETBPP and environment business clubs.
Monitoring	Monitoring of the effect of marketing on the awareness of industry. Monitoring of the success of exchange through the system and through operational exchanges based on parameters such as volume, mass and value exchanged, repeat/long-term exchanges, problems, market opportunities and industry penetration (both vertical within industry sectors and lateral across industry sectors).
Other issues	Establish and assist in running a national representative body for waste exchanges, NAMES.

3.6 Option format summary

Table 5. Option format summary

Aspect	Option 1 : Minimal	Option 2 : Maximum	Option 3 : Workshop	Option 4 : Workshop plus
Geographical area covered	National.	National.	National.	National.
Industrial sectors covered	All.	All.	All.	All.
Wastes and materials covered	All.	All.	All.	All.
Type of exchange	Not applicable. The exchange would not exchange materials.	Active. Sourcing/linking suppliers and consumers. Support services.	Passive. Central, national database of materials available for reuse/recycling.	Passive. Central, national database of materials available for reuse/recycling.
Format	Website, the Environment Agency's 'Ecofax' and marketing literature.	Website, fax-back service, materials catalogue and staff on the ground.	Website, fax-back services and a summary materials catalogue.	Website, fax-back services and a summary materials catalogue.
Charging system	Not applicable. Free information.	Yes. Charges will aim to cover costs.	Yes. Charges will aim to cover the costs.	Yes. Charges will aim to cover the costs.
Marketing style	Linkage of existing exchanges. Development of existing exchanges.	Literature, events, advertising etc.. Links with EA campaigns and relevant organisations.	Literature, events, advertising etc.. Marketing to waste brokers and materials reprocessors. Links with EA campaigns.	Marketing of the exchange <u>and</u> other exchanges. Literature, events advertising, etc.. Marketing to waste brokers and materials reprocessors. Links with EA campaigns and support organisations.
Ownership	Environment Agency.	Environment Agency.	Environment Agency.	Environment Agency.
Funding source/s	EA (possible DETR support).	EA (possible DETR support). Sponsorship.	EA (possible DETR support). Sponsorship and advertising.	EA (possible DETR support). Sponsorship and advertising.
Additional functions and services	None.	Links with relevant sections of the EA.	Links with relevant sections of the EA and operational exchanges. Provision of general information.	Links with other sections of the EA and operational exchanges. Provision of general information.
Monitoring	Awareness and the needs of exchanges.	Awareness and the needs of exchanges.	Awareness and the needs of exchanges.	Awareness and the needs of exchanges.
Other issues	Establish and assist in running NAMES.	Establish and assist in running NAMES.	Establish and assist in running NAMES.	Establish and assist in running NAMES.

4. OPTION ASSESSMENT

4.1 Introduction

This section aims to provide an assessment of general issues relating to the establishment of a waste exchange and the options set out in Section 3. As a result of this assessment and comments made from consultees, a pilot waste exchange may be selected for budget costing and detailed design.

4.2 General issues

Methods of funding both the start-up costs and operational costs of all options are variable. Landfill tax funds were mentioned frequently during consultation. Whilst no organisations have expressed a clear commitment to providing landfill tax funds for an exchange, the possibility of sourcing funds has been suggested by Environmental Bodies who may be interested in jointly operating an exchange. At this stage, it is not possible to pursue this further until the preferred option has been selected and its detail defined. Further sources of funds such as advertising in the exchanges' formats (i.e., on the website and in catalogues) and sponsorship may also be pursued. The sourcing of funding should follow the definition and costing of a pilot; this will enable potential fund holders to be presented with a clearly defined product and for the Environment Agency to establish the level of funding required for start-up and operation.

Advice regarding legal issues and liabilities relevant to the exchange will need to be sought following selection of the pilot. Together with issues such as the requirement to become a registered Waste Broker and issues surrounding Duty of Care and the Special Waste Regulations, advice regarding any necessary disclaimers and conditions of use relating to the exchange will need to be sought. The legal issues and potential liabilities will vary between the options.

A combination of formats is included for each of the options to facilitate comprehensive access to each. By using combinations of website, fax-back, catalogue and people on the ground for the options, issues relating to available and preferred methods of access by users should be overcome.

4.3 Option one: Minimum

Although having national coverage, it will be desirable for marketing literature to be targeted at regions with a greater density of manufacturing industry for *Minimum*. The broader national, industry sector and company size coverage would be facilitated by the website and Ecofax service. As with geographical coverage, targeting of marketing literature should be undertaken to appropriate generators and potential users of waste. No direction would be provided regarding the type of waste and materials to be exchanged although examples could be made available of successful exchanges.

Since *Minimum* does not either provide data on material available or sought, it is likely to have a significant impact only on those businesses or individuals who are already aware of the possibility of materials re-use and recycling. The literature, website and Ecofax formats would be simple and quick to set up. The website and Ecofax formats should be quickly tagged on to the existing services.

By piggy-backing on to existing and suitable new Environment Agency campaigns and services, costs of marketing will be kept low. Forming links with other suitable organisations could increase penetration, by creating a multi-pronged approach. Although the Environment Agency may initially own *Minimum*, it may be possible to broaden ownership to organisations such as the ETBPP. The ETBPP are uniquely placed to jointly produce suitable guides and consequently, promote waste exchange as part of its programme of work. Alliances and possible joint ownership of the option with the ETBPP would be useful.

Funding from the Environment Agency would not need to be substantial since *Minimum* is low cost. Contributions towards costs from aligned organisations would need to be sought. Monitoring would not need to be extensive and monitoring costs would be low relative to other options. The assistance provided to NAMES would be in kind - providing encouragement, promotion and support.

Table 6 provides a summary of key pros and cons for *Minimum*.

Table 6. Summary of pros and cons for *Minimum*

Pros	Cons
<p>Simple to set up and operate.</p> <p>Low cost.</p> <p>Limited staffing requirements.</p> <p>Links with other organisations may avoid duplication and may enable existing and complementary initiatives to extend their scope.</p> <p>Monitoring costs would be low.</p> <p>Low financial and legal risk.</p>	<p>Lowest potential for penetration and awareness raising.</p> <p>Little control over marketing direction.</p> <p>No data collected.</p> <p>Links with other organisations would be essential for success.</p>

4.4 Option two: Maximum

For *Maximum*, it will be necessary to concentrate activities of the exchange within and between regions with a greater density of manufacturing industry. Whilst operating nationally, it may be necessary to operate within a regional context to encourage local rather than long haul exchanges. Coverage of all industrial sectors, whilst leading to increased possibilities of exchange, will also need to be balanced against results achieved for effort expended. A degree of targeting of industries will inevitably be required for both material generators and users. As with the industrial sectors covered, a balance will need to be struck between results and effort expended. It may be necessary to define whether *Maximum* should target certain waste types

(e.g. high volume wastes or high value wastes).

The staff required for *Maximum* would need to have considerable experience of a wide range of industries, waste management, industrial processes and manufacturing; in addition, they will need good commercial sense (both economic and contractual) and excellent communication skills. The facilitation of exchange may require investment and expenditure on material analysis and trials prior to successful negotiation of exchange.

Maximum, will be intensive in terms of both personnel and finance. A clear commitment for at least five years would be necessary to enable the necessary contacts, skills, information, systems and expertise to be established. It would, in effect, be establishing a business (with the aim of covering costs). The website would act as a promotional instrument. The fax-back service and directory would provide the means to record material availability and requests.

Charges will be necessary for successful exchanges. Details of the charging systems are not defined here. Systems will be defined if proceeded to the pilot stage. It is not considered that *Maximum* should be free but should raise sufficient funds to cover costs within 2 years of operation. The Environment Agency's campaigns and services will be used as a spring board to market *Maximum*. *Maximum's* profile will need to be high both within and outside the Environment Agency. If the exchange is jointly owned, a suitable joint marketing strategy will need to be defined.

It is considered that the Environment Agency will have to take the initiative to develop the exchange but it may be possible to bring other organisations onboard from the outset or soon after start-up. It is not possible to define the legal or financial arrangements between partners at this stage. If the ownership is wholly or partly by the Environment Agency, it is considered that the exchange should aim to cover its costs only with any surplus being directed back into the exchange's cost centre. It is anticipated that *Maximum* will require the most intensive set-up funds of the options. A considerable amount of work will be required in the sourcing and securing of funds both from within and outside the Environment Agency.

Linkage to other Environment Agency campaigns and initiatives will provide opportunity for promotion and service development. Monitoring will need to be extensive to enable proper assessment of the economic and environmental benefits of the waste exchange. This will be needed for marketing and business development together with providing information for the securing of support funds if necessary. Monitoring of the effect of waste exchange is notoriously difficult and will require careful consideration and clear commitment.

The role of *Maximum* in the development of NAMES would include an active role in seeking to promote, through NAMES, the awareness of waste exchange.

Table 7 (over page) provides a summary of key pros and cons for *Maximum*.

Table 7. Summary of pros and cons for *Maximum*

Pros	Cons
<p>High potential penetration.</p> <p>Potential for high amount of materials exchanged.</p> <p>Development of data and skill base within the Environment Agency.</p>	<p>Would be in competition with existing private sector exchanges. This may create tension.</p> <p>High set-up and operational costs.</p> <p>Potential complex legal issues.</p> <p>Long lead in time for establishment.</p> <p>Establishing client base and charging system will take time.</p>

4.5 Option three: Workshop

Although *Workshop* is passive and coverage is national, it will be possible to encourage and market the exchange in certain geographical locations depending perceived opportunities and need. As with other exchanges, broad coverage of all industrial sectors, whilst leading to increased possibilities of exchange, will also need to be balanced against results achieved for effort expended. A degree of targeting of industries will be required. Through marketing initiatives, the targeting or promotion of exchange of certain waste types will be possible.

The number of staff required to operate *Workshop* will be low. The staff need not be as technically experienced or possess the level of business and communication skills required for *Maximum*. Key staff qualities for *Workshop* will be a knowledge of a wide range of industries and data management and software skills. Since *Workshop* will be a provider of information only, aspects such as material analysis and trials of waste use will not be necessary. By extending the scope of wastes covered, the opportunity to make recyclable wastes available for reprocessing will be presented. This may provide new sources of material for reprocessors particularly on a local level which may assist in the minimisation of transport requirements

Workshop will aim to be inclusive by encouraging both exchange between companies and providing information for existing exchanges and brokers. The aim will be to maximise the exchange of materials by all parties, including that by existing exchanges. Direct posting and retrieval of waste data to and from a website will be backed up by a fax-back service and a summary catalogue issued a number of times through the year; this combination of formats will enable the inclusive nature of *Workshop* to be maintained.

Charges will aim to cover the costs of running *Workshop*. The charging system will need to be simple, such as paying to advertise and/or obtain information from the database. The level of charging will need to be such that it is not a disincentive to use the exchange. Experiments with charging fees and promotions will need to be carried out. It is considered that *Workshop* should raise sufficient funds to cover costs within 2 years of operation. The Environment Agency's campaigns and services will be used as a spring board to market the exchange. *Workshop's* profile will need to be high both within and outside the Environment Agency.

It is considered that *Workshop* should be owned and operated by the Environment Agency. Sponsorship will be sought to generate funds to set up the exchange and to create awareness of the exchange. It is considered that any financial surplus should be directed back into the exchange's cost centre and assessment of the charging system is made to ensure that charges are maintained at the minimum possible. *Workshop* will require set up funds for the database, website, catalogue and fax-back systems; thereafter funds will be necessary for marketing and format updating, the first of which is anticipated to be the most significant.

As with other the options, the opportunity for linkage to other Environment Agency campaigns and initiatives will provide opportunity for promotion and service development. *Workshop* will aim to become an integral part of the Environment Agency's services. Monitoring of the effect of the exchange will be difficult due to its passive nature. It will be useful to combine the monitoring of successful waste exchanges with the monitoring of industry and waste broker awareness of the exchange.

As with *Maximum*, the role of *Workshop* in the development of NAMES would include an active role in seeking to promote the awareness of waste exchange and factors that would assist other exchanges to develop successfully. Table 8 provides a summary of key pros and cons for *Workshop*.

Table 8. Summary of pros and cons for *Workshop*

Pros	Cons
<p>High potential penetration through wide availability of data.</p> <p>Moderate set-up and operational costs.</p> <p>Short set-up timescale.</p> <p>Development of database on wastes within the Environment Agency.</p> <p>Although in competition with other exchanges, it will also assist private exchanges in sourcing customers and suppliers.</p> <p>Low financial and legal risk.</p>	<p>Relies on successful marketing and promotion.</p> <p>Difficult to gauge success of exchange.</p> <p>Penetration and success is reliant on self-motivated industry participation.</p> <p>Monitoring of success will be difficult.</p>

4.6 Option four: *Workshop plus*

The pros and cons of *Workshop plus* are essentially the same as those for *Workshop*. The principal differences between the two options is that *Workshop plus* will aim to actively promote existing and future operational exchanges to industry and reprocessors alongside the development of the exchange itself. The same opportunities to target marketing of the exchange at certain geographical areas, industry sectors and waste types will exist; it is anticipated that this would be undertaken in consultation with and with the support of existing and new exchanges.

The number and type of staff required to operate *Workshop plus* will be the same as that for *Workshop* although the roles will be slightly different due to the additional responsibility of integrating and supporting other exchanges. Key staff qualities for *Workshop plus* will be a knowledge of a wide range of industries, data management and software skills and an ability the necessary communication skills to co-ordinate and assist in the development of other exchanges. Material analysis and trials of waste use will not be necessary although best practice would developed in conjunction with other exchanges. The inclusion of recyclable wastes will require involvement and development of links with reprocessing industries.

Workshop plus will extend the inclusive ethic of *Workshop* (i.e., exchange directly between companies and through exchanges and brokers) by providing assistance and advice to new exchanges. It is not anticipated that this will be financial assistance but advice on sources of funding, operational systems, styles of exchanges, best practice and the pros and cons of formats. Direct posting of wastes onto a website will be backed up by a fax-back service and a summary catalogue issued a number of times through the year.

Charges will aim to cover the costs of running *Workshop plus*. As with *Workshop*, the charging system will need to be simple (e.g., paying to post and/or retrieve information from the database), set at a level that will not be a disincentive and experiment with charging fees and promotions. *Workshop plus* should raise sufficient funds to cover costs after 2 years of operation. The Environment Agency's campaigns and services will be used as a spring board to market the exchange with the aim of obtaining a high profile.

As with *Workshop*, it is considered that *Workshop plus* should be owned and operated by the Environment Agency, sponsorship should be sought and any financial surplus should be directed back into the exchange's cost centre. Charges should be maintained at the minimum possible. The option is anticipated to require similar set up funds as *Workshop* but slightly greater operational costs.

As with other the options, the opportunity for linkage to other Environment Agency campaigns and initiatives will be sought. Monitoring will include assessment of the styles, success and development of exchanges to enable best practice and the needs of the industry to be evaluated. *Workshop plus* will play a highly active role in the development of NAMES. The exchange should be the key player in NAMES to help facilitate and develop exchanges.

Table 9 (over page) provides a summary of key pros and cons for *Workshop plus*.

Table 9. Summary of pros and cons for *Workshop plus*

Pros	Cons
<p>Provides assistance to existing and new exchanges.</p> <p>Provides advice to new exchanges.</p> <p>High potential penetration through wide availability of data.</p> <p>Moderate set-up and operational costs.</p> <p>Short set-up timescale.</p> <p>Development of database on wastes within the Environment Agency.</p> <p>Although in competition with other exchanges, it will also be proactive in assisting private exchanges develop.</p> <p>Low financial and legal risk.</p>	<p>It may be difficult for the Environment Agency to justify active promotion and support for private companies. Clear consideration to the Environment Agency's involvement in promotion of companies' services would be needed.</p> <p>Relies on successful marketing and promotion.</p> <p>Difficult to gauge success of exchange.</p> <p>Penetration and success is reliant on self-motivated industry participation.</p> <p>Monitoring of success will be difficult.</p>

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The following conclusions have been drawn from the consultation, workshop and option assessment exercise:

- there is support for an exchange;
- there is a need for a co-ordinated approach;
- although support and interest has been expressed, no approaches have been made regarding running an exchange;
- existing exchanges are concerned about the Environment Agency developing an active exchange; any exchange developed should not compromise existing exchanges but aim to assist them;
- the exchange developed should cover its operational costs (and possibly recoup all or part of its set-up costs) through charges;
- the exchange developed should not be limited to reusable materials but should include the exchange of recyclable materials;
- there is a need for a body to co-ordinate existing exchanges and to increase the profile of the concept of waste exchange generally;
- provision of a central directory of recyclers, reprocessors, Waste Carriers and advisory services would be a useful additional function of the waste exchange; and
- marketing and promotion is critical.

5.2 Recommendations

It is considered that:

- *Minimum* will not provide sufficient awareness raising and development of waste exchange;
- *Maximum*, whilst having a higher potential penetration, presents a high risk and conflicts with existing commercial waste exchanges;
- *Workshop* presents a positive compromise to *Minimum* and *Maximum* by avoiding financial and legal risk and conflict with existing exchanges whilst developing and promoting exchange; and
- *Workshop plus*, (like *Workshop*) presents a positive compromise to *Minimum* and *Maximum* by avoiding risk and conflict and developing and promoting waste exchanges; in addition, the option promotes the development of existing and new waste exchanges.

It is recommended that either *Workshop* or *Workshop plus* are considered for detailed design and budget costing and an implementation plan is formulated for the selected option. It is also recommended that the option is developed not as a stand alone project but within the context of a suite of integrated initiatives regarding issues such as waste minimisation and pollution prevention.

APPENDIX 1 REVIEW OF WASTE EXCHANGES IN MAINLAND EUROPE

CONTENTS

1	INTRODUCTION	28
2	REVIEW PROCEDURE	29
3	WASTE EXCHANGE DATA SHEETS	30
3.1	IHK Recyclingbörse	30
3.2	Euwid Recyclingbörse	32
3.3	Reststoffenbeurs	35
3.4	Belgische Afvalbeurs	38
3.5	La Bourse des Dechets Industriels d'île de France	41
3.6	Camara de Comercio de Valencia	44
4	OBSERVATIONS FROM MAINLAND EUROPE	47

APPENDICES

Appendix A	Checklist of consultation issues
Appendix B	Web site information from Euwid Recyclingbörse
Appendix C	Web site information from Reststoffenbeurs
Appendix D	Web site information from La Bourse des Dechets Industriels d'île de France
Appendix E	Web site information from Camara de Comercio

1 INTRODUCTION

This Appendix presents the findings of a review of waste exchanges in mainland Europe. This work has been carried out as part of the Environment Agency R&D Project P1-238 'Waste reduction and re-use programme - feasibility of a national waste exchange'.

The research presents:

- a summary of the review procedure;
- data sheets on waste exchanges; and
- observations of the waste exchanges.

The review work is to be used in the development of options for the development of waste exchange in the UK. Particular attention will be paid to trends, successes, failures and logistical aspects of the exchanges when considering the information in option formulation.

2 REVIEW PROCEDURE

The review was undertaken using the following procedure:

1. identification of waste exchange organisations and the appropriate point of contact using directories, waste industry journals and organisations, internet searches and consultation with the EA and regulatory authorities;
2. contacting waste exchanges by telephone to explain the nature of the study and request their participation;
3. forwarding a list of information requirements to each exchange operator, to form a base for consultation and data collection; and
4. consultation with the exchanges by telephone interview.

Exchange operators provided information on a voluntary basis. To ensure a comprehensive review and consistency, written information requests and telephone interviews followed the same structure for each exchange. A checklist of consultation issues was used; the checklist is presented in Appendix A.

The following waste exchanges were identified as operational and were consulted:

- IHK Recyclingbörse (Germany);
- Euwid Recyclingbörse (Germany);
- Reststoffenbeurs (the Netherlands);
- Belgische Afvalbeurs (Belgium);
- La Bourse des Dechets Industriels d'île de France (France);
- Camara de Comercio de Valencia (Spain); and
- Borsa Rifiuti Industriali (Italy).

Information collected was transferred into a standard datasheet format for ease of analysis; the data sheets are presented in the following section.

3 WASTE EXCHANGE DATA SHEETS

The following data sheets detail information obtained from the waste exchanges. Borsa Rifiuti Industriali, the Italian waste exchange, chose not to participate with the consultation.

3.1 IHK Recyclingbörse

Contact details	
Name of exchange	IHK Recyclingbörse
Contact	Dr R Neuerbourg, Dr. A. Rockholz
Address	Bonner Talweg 17 53113 Bonn
Telephone no.	+49 228 228 4164
Fax. no.	+49 228 228 4170
E-mail	arockhol@bonn.diht.ihk.de
Web site address	http://www.ihk.de
General information	
Exchange operator (company/authority)	Chambers of Commerce (IHK), co-ordinated by Deutscher Industrie und Handelstag (DIHT).
Passive or active system	Passive.
Commercial, non-profit or loss making	Non-profit.
Date established	1974.
Geographic area of operation	Initially national coverage only. European contacts outside Germany included from 1980.
User/use information	
Type of industries served	All covered.
Type of wastes exchanged	All covered, particularly the chemical industry.
Number of users	From 1974-1995: 40,000 supplier records, 16,000 customer records and about 140,000 requests (national). From 1980: 28,000 supplier/customer records (international).
Amount of waste exchanged per year	Not known.
Value of waste exchanged per year	Not known.
Information requirements and liaison	
Information required from waste generator	Category, composition, amount, frequency, location, packaging, possible transport.
Information required from waste user	Category, composition, amount, frequency, location, packaging, possible transport.
Method of information collection	Advertisements of wastes available are held in a central databank and are promoted locally through the Chambers of Commerce newsletters, information packs and meetings. Information is regularly updated.

Supplier-customer liaison procedure	Supplier and customer details are kept separate and anonymous.
Transport and storage	
Involvement in transportation	None.
Involvement in storage	None.
Marketing	
Promotional methods used	Internet and advertisements in local Chambers of Commerce newsletters.

Catalogues and information technology	
Printed catalogues used	Local Chamber of Commerce newsletters.
Information technology used	Electronic database, access through the Chambers of Commerce.
Monitoring	
Method of monitoring exchanges	None.
Items monitored	None.
Resources	
Cost of establishing exchange	Not known.
Cost of promotion	Not known.
Cost of running exchange	Not known.
Personnel requirements (type and time)	Not known.
Legal issues	
Legal issues effecting the exchange	None.
Financial incentives, grants, etc.	
Financial incentives	
Grants	Budget from the German Chambers of Commerce.
Other	
Charging system	
Charging system description	No charges.
Comments	
The exchange is considered successful because it is free of charge.	

3.2 Euwid Recyclingbörse

Examples of the web site information from Euwid Recyclingbörse are presented in Appendix B.

Contact details	
Name of exchange	Euwid Recyclingbörse
Contact	Regina Meier
Address	PO Box 1332 76586 Gernbach
Telephone no.	+49 722 493 970
Fax. no.	+49 722 493 975
E-mail	reginameier.euwid@t-online.de
Web site address	http://www.recycle.de
General information	
Exchange operator (company/authority)	Euwid Europäischer Wirtschaftsdienst GmbH.
Passive or active system	Passive.
Commercial, non-profit or loss making	Commercial.
Date established	1990.
Geographic area of operation	German speaking countries (Germany, Austria, Switzerland).
User/use information	
Type of industries served	All covered.
Type of wastes exchanged	All covered.
Number of users	30,000 contacts established to date.
Amount of waste exchanged per year	Not known.
Value of waste exchanged per year	Not known.
Information requirements and liaison	
Information required from waste generator	Company name, address, waste code (national/European Union code), description, amount, condition (liquid, emulsion, etc.), packaging, contaminants.
Information required from waste user	Company name, address code for search area or city/region.
Method of information collection	Posting on web site and subscription via information folder.
Supplier-customer liaison procedure	Supplier/customer remain anonymous.
Transport and storage	
Involvement in transportation	None.
Involvement in storage	None.
Marketing	
Promotional methods used	Internet, information folder, advertisements in specialised magazines.
Catalogues and information technology	

Printed catalogues used	Information folder.
Information technology used	Web site used with database and straightforward search engines.
Monitoring	
Method of monitoring exchanges	None.
Items monitored	None.

Resources	
Cost of establishing exchange	Not known.
Cost of promotion	Not known.
Cost of running exchange	Not known.
Personnel requirements (type and time)	Not known.
Legal issues	
Legal issues effecting the exchange	None.
Financial incentives, grants, etc.	
Financial incentives	None.
Grants	
Other	
Charging system	
Charging system description	Registration is free (access for members only), to get an address costs DM6.50 (£2), a 12 month advertisement is DM1,200 (£413) and a 3 month advertisement is DM350 (£120).
Comments	
Customer problems have occurred with using the internet site since it costs money whereas the information folder is free of charge.	

3.3 Reststoffenbeurs

Examples of the web site information from Reststoffenbeurs are presented in Appendix C.

Contact details	
Name of exchange	Reststoffenbeurs
Contact	Ron van Ovost
Address	Postbus 65 6800 AB Arnhem
Telephone no.	+31 26 383 0161
Fax. no.	+31 26 383 0162
E-mail	van.ovost@inter.nl.net
Web site address	http://www.reststoffenbeurs.nl
General information	
Exchange operator (company/authority)	Ron's Activiteiten BV.
Passive or active system	Active in the beginning to establish a name and a network of clients. Once established it became passive. Initially promoted at the Chambers of Commerce, local authorities, landfill sites, etc.. Additional advertising through trade fairs, direct mailings, telemarketing.
Commercial, non-profit or loss making	Commercial.
Date established	1986, by The Foundation of Chambers of Commerce and the Dutch Ministries of Environment and Economic Affairs. Commercial since 1992.
Geographic area of operation	Nationally, with international contacts.
User/use information	
Type of industries served	All covered.
Type of wastes exchanged	All covered, except for demolition, hospital and radioactive waste.
Number of users	Not known.
Amount of waste exchanged per year	Not known.
Value of waste exchanged per year	Not known.
Information requirements and liaison	
Information required from waste generator	Company name, registration number, address, waste category, description (including colour), amount, form (i.e. liquid, emulsion, etc.), packaging, contamination, analysis report, preference of direct contact or remaining anonymous.
Information required from waste user	Company name, registration number, address.
Method of information collection	Posting on web site page.
Supplier-customer liaison procedure	The exchange is an independent mediator between the supplier and customer, the supplier and customer can choose to be anonymous if

	requested. Waste details are entered directly via the internet. Customer registration is by mail.
Transport and storage	
Involvement in transportation	None.
Involvement in storage	None.
Marketing	
Promotional methods used	Promotion on internet and in specific national waste magazines (e.g. Afval).

Catalogues and information technology	
Printed catalogues used	None.
Information technology used	Web site used with database and straightforward search engines.
Monitoring	
Method of monitoring exchanges	Regular telephone contact with suppliers/customers.
Items monitored	Evaluations of cost savings and environmental impacts were carried out in the beginning.
Resources	
Cost of establishing exchange	Not known.
Cost of promotion	Not known.
Cost of running exchange	Negligible.
Personnel requirements (type and time)	2 full time personnel.
Legal issues	
Legal issues effecting the exchange	None.
Financial incentives, grants, etc.	
Financial incentives	None.
Grants	None.
Other	None.
Charging system	
Charging system description	Annual subscription of suppliers is f490 (£150), which entitles the supplier to enter up to 5 waste streams per month and a free magazine, with a one month trial subscription at f59 (£18). To register as a customer it is f50 (£15).
Comments	
Positive comments and reasons for success:	
<ul style="list-style-type: none"> • overhead costs are low; • statistics or research is not warranted since it is too costly for information gained; • contacts are by phone and automatic mailings which are low time intensive activities; • the exchange is one of several services provided including waste management and advice; • the exchange utilises simple and user friendly information access (internet) and data management; 	

- the exchange facilitates networking; and
- focusing on the one issue of waste keeps it simple.

Negative comments:

- it takes time to establish a good reputation and regular customers.

3.4 Belgische Afvalbeurs

Contact details	
Name of exchange	Belgische Afvalbeurs
Contact	W Degriecq
Address	NG III - Emile Jacqmainlaan 15 1000 Brussels
Telephone no.	+32 2 2064111
Fax. no.	+32 2 2065712
E-mail	acdc@pophost.eunet.be
Web site address	-
General information	
Exchange operator (company/authority)	Ministry of Economic Affairs.
Passive or active system	Passive.
Commercial, non-profit or loss making	Non-profit.
Date established	1978.
Geographic area of operation	National, with international contacts.
User/use information	
Type of industries served	All covered, although the exchange is particularly aimed at small and medium enterprises (SMEs).
Type of wastes exchanged	All covered, although mostly textile, chemical and plastic industry.
Number of users	Not known.
Amount of waste exchanged per year	Not known.
Value of waste exchanged per year	Not known.
Information requirements and liaison	
Information required from waste generator	Form (i.e. liquid, emulsion, etc.), amount, frequency, packaging, colour, contamination, transport, location, description.
Information required from waste user	Form (i.e. liquid, emulsion, etc.), amount, frequency, packaging, colour, contamination, transport, location, description.
Method of information collection	Subscription by mail.
Supplier-customer liaison procedure	Suppliers/customers identity can be revealed on request with the relevant party's permission.
Transport and storage	
Involvement in transportation	None.
Involvement in storage	None.
Marketing	
Promotional methods used	Trade fairs, advertising in specialised magazines; soon to be on the internet (web site for Ministry of Economic Affairs).

Catalogues and information technology	
Printed catalogues used	Information folder, published twice a year.
Information technology used	Electronic database.
Monitoring	
Method of monitoring exchanges	None.
Items monitored	None.

Resources	
Cost of establishing exchange	Not known.
Cost of promotion	Not known.
Cost of running exchange	Not known.
Personnel requirements (type and time)	Two, excluding overheads.
Legal issues	
Legal issues effecting the exchange	None.
Financial incentives, grants, etc.	
Financial incentives	
Grants	Part of general budget for Ministry of Economic Affairs.
Other	
Charging system	
Charging system description	300 BEF (£5) per annual subscription. 500 BEF (£8) per waste announcement per year.
Comments	
The exchange is not well known amongst SMEs despite this being the target industry size.	

3.5 La Bourse des Dechets Industriels d'ile de France

This exchange is one of twenty exchanges separately operated by Chambers of Commerce across France. National co-ordination of these exchanges is presently being initiated. Examples of the web site information from La Bourse des Dechets Industriels d'ile de France are presented in Appendix D.

Contact details	
Name of exchange	La Bourse des Dechets Industriels d'ile de France
Contact	C Charve
Address	19, rue Lord Byron 75008 PARIS
Telephone no.	+33 1 55657473
Fax. no.	+33 1 55657466
E-mail	etudes@francenet.fr
Web site address	http://www.ccip.fr/bourse-des-dechets
General information	
Exchange operator (company/authority)	Chamber of Commerce for Paris.
Passive or active system	Active.
Commercial, non-profit or loss making	Non-profit.
Date established	1978.
Geographic area of operation	Started as regional, now with national and international connections.
User/use information	
Type of industries served	All covered.
Type of wastes exchanged	All covered, mainly chemical industry.
Number of users	4,500 members.
Amount of waste exchanged per year	Not known.
Value of waste exchanged per year	Not known.
Information requirements and liaison	
Information required from waste generator	Form (i.e. liquid, emulsion, etc.), amount, frequency, packaging, colour, contamination, transport, location, description.
Information required from waste user	Form (i.e. liquid, emulsion, etc.), amount, frequency, packaging, colour, contamination, transport, location, description.
Method of information collection	Subscription by mail or via internet.
Supplier-customer liaison procedure	Confidential.
Transport and storage	
Involvement in transportation	None.
Involvement in storage	None.
Marketing	

Promotional methods used	Internet, fairs, advertising in environmental magazines.
Catalogues and information technology	
Printed catalogues used	Information folder (three per year).
Information technology used	Electronic database.

Monitoring	
Method of monitoring exchanges	Monitoring is conducted to substantiate industrial funding but no data was provided.
Items monitored	None.
Resources	
Cost of establishing exchange	Not known.
Cost of promotion	Not known.
Cost of running exchange	Not known.
Personnel requirements (type and time)	1 but more are required.
Legal issues	
Legal issues effecting the exchange	None.
Financial incentives, grants, etc.	
Financial incentives	
Grants	Budget from Chamber of Commerce and industrial funding from a variety of trade associations and large industrial companies (e.g. Rhône-Poulenc).
Other	
Charging system	
Charging system description	Free (other Chambers of Commerce in France do charge per waste advertised).
Comments	
<p>Successes:</p> <ul style="list-style-type: none"> • since the exchange has been on the internet (1997), the number of contacts increased by 40%; • it is regarded as successful because it is free to use; and • an advisory service is also provided to industry, covering a wide range of environmental issues. This gives added value to the exchange, which assists in making the exchange a success. 	

3.6 Camara de Comercio de Valencia

This exchange is one of six regional exchanges separately operated by regional Camara de Comercio across Spain. All of the exchanges are co-ordinated nationally by the central Camara in Madrid. Examples of the web site information from Camara de Comercio are presented in Appendix E.

Contact details	
Name of exchange	Camara de Comercio de Valencia In total there are 6 regional Camaras in Spain
Contact	Sra Villena
Address	Camara Oficial de Comercio Industrial y Navegacion (Bolsa de Subproductos) Poeta 15 46001 Valencia
Telephone no.	+34 635 11 301
Fax. no.	+34 635 63 49
E-mail	pgarcia@camarav.es
Web site address	www.camerdata.es/bolsa
General information	
Exchange operator (company/authority)	Camara de Comercio.
Passive or active system	Passive; suppliers and customers advertise their waste offers or demands in a national and regional magazines called Reutil. The appropriate regional Camara then forwards to the advertiser, any replies received.
Commercial, non-profit or loss making	Non-profit.
Date established	1990.
Geographic area of operation	Valenciana community, covering three provinces.
User/use information	
Type of industries served	All.
Type of wastes exchanged	Waste categories covered include: chemical, leather, plastics, metal (including scrap iron), paper, cardboard, wood, rubber, construction and mineral, animal and vegetable, petrol and oil, packing and miscellaneous.
Number of users	Magazine is sent to 8,000 companies.
Amount of waste exchanged per year	The exchange has received 118 advertisements for available waste and 324 advertisements for wastes wanted for 1997. No information has been obtained regarding quantities successfully exchanged.
Value of waste exchanged per year	-
Information requirements and liaison	
Information required from waste generator	Information is organised according to waste categories. Each

Information required from waste user	advertisement has a code. The advertisement specifies the type of waste as well as the quantity and the frequency of supply. This information is revised every four months. Information is organised according to waste categories. Each advertisement has a code. The advertisement specifies the type of waste as well as the quantity and the frequency of supply. This information is revised every four months.
Method of information collection	Subscription by mail or via internet.
Supplier-customer liaison procedure	Confidential.

Transport and storage	
Involvement in transportation	No.
Involvement in storage	No.
Marketing	
Promotional methods used	A national and regional magazine called Reutil.
Catalogues and information technology	
Printed catalogues used	The Reutil magazine.
Information technology used	Internet.
Monitoring	
Method of monitoring exchanges	No monitoring system available.
Items monitored	-
Resources	
Cost of establishing exchange	-
Cost of promotion	-
Cost of running exchange	Approximately £4,3500 (11,000,000 PTAs). plus costs of editing magazine.
Personnel requirements (type and time)	
Legal issues	
Legal issues effecting the exchange	Producers, recyclers and waste management companies handling toxic and dangerous wastes require licences. Starting from April 22 nd 1999, all waste producers, recyclers and waste management companies will have to be licensed or registered to develop their activity. Activities are only accepted if they meet the relevant criteria.
Financial incentives, grants, etc.	
Financial incentives	-
Grants	From the regional administration.
Other	-
Charging system	
Charging system description	No information specified.

Comments

The main problems result from the lack of monitoring or information gathering, especially with regard to environmental benefits, financial savings and quantities exchanged per annum. Lack of monitoring is an inherent problem of a passive system.

These exchanges are not limited to specific regions as all of the exchanges interact with the central Camara in Madrid. All information (advertisements) is sent to this central point and is published in the national magazine.

4 OBSERVATIONS FROM MAINLAND EUROPE

The following observations from the review of waste exchanges in mainland Europe may be made:

General

- waste exchanges have been in operation within Europe since the 1970s and have experienced a varying degree of success;
- only La Bourse des Dechets Industriels d'île de France operates an 'active' exchange, Reststoffbeurs was initially an active exchange but now operates a 'passive' system. Reststoffbeurs the could not comment whether it is necessary to be active prior to being a successful passive exchange to be successful;
- the majority of exchanges, which also tend to be the older exchanges, are non-profit making. Only two exchanges, Euwid Recyclingbörse and Reststoffbeurs, are commercial enterprises;
- the various waste exchanges in France, including La Bourse des Dechets Industriels d'île de France, are currently examining how they can integrate their operations;
- the majority of exchanges operate both nationally and internationally, only the Camara de Comercio de Valencia operates on just a national basis; and
- Reststoffbeurs and Euwid Recyclingbörse are generally regarded as more successful and pro-active but without monitoring the quantities of waste exchanged, this can not be substantiated.

User information

- all but the Reststoffbeurs, which excludes demolition, hospital and radioactive waste, deal with all industry sectors and wastes.

Information requirements and liaison

- all exchanges operate as third party mediators, with a preference for the suppliers and customers to remain anonymous. Only Belgische Afvalbeurs and Reststoffbeurs will provide, on request and approval, supplier and customer details;
- information required from both suppliers and customers regarding wastes include composition, amount, frequency, location, packaging, company name, address, waste classification, physical form, contamination and analysis report;
- information collection is through the internet and mailing; and
- only Euwid Recyclingbörse asks the supplier which search area they require.

Transportation and storage

- none of the exchanges become involved in transportation or storage of wastes.

Marketing

- the internet, specialist magazines and trade fairs are the main medium used to promote the exchanges; and

- promotion via the internet was stated by La Bourse des Dechets Industriels d'ile de France to result in a 40% increase in contacts.

Catalogues and information technology

- all exchanges store supplier and customer data electronically; and
- only Reststoffbeurs relies solely on the internet to gather and publish waste data, all the other exchanges also use a publication and it is only Belgische Afvalbeurs that is yet to use the internet.

Monitoring

- monitoring of both the success of the exchanges and resource use has been limited or non-existent for all of the exchanges;
- the Camara de Comercio de Valencia suggests the lack of monitoring causes the exchanges main problems and is an inherent problem of a passive system; and
- Reststoffbeurs had initially conducted some monitoring on success but have since regarded it as too costly.

Resources

- details on resource use is limited although both Belgische Afvalbeurs and Reststoffbeurs utilise two personnel and La Bourse des Dechets Industriels d'ile de France utilise 1 but requires more.

Legal issues

- none of the exchanges experience any legal issues, however the Camara de Comercio de Valencia does state all waste related activities must meet relevant criteria and licensing requirements.

Financial incentives, grants, etc.

- both of the commercial waste exchanges, Euwid Recyclingbörse and Reststoffbeurs, are self financing; and
- the non-profit exchanges receive government or Chamber of Commerce funding.

Charging systems

- a variety of charging systems are used including charges for obtaining addresses of waste suppliers, annual and monthly advertisement rates and customer registration.

APPENDIX A CHECKLIST OF CONSULTATION ISSUES

APPENDIX B WEB SITE INFORMATION FROM EUWID RECYCLINGBÖRSE

APPENDIX C WEB SITE INFORMATION FROM RESTSTOFFENBEURS

**APPENDIX D WEB SITE INFORMATION FROM LA
BOURSE DES DECHETS INDUSTRIELS D'ILE
DE FRANCE**

APPENDIX E WEB SITE INFORMATION FROM CAMARA DE COMERCIO

