

# COMMISSION OF THE EUROPEAN COMMUNITIES

COM(78) 407 final

Brussels, 11 September 1978

PROPOSAL FOR A COUNCIL DECISION  
ADOPTING A RESEARCH AND DEVELOPMENT PROGRAMME  
OF THE EUROPEAN ECONOMIC COMMUNITY  
IN THE FIELD OF RECYCLING OF URBAN AND INDUSTRIAL WASTE  
(SECONDARY RAW MATERIALS  
INDIRECT ACTION 1979-1982)

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(submitted by the Commission to the Council)

COM(78) 407 final

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SUMMARY

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This proposal relates to a set of research and development projects on the recycling of urban industrial and agricultural waste (secondary raw materials).

The research areas are as follows : 1. recovery of materials and energy from urban refuse ; 2. thermal treatment of waste ; 3. fermentation and hydrolysis of organic waste of agricultural, industrial and household origin ; 4. recovery of waste rubber.

For each research area, a coordination of on-going research in the member states will be implemented and additional supplementary research will be launched at Community level.

A total budget evaluated at 13 millions European units of account and a staff of six are required to carry out this 4-year programme.

A. INTRODUCTION

The 20th century has witnessed an unprecedented growth in the world population. This was made possible, in part, because adequate supplies of food, raw materials and energy were made available through significant scientific and technical advances over the last hundred years.

Population growth, together with a rising standard of living, has created a tremendous demand on the world's resources. Whilst in the past man has acted as if these resources were unlimited, he is now forced to recognize that this is not so and must take steps to conserve them by all possible means.

A significant contribution in this direction could be made by the recovery and recycling of useful materials from the large amounts of waste produced daily.

The EC alone produced over 1.5 billion tons of waste in 1976 (or 4.2 million tons daily) including

90.10<sup>6</sup> tonnes of household refuse  
950.10<sup>6</sup> tonnes of agricultural waste  
115.10<sup>6</sup> tonnes of industrial waste  
200.10<sup>6</sup> tonnes of sewage sludge  
150.10<sup>6</sup> tonnes from the extractive industries.

This is estimated to increase at an annual rate of about 3% for the Community, although significant differences exist in this respect among member states. The development of technology both to maximise the reuse of waste and to reduce the amount of waste generated by present industrial processes is undeniably important as is the development of markets for secondary materials so produced.

Waste must then be regarded as a vast, untapped, renewable resource which can, and must, be more exploited in the future. Successful utilisation of waste may be equated to the conservation of scarce and vital resources and to a better use of energy and its linked economic benefits.

In recent years public authorities, as well as industry and the scientific community in the various member states, have shown a strong interest in the recovery of useful products from wastes in order a) to exploit alternative sources of raw materials, thereby effecting savings in natural resources and energy and improving the possibilities of self-supply, and b) to reduce the quantities of wastes that have to be disposed of, thus contributing to the protection of the environment.

At Community level, the problems of raw materials supply have caused serious concern<sup>(1)</sup> which resulted in the implementation of research and development programmes in the raw materials sector, based on the work of an ad-hoc CREST subcommittee, as well as on the preparation of other measures aimed at ensuring the safety of supplies.

On the other hand, an important "war on waste" action was included in the Action Programme of the European Communities in the field of environment<sup>(2)</sup>.

The present proposal deals with a R & D programme on the recycling of urban industrial and agricultural waste ("Secondary raw materials"). It follows the programmes on "Primary raw materials", "Exploration and extraction of uranium" and "Recycling of papers and board" adopted by the Council in March and April 1978<sup>(3)</sup>. It was prepared in consultation with the above mentioned CREST Subcommittee and its "Consumers Waste" working party and on the basis of studies commissioned to specialized organisations in the member states. These studies, listed in Annex A, dealt with the following topics: separation at source of consumer wastes, mechanical separation of bulk household waste, thermal processes of waste disposal, recovery of rubber wastes, fermentation and hydrolysis of organic wastes.

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1) see also in this regard the Resolution of the European Parliament on the supply of raw materials of the Community of 19.4.1977

2) O.J. n° C 139 of 13.6.1977

3) O.J. n° L 72 of 14.3.1978  
n° L 107 of 21.4.1978

The proposed programme corresponds to two of the four priority sectors identified in the common policy for science and technology<sup>(1)</sup> in relation to the general objectives of the Community, i.e. (i) the long-term supply of resources (raw materials) and (ii) protection of the environment and nature. It meets also several general and specific selection criteria for common R & D actions, i.a. greater effectiveness at Community level by the pooling of national efforts and the elimination of useless duplication, as well as the fulfillment of needs common to all Community countries.

#### B. PROGRAMME CONTENT

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The 4-year programme includes the following four areas :

- I. Recovery of materials and energy from household waste by
  - a) separation at source
  - b) separation of bulk waste
  
- II. Recovery of materials and energy by thermal treatment of waste.
  
- III. Fermentation and hydrolysis of organic agricultural industrial and household waste.
  
- IV. Recovery of rubber waste.

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(1) Communication from the Commission to the Council of 30 June 1977 COM 77/283 final.

In each of these areas it is proposed to implement a coordination of publicly-funded work in hand in the member states and to supplement it by research projects to be partly funded by the Community, on specific topics, to be determined by the Commission in consultation with the Advisory Committee of national officials (ACPM) who will assist it in the management of the programme.

In the following sections a brief description is given of the objectives and topics of research for each area of the programme. Extensive details on the situation for each category of waste in the EC, including prospects for increasing recovery, current R&D activities in the member states and future R&D requirements to achieve this aim, may be found in the series of study reports referred to above.

As far as funding is concerned, estimates are given for the relative distribution of funds among the various research areas and topics for a 4-year programme. Actual allocations, however, will be decided by the Commission after consultation of the Advisory Committee, during the implementation of the programme when all submitted proposals will have been examined.



I. RECOVERY OF MATERIALS AND ENERGY FROM HOUSEHOLD WASTE BY

- a) SEPARATION AT SOURCE
- b) SEPARATION OF BULK WASTE

I.1. Introduction

An increasing interest is shown by national and local authorities, as well as by industry in recovering useful productions from urban waste in order to reduce the quantities of wastes to be disposed of, to exploit alternative sources of raw materials, and to develop economic and environmentally safe disposal systems.

I.2. Objectives : coordinate research on hand and in some cases, start new projects on

- a) separation of household refuse at source
- b) sorting of bulk household waste, through the investigation of unit processes in order to
  - improve separation efficiencies
  - improve the quality of recovered products.

I.3. Justification : Sorting of household waste in view of recovering products offers increasingly interesting alternatives to landfilling, incineration and composting of bulk household waste.

As far as sorting at source is concerned, a number of initiatives have been taken in several member states which, in their research aspects, should be evaluated and coordinated at Community level.

In the area of bulk household waste sorting, no single model plant can be specified for the EC because of the wide variety in waste composition and in markets for recovered products, even within member states. A large number of flowsheets producing a great range of products have been developed in Europe to the pilot plant stage and even, in at least one instance, to full-scale commercial plants.

A coordination of research on hand and the promotion of work in more fundamental studies and on the improvement of separation techniques and the development of novel techniques aimed i.a. at increasing the acceptability of recovered materials would be beneficial in developing unit processes and specifying assemblages of such unit processes best suited to local conditions.

I.4. Research topics

A. Sorting at source and sorting of bulk household waste

4.1. Monitoring on-going or planned projects in the member states by means of comparative investigation of the different systems under varying conditions.

4.2. Establishment of standard methods for sampling and analysing household wastes, specifying the quality of recovered products and presenting economic data.

4.3. Evaluation of health hazards associated with household waste treatment and storage, and the recovered products.

B. Sorting of bulk household waste

4.4. Separation technology

4.4.1. Air classification

Investigation of parameters affecting separation, in order to facilitate the choice of air classification systems to use in particular situations, and to design large-scale trials.

Items to be considered are :

- comparison of air classifiers under consistent conditions
- effects of changing design variables and feed composition
- establishment of criteria for design and scale-up of air classification systems

4.4.2. Liberation-comminution

Comparative investigations of shredding and sizing systems at scale of 10 T/hour and more under consistent conditions and with a well-defined feed in order to assess :

- suitability of processed waste for further separation into products
- elimination of gross oversize materials (in sizing plants)
- reliability and maintenance problems.

4.4.3. Novel separation techniques : research into new separation techniques based on

- density separation
- optical, ballistic, triboelectrical, etc. methods

4.5 Materials recovery

4.5.1. Paper

In support of and as a complement to the R&D Programme on paper and board recycling mentioned above, adopted by the Council on 17 April, 1978,<sup>(1)</sup> in particular its topic 4 ("urban fibers"), the following problems will be investigated :

- design and operation of air classifiers to obtain a better paper-rich product (cf. 4.4.1.)
- improvement of techniques for separating plastic films from paper

4.5.2. Plastics

Separation and clearing of plastics' concentrates, including work on feedstock formulations for specific end-products, on nature and levels of contaminants inhibiting the use of reclaimed polymer, and the development of new additives for moulding.

Recovery of plastics from specific arisings of consumers' wastes.

4.5.3. Non-ferrous metals

Improvement of available, and development of new techniques to enable an economic recovery of non-ferrous metals in household waste, thereby increasing the rate of recycling of these commodities.

4.6. Energy recovery

Work in this area is already on hand in the framework of the Energy R & D Programme<sup>(2)</sup>. limited effort could be supported to complement it, with regard to the preparation and handling

(1) O.J. nr. L 107 du 21.4.1978

(2) O.J., Vol. 18, nr. L 231 of 2/9/1975

of shredded or densified waste-derived fuel (i.e. a combustible fraction from household waste for use as a supplementary fuel in power generation), as well as the firing of WDF (cf. II.4.1. Thermal treatment). The following points are to be considered :

- effects of WDF firing on metals corrosion and fouling of boiler tubes,
- atmospheric emissions of WDF combustion.

4.7. Studies of new collection and transport systems for household refuse - if warranted on the basis of a state-of-the art review.

#### I.5. Implementation and funding

Coordination of publicly funded on-going work in the member States will be implemented for all topics above (sorting at source and sorting of bulk household waste), whereas contract research will be commissioned for specific work under topics 4.4. (separation technology), 4.5 (materials recovery) and 4.6 (energy recovery) and 4.7 (collection and transport systems).

It is foreseen that about 40% of funding for the whole programme could be allocated to this research area, with about

- 20-22,5% for topic 4.4. - Separation technology
- 12-15 % for topic 4.5. - Materials recovery
- 4-5 % for topic 4.6. - Energy recovery

## II. RECOVERY OF MATERIALS AND ENERGY FROM THERMAL TREATMENT OF WASTE

### II.1. Introduction

Thermal treatment of waste i.e. incineration and pyrolysis present advantages with regard to waste disposal (volume reduction, energy production, rapidity, sterilization of waste etc.). Incineration of urban waste is widely practised and has reached a satisfactory level of technical sophistication. On the other hand, incineration of some types of industrial waste and pyrolysis, have not reached the same degree of development.

II.2. Objective : to evaluate the practical potential of novel techniques of thermal processing of specific categories of wastes.

### II.3. Justification

Techniques such as pyrolysis, gasification and waste-derived fuel firing offer interesting possibilities of disposing of certain kinds of wastes while providing energy and secondary materials. Their prospects must be checked on an appropriate scale and in a variety of conditions before recommendations can be made on their practical use, hence the motivation for a Community effort in this area.

### II.4. Research topics

#### 4.1. Firing of waste-derived fuel - p.m.

This topic is treated under I.4.6. above.

#### 4.2. Pyrolysis and gasification

Test of processes already developed at the bench scale on a semi-industrial scale of 0.1 to 1 ton/hour waste disposal capacity. Several reactor types should be tested (i.e. single/double fluidized bed). (Note that pyrolysis of rubber waste is mentioned under IV below).

#### 4.3. Recovery of metals and glass from incineration and pyrolysis residue, evaluation of performance of existing plants and development of new separation techniques.

### II.5. Implementation and funding

A coordination of on-hand research publicly-funded in the Member States will be implemented. Supplementary projects will be launched especially with regard to topic 4.2.

About 12.5 % of total funds could be allocated to this research area.

## III. FERMENTATION AND HYDROLYSIS OF AGRICULTURAL AND ORGANIC INDUSTRIAL WASTE

III.1. Introduction : Very large amounts of organic waste (over 1.000 million tons) are generated yearly in the EC from the agricultural sector, the food processing industry, the forest industry and households. While these can be disposed of by landfilling or thermal processes, the application of fermentation and/or hydrolysis processes results in the recovery of useful organic products, as well as of energy.

Research actions are proposed in the following sub-areas : anaerobic digestion, composting and carbo-hydrate (mostly cellulose) hydrolysis. Protein production is not included as it is considered in a COST project under preparation.

### III.2. Anaerobic digestion

III.2.1. Objective : to contribute to the full development and acceptance of the process of anaerobic digestion in the treatment of mostly agricultural and industrial waste.

III.2.2. Justification : anaerobic digestion is a means of producing methane, and other usable products while stabilizing waste, reducing waste solids and disinfecting it partly. The process is potentially applicable, in small or large scale installations, to great quantities of waste. A coordination of R&D on hand in the member states and the funding of supplementary research are advisable to stimulate the use of the process.

### III.2.3. Research topics :

- development of simple, cheap, reliable and economically viable digesters, particularly of the "solid state" kind, for agricultural and industrial process wastes; emphasis will be put on speeding up the digestion process, i.e. by mixing with household waste;
- fundamental studies of anaerobic digestion : microbiology and biochemistry, including the production of products others than methane, as well as thermophilic digestion

### III.3. Carbohydrate (cellulose) hydrolysis

III.3.1. Objective : To improve available technology in this area and make it economically justified.

III.3.2. Justification : Cellulose and starch from organic matter can be hydrolyzed, chemically or enzymatically, to yield glucose, which can be used as such or serve as a substrate for the production of other useful chemicals. Research actions are needed in the areas of pretreatment and treatment processes.

III.3.3. Research topics :

- pretreatment processes to increase the susceptibility of cellulose to hydrolysis
- development of one-stage microbiological processes for various chemicals
- enzymatic hydrolysis : selection of species and strains with valuable enzyme production, development of immobilized enzymes techniques
- lignin recovery and utilisation

III.4. Composting

III.4.1. Objective : to promote the production of high quality compost and its use as a soil amendment.

III.4.2. Justification : Composting is a fairly simple method of disposing of organic wastes while making a product which can restore the humus content of agricultural soils and fertilizing them. A coordination of research on composting in the member states would contribute to promoting its widespread use.

### III.4.3. Research topics

A coordination of on-hand research on the following topics will be implemented :

- field experimentation on fertilizing value of compost for various crops and soil types
- effects of, and elimination of undesirable substance and organisms in compost (heavy metals, chlorinated hydrocarbons, plastics, glass, pathogens etc.)
- development of the performance of existing composting plants in the EC.

### III.5. Implementation and funding :

In addition to the implementation of a coordination of national efforts on hand, contract research will be funded to supplement existing work, where needed in

subarea 1 (anaerobic digestion), with regard both to the development of simple reactors and to methanogenesis

subarea 2 (carbohydrate hydrolysis) for the development of one-stage biological processes, enzymatic hydrolysis of cellulose and lignin recovery and utilization.

Funds for this research area could amount to about 25 % of total, distributed approximately equally between the two subareas.

## IV. RECOVERY OF RUBBER WASTE

### IV.1. Introduction

Waste tyres represent an important potential source of secondary raw materials.

There is a strong interest in the recovery of useful products from waste tyres in order to increase the possibilities of self-supply and to reduce the quantities of waste to be disposed of.



IV.2. Objective : Developing advanced recovery processes in cooperation with industry in the areas of retreading, size reduction of waste, rubber powder reclaiming in the rubber industry and pyrolysis of rubber products.

IV.3. Research topics

IV.3.1. Retreading

Justification : retreading is the most direct way of recycling tyres. Its economic balance is good and there is ample scope to increase its use, particularly for passenger tyres.

3.1.1. Methods for testing the suitability of casings for retreading; assessment of the availability of sound casings in the EC

3.1.2. Laboratory research on the quality of retread rubber and precured treads

3.1.3. Quality tests of retreaded tyres, including safety aspects

IV.3.2. Size Reduction (shredding and grinding)

Justification : Size reduction being the key to many recycling processes, it is advantageous to improve its technical and economical aspects.

3.2.1. Research aimed at decreasing cost of grinding.

For instance :

- use of classical means to cool rubber materials before grinding,
- reduction of energy requirement for shredding and grinding,
- technical optimisation.

3.2.2. Cryogenic grinding, including economic aspects.

3.2.3. Influence of particles shape on their use by various processes.

IV.3.3. Reclaiming and recycling of rubber powder in the rubber industry.

Justification : Improving prospects for an already existing recycling industry which uses tires rejected by the retreading industry.

- 3.3.1. Laboratory research on the quality of reclaim (grading system).
- 3.3.2. Laboratory research on the influence of reclaim on existing rubber compounds (and retread compounds).
- 3.3.3. Research on size reduction of steel braced radial car tyres.
- 3.3.4. Laboratory research on the influence of particle size of rubber powder on the mechanical properties of vulcanizates.
- 3.3.5. Research on mixtures of virgin rubber powder and scrap rubber powder.
- 3.3.6. Research on suitable binders in ground scrap.

IV.3.4. Pyrolysis

Justification : Pyrolysis is attractive if products can be recycled in part by the rubber industry or in other industry with a high value.

- 3.4.1. Industrial scale experiment of use of pyrolysis char residue by rubber industry or other industry.  
see also II.4.2.

IV.4. Implementation and funding

Here also a coordination of publicly-funded research on hand in the member states will be implemented and additional research will be funded for specific projects in each subarea.

Estimated funding could be about 22,5% of the total for the programme

- with about 2-4 % for retreading
- 6-8% for size reduction
- 5-7% for reclaiming
- 5-8 % for pyrolysis

C. TOTAL FUNDING, IMPLEMENTATION AND MANAGEMENT

Total funding requested, the budget of the European Communities for the 4-year programme is estimated at 13 million European units of account.

As mentioned above, the final distribution of funds among research areas and topics will be decided by the Commission in consultation with the Advisory Committee on Programme Management, when all proposals will have been examined.

Estimated distribution per research area could be approximately as follows :

- I. Recovery of materials and energy from household waste 40 %
  - A. separation at source
  - B. separation of bulk waste
    - separation technology
    - materials recovery
    - energy recovery
  - C. New collection and transport systems
- II. Recovery of materials and energy by thermal treatment of waste 12.5 %
  - pyrolysis and gasification
  - recovery of metals and glass
- III. Fermentation and hydrolysis of agricultural and industrial organic waste 25 %
  - anaerobic digestion
  - carbohydrate hydrolysis
  - composting
- IV. Recovery of rubber wastes 22.5 %
  - retreading
  - size reduction
  - reclaiming
  - pyrolysis

Funds requested will be used for coordination activities (concerted actions), for partial (maximum 50 %) financing of cost-sharing contracts and for the cost of the personnel managing the programme (6 staff of which 4 of A category, one for each research area).

It is proposed to join to this programme the first Programme on Paper and Board Recycling adopted by the Council on 17 April 1978<sup>(1)</sup> with a budget of 2.9 million e.u.a. for 3 years, so that both will be under the same Advisory Committee for Programme Management.

(1) O.J. L 107 du 21.4.1978

A revision clause is foreseen in the Council decision to that new research topics may be introduced in the programme after the first two years.

The R&D programme will be managed in a flexible and decentralized manner. While the Commission will be responsible for the execution of the programme, it will do so in close working relationship with the Advisory Committee for Programme Management (ACPM).

More specifically the Committee will advise the Commission with regard to :

- allocation of available funds among the research areas and topics of the programme, taking into account relative priorities
- the examination and selection for inclusion in the programme of research proposals received from applicants in the member states on the basis of criteria of : relevance and in particular the potential for use by industry, scientific quality, prospects of success, and costs
- the establishment of special working parties for the close supervision of specific parts of the programme
- the monitoring of the progress of on-going research and the formulation of recommendations, if need be, for further work
- the evolution of research requirements throughout the Community
- periodic reviews and, if advisable, the preparation of revisions of the programme during its course
- the initiation of a progressive coordination of national and Community R&D activities in the field of secondary raw materials.

D. DISSEMINATION OF INFORMATION

The dissemination of information resulting from the programme will be ruled by Regulation (EEC) n° 2380/74 of the Council, dated 17 September 1974.

Every effort will be made to exploit results as soon as available, i.e. before the end of the multiannual programme.

LIST OF REPORTS ON SECONDARY RAW MATERIALS

- 1) Separation at source of consumer wastes
  - a) Stichting Verwijdering Afvalstoffen, s'Gravenhage (Pilot) Ct. n° 275-76-9 ECI-NL
  - b) Enviroplan, Lungby - Copenhagen Ct. n° 276-76-9 ECI-DA
  - c) Secretary of State for the Environment, London Ct. n° 277-76-9 ECI-UK
  
- 2) Mechanical separation of bulk household wastes
  - a) Secretary of State for Industry (Warren Spring Laboratory) London (Pilot) Ct. n° 278-76-9 ECI-UK
  - b) Fiat Engineering, Torino Ct. n° 279-76-9 ECI-IT
  - c) Bureau de la Recherche Géologique et Minière, Paris Ct. n° 280-76-9 ECI-FR
  - d) Umweltbundesamt, Berlin Ct. n° 281-76-9 ECI-DE
  
- 3) Thermal processes of waste disposal
  - a) Vrije Universiteit Brussel (Pilot) Ct. n° 282-76-9 ECI-B
  - b) Bureau de la Recherche Géologique et Minière, Paris Ct. n° 283-76-9 ECI-FR
  
- 4) Fermentation/hydrolysis of organic wastes
  - a) Institute for Industrial Research and Standards, Dublin (Pilot) Ct. n° 304-76-12 ECI-EIR
  - b) Tecneo S.p.A., Fano (Pesaro) Ct. n° 305-76-12 ECI-IT
  - c) Umweltbundesamt, Berlin Ct. n° 306-76-12 ECI-DE
  - d) Rijksuniversiteit te Gent Ct. n° 307-76-12 ECI-B
  - e) Université Catholique de Louvain Ct. n° 310-76-12 ECI-B
  
- 5) Recovery of rubber wastes
  - a) Bureau de la Recherche Géologique et Minière, Paris (Pilot) Ct. n° 273-76-9 ECI-FR
  - b) Technische Physische Dienst TNO-TH, Delft Ct. n° 274-76-9 ECI-NL

PROPOSAL FOR A COUNCIL DECISION

of 11 September 1978

adopting a multiannual research and development programme for the European Economic Community on the recycling of urban and industrial waste (secondary raw materials, indirect action 1979-1982)

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THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 235 thereof,

Having regard to the proposal from the Commission,

Having regard to the Opinion of the European Parliament<sup>1</sup>,

Having regard to the Opinion of the Economic and Social Committee<sup>2</sup>,

Whereas, pursuant to Article 2 of the Treaty, the Community has the task of promoting throughout the Community a harmonious development of economic activities, a continuous and balanced expansion and an accelerated raising of the standard of living;

Whereas, in its Resolution of 14 January 1974 on a first action programme of the European Communities in the field of science and technology<sup>3</sup>, the Council emphasized that an appropriate approach should be adopted towards the whole range of available ways and means, including indirect action;

Whereas it is to the Community's advantage to reduce as far as possible its dependence on non-member countries for its supplies of raw materials; whereas waste recovery, recycling and re-use are ways of reducing that dependence;

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OJ No C 7, 29.1.1974, p. 6

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Whereas the Council of the European Communities and the Representatives of the Governments of the Member States meeting within the Council adopted on 17 May 1977 a Resolution on the continuation and implementation of a European Community policy and action programme on the environment<sup>2</sup>, which in particular refers to a campaign against waste;

Whereas a Community research project on secondary raw materials is likely to contribute effectively to the achievement of the abovementioned aims by helping to solve technical problems arising in the use of waste;

Whereas on 19 April 1977 the European Parliament adopted a Resolution on the Community's raw materials supply;

Whereas the Treaty does not provide the specific powers necessary for this purpose;

Whereas the Scientific and Technical Committee (CREST) has given its opinion on the Commission proposal,

HAS DECIDED AS FOLLOWS :

Article 1

The Community shall implement for a period of four years from 1 January 1979 a research and development programme on the recycling of urban and industrial waste (secondary raw materials) (indirect action) as set out in Annex A.

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<sup>2</sup>OJ No C 139, 13.6.1977, p. 1



Article 2

The upper limit for expenditure commitments necessary for the implementation of this programme is estimated at 13 million European units of account and the staff at 6, the unit of account being defined by the Financial Regulations in force.

Article 3

The Commission shall be responsible for the implementation of the research and development programme. To assist it in this task, an Advisory Committee on Programme Management for Research and Development in Urban and Industrial Waste Recycling (secondary raw materials) is hereby set up.

The terms of reference and the composition of this Committee shall be defined in accordance with the Council Resolution of 18 July 1977 on advisory committees on research programme management.<sup>3</sup>

Article 4

During the third year the programme shall be reviewed ; this review may result in a revision of the programme in accordance with the appropriate procedures after the Advisory Committee on Programme Management has been consulted. The European Parliament shall be informed of the results of that review.

Article 5

The information resulting from the execution of the programme shall be disseminated in accordance with Council Regulation (EEC) n° 2380/74 of 17 September 1974 adopting provisions for the dissemination of information relating to research programmes for the European Economic Community<sup>4</sup>.

Done at Brussels

For the Council

The President

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<sup>3</sup>OJ No C 192, 11.8.1977, p. 1

<sup>4</sup>OJ No L 255, 20.9.1974, p. 1

ANNEX A

- I. Recovery of materials and energy from solid urban refuse
  - sorting at source
  - mechanical separation
  - recovery of materials and energy
  
- II. Recovery of materials and energy by thermal treatment of waste
  - pyrolysis and gasification
  - recovery of metals and glass in thermal treatment residues
  
- III. Fermentation and hydrolysis of organic waste of agricultural and industrial origin
  - anaerobic digestion
  - hydrolysis of carbohydrates
  - composting
  
- IV. Recovery of waste rubber
  - retreading
  - reduction in dimensions
  - regeneration
  - pyrolysis

The research and development work shall be carried out under contract.

FINANCIAL RECORD SHEETA. PART I : NEW PROJECT

1. RELEVANT BUDGET HEADING CODE : 3360
2. TITLE OF BUDGET HEADING : Multiannual research and development programme of the European Communities on secondary raw materials - indirect action 1979-1982
3. LEGAL BASIS Article 235 of the EEC Treaty  
Council Decision
4. DESCRIPTION, OBJECTIVE (S) AND JUSTIFICATION OF THE PROJECT :

## 4.0 Description

Implementation of a research programme on secondary raw materials (indirect action and concerted actions), to be carried out by means of shared-cost contracts concluded with research bodies in the Member States and by coordination of research financed at national level in the following areas :

- (a) Separation of urban waste
- (b) Thermal treatment of waste
- (c) Fermentation/hydrolysis (agricultural and industrial waste)
- (d) Recovery of materials from waste rubber

## 4.1 Objective

R&D intended to :

- (1) improve technological knowledge in the field of recovery and recycling
- (2) encourage savings of materials by stepping up recycling.

## 4.2 Justification

As part of the action programme approved by the Council on 14 January 1974 for the planned development of a common scientific research and technological development policy, and following the work done in CREST and the CREST sub-committee on raw materials R&D, it has been found necessary to establish cooperation at Community level in the sector of secondary raw materials (recycling and recovery).

In addition to the coordination of on-going research in the Member States, it proves necessary to supplement it by an indirect action by means of cost-sharing research contracts.

XII/465/78-EN

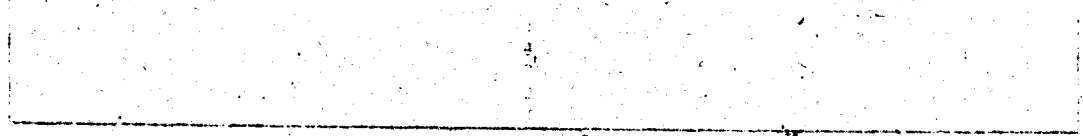
5.	<b>TOTAL FINANCIAL INCIDENCE OF ACTION (in EUA)</b>	
5.0.	Incidence on expenditure	
5.0.0.	Total cost during the term envisaged	
	- on Community budget	13.000.000
	- by national administrations	11.190.500
	- by other sectors at national level	
	<b>Total</b>	<b>24.190.500</b>

5.0.1. Multiannual schedule  
Commitment

	1979	1980	1981	1982		
Staff	150.200	321.400	339.500	360.500		
Manag.	144.800	155.000	163.900	174.200		
Techn.	—	—	—	—		
Contracts	4.000.000	5.000.000	2.190.500	—		
<b>Total</b>	<b>4.295.000</b>	<b>5.476.000</b>	<b>2.693.900</b>	<b>534.700</b>		

Payment

	1979	1980	1981	1982	1983	
Staff	150.200	321.400	339.500	360.500	—	
Manag.	144.800	155.000	163.900	174.200	—	
Techn.	—	—	—	—	—	
Contracts	1.500.000	3.000.000	3.000.000	2.500.000	1.190.500	
<b>Total</b>	<b>1.795.000</b>	<b>3.476.400</b>	<b>3.503.400</b>	<b>3.034.700</b>	<b>1.190.500</b>	



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## 5.0.2.

Method of calculationa) Personnel expenditure

Needs were assessed on the basis of the officials required for the programme

1979    1980-82

2            4

Category A official(s)

Category B official(s)

1            2

Category C official(s)

Apart from these posts the calculations take account of the parameters set for the purpose of drawing up the preliminary draft budget for the financial year 1979. No increase in purchasing power has been provided for. A change in the weighting applicable to remuneration was the only alteration introduced to take account of the general trend in prices within the Community.

b) Expenditure for administrative and technical operations

They cover travel, mission and meeting expenses as well as the cost of scientific and technical assistance whenever it proves necessary for the implementation of the programme.

c) Expenditure in respect of contracts

Since the nature of the work and the qualifications of the contracting parties vary, it is impossible to introduce a standard method of calculation.

However, the Advisory Committee on Programme Management (ACPM) will always be consulted on the allocation of funds.

d) Multiannual forecasts

The rates fixed for calculating estimates are :  
1980-1,07    1981-1,13    1982-1,20    1983-1,26

## 5.1.

Implications in respect of revenue

## 6.

Type of control to be applied

Scientific controls : Management Committees  
ACPM  
Officials appointed by DG XII

Administrative controls :

Budget implementation : Financial Control

Regularity of expenditure : Financial Control

Contracts Division DGXII

7. FUNDING ACTION

7.0.

7.1.

7.2.

7.3. Funds to be included in future (s) budget (s)