



Synthesis report

Targeted Research Action on Polymer Materials
Thematic Network Type 2
Proposal N° BETC-97-1019
Contract N° BRRT-CT97-5025

Woubrugge
October 2002

Synthesis report

Contract n°:	BRRT-CT97-5025
Project n°:	BETC-97-1019
Title:	Targeted Research Action on Polymer Materials
Project co-ordinator:	E3T Consult BV (NL)
Partners:	Air Liquide SA (F) Asociación Centro Tecnológico GAIKER (ES) Association of Plastics Manufacturers in Europe (B) Association pour la Recherche et le Développement de Méthodes et Processus Industriels (F) Centre for Research and Technology Hellas (EL) Centre National de la Recherche Scientifique (F) C.G.S. sas (I) Clariant Emulsion Norden AB (S) Commissariat à l'Energie Atomique (F) Conseil Européen de l'Industrie Chimique (B) Consiglio Nazionale della Ricerca (I) Consorzio sulle Applicazioni dei Materiali Plasticci e Problemi di Difesa dalla Corrosione (I) Daimler-Chrysler AG (D) Danmarks Tekniske Universitet (DK) DOW Benelux NV (NL) DSM Performance Polymers BV (NL) ERA Technology Ltd (UK) European Plastics Converters (B) Euro-Projects (LTTC) Ltd (UK) Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung eV (D) Friedrich-Alexander Universität Erlangen-Nürnberg (D) Göthlich (D) Hoechst Portuguesa SA (PT)
Reference period:	December 1st 1997 – May 31st 2002
Duration:	54 months
Date of issue:	October 2nd 2002
Imperial Chemical Industries Plc (UK) Institut für Polymerforschung Dresden eV (D) Interchem Hellas SA (EL) Johannes Kepler Universität Linz (A) KEMA Nederland BV (NL) Kungliga Tekniska Högskolan (S) Metso Paper Inc (SF) Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (NL) Production Engineering Research Association (UK) PwC Consulting BV (NL) Rapra Technology Ltd (UK) Sapa Autoplastics SpA (I) Scientific Generics Ltd (UK) Sigma Coatings BV (NL) Stichting Hout Research (NL) Swedish Environmental Protection Agency (S) Techinauv SA (F) Technische Universiteit Eindhoven (NL) Thales Underwater Systems sas (F) Tun Abdul Razak Research Centre (UK) Universidad Politécnica de Madrid (ES) Université Blaise Pascal Clermont- Ferrand II (F) Université Catholique de Louvain (B) Université Pierre et Marie Curie – Paris VI (F) University of Aston (UK) University of Leeds (UK) VANE Beheer BV (NL)	



*Project funded by the European Community
under the Industrial and Material Technologies Programme (1994-1998)*

TRA on Polymer Materials

Address: *Dokter Lothlaan 2*
P.O. Box 3055
2480 AB Woubrugge
The Netherlands
Telephone: +31 172 518 944
Fax: +31 172 518 303
E-mail: *tra@e3t.nl*
Internet: *www.tra-pm.org*

Table of contents

1.	<i>Summary</i>	1
2.	<i>Consortium</i>	3
2.1	Network structure and Steering Committee	3
2.2	Clusters	4
2.2.1	Cluster 1 – Polymer chemistry and engineering	4
2.2.2	Cluster 2 – Polymers in surface treatment and adhesion	5
2.2.3	Cluster 3 – Polymer composites	6
2.2.4	Cluster 4 – Recycling of polymer materials	7
3.	<i>Achievements</i>	8
3.1	Strategic objectives	8
3.2	Network events	9
3.2.1	Annual workshop	9
3.2.2	Cluster meetings	10
3.2.3	Round Table meeting	11
3.3	Network deliverables	12
3.3.1	Newsletter	12
3.3.2	Website	13
3.3.3	Strategic reports	14
3.4	Conclusions	14
4.	<i>Dissemination practices and follow-up actions</i>	16
4.1	Dissemination practices	16
4.2	Follow-up actions	16
4.2.1	Pan-European clean coating technology alliance	17
4.2.2	Adoption of best practice technology cases	17

1. Summary

The thematic network entitled “Targeted Research Action on Polymer Materials” (TRA-PM) was an initiative of the European Commission (EC). The general aim of this network was to establish an interface between related research and technological development (RTD) projects on polymer materials supported by the EC.

The objectives of the TRA-PM were:

- to provide a European forum for the development, dissemination and exchange of scientific and technological knowledge, and of ideas relating to all aspects of production and use of polymer materials;
- to accelerate dissemination and exploitation of research results to meet the need of industry and society for a sustainable development;
- to improve synergy and co-ordination of research being carried out in EC programmes;
- to inform RTD programme planners of the research needs and priorities of tomorrow;
- to support socio-economic targets by scientific and technical excellence.

The network consisted of four clusters:

1. Polymer chemistry and engineering;
2. Polymers in surface treatment and adhesion;
3. Polymer composites;
4. Recycling of polymer materials.

The projects were allocated to the cluster with most common ground. Forty-eight projects in total have participated in the TRA-PM representing about 500 partners from circa 400 universities, research institutes, small and medium-sized enterprises (SMEs) and big industries.

To achieve the above-mentioned objectives the TRA-PM has organised four annual workshops, twenty-five cluster meetings and three Round Table meetings, and published eleven newsletters, three strategic reports, three position papers, two press releases and a website. In addition, the network has organised several management activities like Steering Committee meetings, and published the necessary management deliverables like progress reports and summary cost statements.

The annual workshops have been two-day events bringing together representatives of all projects, who presented their technological achievements, exchanged ideas and

discussed new projects, identified and stimulated synergy between the projects, and developed closer contacts between each other.

The cluster meetings brought together representatives of projects being part of that cluster. Due to the smaller organisation in comparison with the annual workshop, the cluster meetings allowed more detailed discussions.

The Round Table meetings brought together representatives from industry, government and society in general to discuss current trends and identify challenges for future research needs.

The newsletter informed the participants and other interested persons about the clusters, projects, events and other interesting information related to the network. People could subscribe for free copies of the newsletter.

The strategic reports informed EC RTD programme planners and other players in the field of polymer materials on the state of the art and the future research needs in this area.

The position papers were the result of the Round Table meetings and presented the view of the network on the topics discussed at the meetings.

The subjects of the press releases have been the commencement of the network and the introduction of e-mail discussion groups on the website.

The website, the address of which is www.tra-pm.org, includes relevant information on the projects participating in the network and the events organised by the network, documents published by the network or its partners, and details on the partners and their organisation.

Generally it can be said that the TRA-PM was successful, since the general aim of establishing an interface between related RTD projects has been achieved. Only exception is the cluster on polymer composites, which had to early terminate its activities due to the big differences between the projects.

Considering the objectives of the TRA-PM, it can be said that most of the objectives have been achieved. The TRA-PM has succeeded in providing a European forum for the development, dissemination and exchange of scientific and technological knowledge, and of ideas relating to all aspects of production and use of polymer materials. Besides the network succeeded in accelerating the dissemination, but not the exploitation of research results to meet the need of industry and society for a sustainable development. The network has also informed RTD programme planners of the research needs and priorities of tomorrow. However, the network has not contributed to the improvement of synergy and co-ordination of research being carried out in EC programmes.

2. Consortium

The TRA-PM was a network established on the initiative of the EC. The general aim of this network was to establish an interface between related RTD projects on polymer materials. As such, the TRA-PM brought together about 500 representatives from circa 400 institutes, universities and enterprises from all over Europe, linked together by the involvement in polymer materials and their participation in EC-funded projects.

2.1 Network structure and Steering Committee

The network structure of the TRA-PM is depicted in Figure 2.1. The network consisted of four clusters. Projects were allocated to the cluster with most common ground.

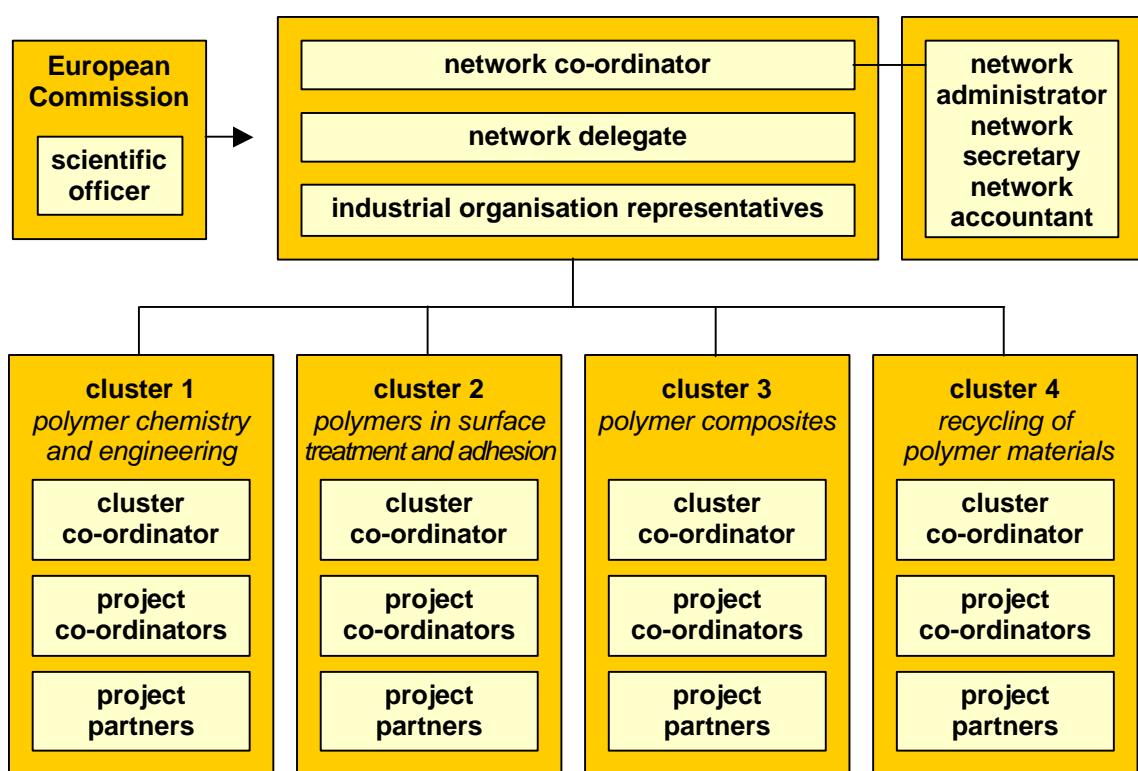


Figure 2.1. Structure of the organisation of the TRA-PM.

The network was co-ordinated by E3T Consult BV (NL), who also chaired the Steering Committee. Other members of the Steering Committee were the network delegate PwC Consulting BV (NL), the representatives of the industrial organisations Association of Plastics Manufacturers in Europe (B), Conseil Européen de l'Industrie Chimique (B) and European Plastics Converters (B), the below-mentioned cluster co-ordinators and a scientific officer in charge of the EC.

2.2 Clusters

2.2.1 Cluster 1 – Polymer chemistry and engineering

This cluster was co-ordinated by the partner Göthlich (D). Thirteen projects have been allocated to this cluster, which are summarised in Table 2.1.

Table 2.1. Overview of projects and their co-ordinators participated in cluster 1.

Project co-ordinator	Project
Association pour la Recherche et le Développement de Méthodes et Processus Industriels (F) C.G.S. sas (I)	Postpone polymer processing instabilities (3PI) Industrial prototype for gluing shoe components by means of a thermoplastic film (IGESI)
Centre for Research and Technology Hellas (EL)	Development of advanced polymerisation process modelling, simulation, design and optimisation tools (<i>polyPROMS</i>)
Centre National de la Recherche Scientifique (F)	Reaction engineering of heterogeneously catalysed polymerisation (CATAPOL)
Danmarks Tekniske Universitet (DK)	Temperature controlled stretching, heat stable, biaxially oriented PET bags and devices for use in the medical sector (TEMCO STRETCH)
dow Benelux NV (NL)	Development of an advanced rheological tool for polymer melt characterisation (ART)
Friedrich-Alexander Universität Erlangen-Nürnberg (D)	Optimisation of industrial multiphase mixing (OPTIMUM)
Johannes Kepler Universität Linz (A)	Structure development during solidification in the processing of crystalline polymers (DECRYPO)
Universidad Politécnica de Madrid (ES)	Molecular-based approach to the simulation of polymer fluid flows in processing operations (MPFLOW)
Université Blaise Pascal Clermont-Ferrand II (F)	Interactions between gases and polymers at high pressures - Polymer foaming process (POLYFOAM)
Université Catholique de Louvain (B)	Mechanically induced reactions during ultra-high shear polymer processing (UHS PROCESSING)
Université Pierre et Marie Curie – Paris VI (F)	Polymer processing: measurements and numerical simulation (MENUSIM)
University of Leeds (UK)	The science and technology of long chain branching in polyolefins and their process control (LCB POLYOLEFINS)

2.2.2 Cluster 2 – Polymers in surface treatment and adhesion

This cluster was first co-ordinated by Scientific Generics Ltd (UK), but after resignation of this partner, Clariant Emulsion Norden AB (S) filled the position. Twelve projects have been allocated to this cluster, which are summarised in Table 2.2.

Table 2.2. Overview of projects and their co-ordinators participated in cluster 2.

Project co-ordinator	Project
Air Liquide SA (F)	Enhanced wettability and adhesion of polymer film surfaces by electric discharges in silane gas mixtures under atmospheric pressure
Centre National de la Recherche Scientifique (F)	Polymerisable and polymeric surfactants in emulsion polymerisation for waterborne coatings (POLYSURF)
Clariant Emulsion Norden AB (S)	New generation surfactants for the latex polymerisation process and high quality environmentally friendly coatings
Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung eV (D)	Vacuum coating of polymer films for packaging and technical applications
Hoechst Portuguesa SA (PT)	New approach to water dispersed high performance adhesives (NEWAD)
Imperial Chemical Industries Plc (UK)	Depolymerisation, polymerisation and applications of biosustainable raw materials for industrial polymeric end uses (CARBOPOL) & High performance industrial polymers based on modified starch (HYDROSTAR)
Interchem Hellas SA (EL)	Visible-light curable latex and heavily pigmented coating systems (VISLATEX)
Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (NL)	Heavy metal free waterborne anticorrosion coatings from intrinsically conductive polymers
Sigma Coatings BV (NL)	Rheology engineered waterborne dispersions for high performance paints (RE POLYMERS)
Stichting Hout Research (NL)	Development of a new generation of low-VOC, high performance coatings based on chemical crosslinks between binder and wood (CROSCOATWOOD)
Technische Universiteit Eindhoven (NL)	Living radical polymerisation in emulsion for direct environmentally friendly preparation of dispersed polymers with compositional and architectural control

2.2.3 Cluster 3 – Polymer composites

This cluster was co-ordinated by PwC Consulting BV (NL). Ten projects have been allocated to this cluster, which are summarised in Table 2.3. The cluster had to early terminate its activities due to the big differences between the projects.

Table 2.3. Overview of projects and their co-ordinators participated in cluster 3.

Project co-ordinator	Project
Commissariat à l'Energie Atomique (F)	Design of new heat-exchangers made of polymer (HEXPO)
Consorzio sulle Applicazioni dei Materiali Plastici e Problemi di Difesa dalla Corrosione (I)	Integration of conventional polymers with ceramic nanoparticles to produce structural composites with enhanced performances (CERAPOLNANO)
Daimler-Chrysler AG (D)	New cyanate based materials for advanced technologies: cost effective production and improved long-term durability
Euro-Projects (LTTC) Ltd (UK)	Research, development and evaluation of environmentally friendly advanced thermoplastic composites for the manufacture of large surface area structures (ENVIROCOMP)
Institut für Polymerforschung Dresden eV (D)	Interphase characterisation and study of structure-property relations of fibre-reinforced polymers (INTERPHASE)
Metso Paper Inc (SF)	Dynamically loaded filament wound composite parts tailored for hot and wet environments (DYNACOMP)
Production Engineering Research Association (UK)	Localised stiffening of thermoplastic extrusions & Thermoplastic composite technology for reduced cost pipelines &
Techinauv SA (F)	Reinforced plastics for cost effective sanitary ware Simultaneous bi material injection of rubber compounds to obtain parts of complex specifications

2.2.4 Cluster 4 – Recycling of polymer materials

This cluster was co-ordinated by the Swedish Environmental Protection Agency (S). Thirteen projects have been allocated to this cluster, which are summarised in Table 2.4.

Table 2.4. Overview of projects and their co-ordinators participated in cluster 4.

Project co-ordinator	Project
Asociación Centro Tecnológico GAIKER (ES)	Development of multipurpose industrial separator units for recycling plastic wastes by on-line pattern recognition of polymer features (SURE-PLAST)
Consiglio Nazionale della Ricerca (I)	New materials from miscellaneous plastic products
DSM Performance Polymers BV (NL)	Sustainable closed loop system for recycling of carpet materials (RECAM)
ERA Technology Ltd (UK)	Electrostatic recovery of paper and plastic packaging wastes (ELREC)
KEMA Nederland BV (NL)	Tribo-electric cable plastics recycling (TRICARE)
Kungliga Tekniska Högskolan (S)	Industrial production of high-performance ecological polymeric composites based on residual/renewable cellulose fibres and post-consumer thermoplastics (ECOSITES)
Production Engineering Research Association (UK)	Development of a high speed recyclable packaging technology for yellow fat food products
Rapra Technology Ltd (UK)	Reprocessing and re-use of waste produced in the manufacture of plastic packaging
Sapa Autoplastics SpA (I)	Development of innovative systems for waterborne coated plastic surfaces to minimise the environmental impact and to increase product quality (PLASCOAT)
Thales Underwater Systems sas (F)	Cost efficient recycling of elastomeric materials with noise and vibration damping applications (CERMAT)
Tun Abdul Razak Research Centre (UK)	Thematic network on rubber compounding for improvements in health, safety and the environment (RUBBER COMPOUNDING)
University of Aston (UK)	Development of biodegradable polymer modifiers
VANE Beheer BV (NL)	High shear mixing to recycle vulcanised rubber by devulcanisation (HSM)

3. Achievements

3.1 Strategic objectives

The main objective of the TRA-PM was to secure added value to EC's funded research projects for both the European Community and researcher in field of polymer materials. By enhancement of the communication between researchers in universities, research institutes and industry, the TRA-PM tried to strengthen the high level of research activities in Europe. In this way, the high level of research in Europe will be highly competitive with other continents like the United States of America and Asia. This is necessary for industrial competitiveness of Europe with the other continents in the near and far future.

The objectives of the TRA-PM were defined as:

- providing a European forum for the development, dissemination and exchange of scientific and technological knowledge, and of ideas relating to all aspects of production and use of polymer materials;
- accelerating dissemination and exploitation of research results to meet the need of industry and society for a sustainable development;
- improving synergy and co-ordination of research being carried out in EC programmes;
- informing RTD programme planners of the research needs and priorities of tomorrow;
- supporting socio-economic targets by scientific and technical excellence.

The added value of the network was classified in three categories:

1. For the *research consortia/ partners*, the TRA-PM would offer increased exchange of mutually relevant information on technological aspects for future exploitation. Furthermore, the network would provide a platform for new contacts/ partners and new ideas.
2. For the *programme*, the TRA-PM would offer a better coherence between running projects, so that synergy and common themes or sub-themes between projects could be identified and stimulated.
3. For the *European Commission* the added value of the TRA-PM would be, in general, the strengthening of industrial competitiveness. This would result in the development of a sound and proven scientific and technological framework and increase dissemination of quality information to European producers and converters of polymers.

3.2 Network events

In order to meet the objectives the TRA-PM organised various network events, of which the annual workshops, cluster meetings and Round Table meetings were the major ones.

3.2.1 Annual workshop

The annual workshop was aiming at presenting the technological achievements, promoting the exchange of ideas and discussion on new projects, identifying and stimulating synergy between projects, and developing closer contacts between the participants. The TRA-PM organised four workshops.

1st annual workshop

The first workshop was held in Brussels on April 23rd 1998. The focus of this workshop was on introducing the network, its clusters and its partners, but it included also a presentation on the Fifth Framework Programme. All projects but one were represented, and also co-ordinators of projects to be included in the TRA-PM, but just finished before the start of the network, attended the workshop.

2nd annual workshop

The second workshop was held at the Production Engineering Research Association (PERA) in Melton Mowbray (UK) on September 16-17th 1999. The first day consisted of plenary sessions on the Fifth Framework Programme and the research infrastructure, and a discussion on the communication within the TRA-PM. During a poster session, participants were able to present their project results and ideas. The second day consisted of three parallel sessions with topics on life cycle assessment, sustainable development, plastics in construction and manufacturing, plastics in coatings and packaging, and project ideas. The workshop was concluded with a tour round the facilities of PERA.

3rd annual workshop

The third workshop was held at the Blaise Pascal University in Clermont-Ferrand (F) on May 11-12th 2000. Plenary sessions on the exploitation of research results and the value of research for SMEs and for the future of Europe were on the programme on the first day, whereas parallel sessions on process technologies, structure-property relations, polymers in the transport industry, and project ideas were on the programme on the second day. A tour round two laboratories of the university and two associated institutions completed the third workshop.

4th annual workshop

The last workshop was held in Paris on September 13-14th 2001. The first morning started with a presentation on the Sixth Environmental Action Programme followed by a plenary session on the exploitation of research results. The afternoon was reserved for parallel sessions on new applications of polymers or biopolymers, rheology and molecular modelling, recycling of polymer materials, and replacement of hazardous substances. Besides, there was a poster and project ideas session. The second day consisted of brainstorming sessions on various themes and a plenary session on the European Research Area. The workshop was concluded with a tour round the Advanced Spectroscopy Laboratory of the Pierre et Marie Curie University.

3.2.2 Cluster meetings

The cluster meetings had similar aims as the annual workshop, but since these meetings took place on a smaller and more specific level, there was more room for detailed discussions.

Cluster 1 – Polymer chemistry and engineering

This cluster organised seven cluster meetings; the first meeting combined with the first annual workshop and the other meetings in Brussels, ‘s-Hertogenbosch (NL), Speyer (D), Paris and two more in Brussels, respectively. At the second meeting the participants agreed that it was not necessary to decide on the objective of the cluster, since the network itself, as a platform for the exchange of ideas and a forum for the discussion of scientific and technical problems, was the objective.

In addition to presenting the status of their projects, the participants also identified future research needs, exchanged ideas for new projects and tried to find synergies within existing ones. Added value was created by inviting guest speakers for presentations on related topics, by visiting laboratories and plants, and by organising social activities. Excellent example of co-operation within the cluster was the joint workshop of the structure-property related projects ART, DECRYPTO, LCB POLYOLEFINS and MPFLOW.

Cluster 2 – Polymers in surface treatment and adhesion

This cluster organised five cluster meetings; the first meeting combined with the first annual workshop and the other meetings in Brussels, Wageningen (NL), Athens and Lyon (F). At the first cluster meeting the participants agreed that the objectives of the cluster were to generate network opportunities at both technical and commercial levels, and to exchange technology where this was possible.

Main topic of the meetings was to present the progress of the projects and find possible synergies between the projects. But time was also reserved for exchanging ideas on success factors for good projects and ideas for new projects. Besides, discussions on the future research needs were part of the programme.

Cluster 3 – Polymer composites

This cluster organised five meetings; two meetings combined with the first and second annual workshop, respectively, and the other meetings in Dresden (D) and twice in Paris.

The cluster meetings in Paris were parallel to the JEC Composites Show. The first meeting was organised together with the ‘Composite Industry meeting’ in which participants from both inside and outside the TRA-PM could present their ideas for new projects. The second meeting was organised together with the ‘European Union high-level strategy forum on composite materials’. This forum was organised by the TRA-PM and aimed at building a common strategy by leading industrial and EC actors and building new strategic views by the EU’s industries in the composite production chain.

Cluster 4 – Recycling of polymer materials

This cluster organised eight cluster meetings; four meetings combined with the annual workshops and the other meetings, all two-day events, in Shrewsbury (UK), Brussels, Stockholm and Padua (I), respectively. At the second cluster meeting the participants agreed that the objective of the cluster was to contribute to the development of cost-effective and environmentally sound polymer recycling systems.

Besides presenting the status of their projects, the participants had fruitful discussions on the future needs in EU policy, RTD and market forces. There was a high level of sharing information and materials and exchanging ideas. Added value was created by presentations of guest speakers, tours round laboratories and pilot plants, and social activities. Furthermore, two meetings were organised together with other network initiatives; the meeting in Brussels together with the cluster ‘End-of-life materials processing and recovery’ of the “Targeted Research Action on Waste Minimisation and Recycling” (TRAWMAR), and the meeting in Padua together with the COST action ‘Fluorous medium as a tool for environmentally compatible oxidation processes’.

3.2.3 Round Table meeting

The Round Table meeting was aiming at bringing together representatives from industry, government and society in general, to discuss current trends and identify challenges for future research needs. The TRA-PM organised three Round Table meetings.

1st Round Table meeting

The first Round Table meeting was held in Amsterdam on December 9th 1998. The subject of this meeting was ‘Polymers and sustainable development’. At this meeting the role of sustainable development in the Fifth Framework Programme was explained. The representatives of the aforementioned industrial organisations illustrated their initiatives and contributions to sustainability. The meeting ended with a discussion on the position paper about this subject.

2nd Round Table meeting

The second Round Table meeting was held at the Association of Plastics Manufacturers in Europe (APME) in Brussels on January 20th 2000. The subject of this meeting was ‘Exploitation of research results of both ongoing and finished TRA-PM projects on polymer research and development’. The first part of the meeting consisted of sharing experiences by presenting models and theory of exploitation, best practices and lessons learned, and real life cases. In the second part the experiences gained were translated to mechanism of exploitation for the TRA-PM. This view was presented in a position paper.

3rd Round Table meeting

The third Round Table meeting was held at the Research DG of the European Commission in Brussels on March 15th 2001. The subject of this meeting was ‘Assessment of the TRA-PM and the TRA-PM in its final year’. At this meeting the events and deliverables of the TRA-PM were evaluated as well as its clusters. After that, suggestions were made about the future of the TRA-PM and the organisation of future networks in general. In this scope, a presentation was given on the Sixth Framework Programme and its instruments. The successes of cluster 1 and the RUBBER COMPOUNDING network were useful examples.

3.3 Network deliverables

In addition to the organisation of events the TRA-PM produced several kinds of network deliverables to meet the objectives, of which the newsletter, the website and strategic reports were the major ones.

3.3.1 Newsletter

The newsletter was aiming at informing the participants and other interested persons about the clusters, projects, events and other interesting information related to the TRA-PM. Eleven newsletters, eight to twelve pages of A4 size, were released. Some issues concentrated on a specific subject whereas other issues contained a mixture of subjects.

Table 3.1 gives an overview of the issues released and their topics. The newsletter had over 500 subscribers at the end and was therefore an excellent means to disseminate information.

Table 3.1. Overview of the newsletters released and their topics.

Newsletter	Topics
Issue 98-1	Introduction of TRA-PM and its clusters
Issue 99-1	Status of cluster 4 including reports of three finished projects; Report of first Round Table meeting
Issue 99-2	Report of second annual workshop; State-of-the-art review 1999; Summary on Fifth Framework Programme; Website TRA-PM
Issue 00-1	Status of cluster 1 including reports of five projects; Report of SusTech 10 event
Issue 00-2	Reports of three projects in cluster 3; Report of second Round Table meeting; Report of cluster 2 meeting; Report of EU high-level strategy forum on composites; Report of joint TRA-PM/ TRAWMAR meeting
Issue 00-3	Report of third annual workshop
Issue 00-4	Status of cluster 2 including reports of six projects
Issue 01-1	Reports of six new projects and one finished project; Reports of meetings of clusters 1 and 4
Issue 01-2	Reports of one new project and one finished project; Report of third Round Table meeting; Report of Steering Committee meeting; Reports of meetings of clusters 1, 2 and 4
Issue 01-3	Report of fourth annual workshop
Issue 02-1	Retrospective view TRA-PM; State-of-the-art review 2002; Website TRA-PM

3.3.2 Website

The website of the TRA-PM provides the partners and other visitors information about the network, the clusters and the participating projects. The website includes all non-confidential documents published by the partners of the TRA-PM and an overview of the events organised. Visitors can search for the contact details of all partners of the TRA-PM and they can join one or more e-mail discussion groups on polymer materials related topics. A page containing links to other relevant web pages completes the website.

The original website was built for two-way communication. Besides obtaining information, the partners were also allowed to put content on the website by entering the private part by means of a username and a password. These were also required to enter the cluster libraries containing confidential information. However, it turned out that the website was mainly used in one-way, namely obtaining information. Since the original

website was rather complex and sensitive to runtime errors, the site was redeveloped in a more user-friendly one with an increased information content. The website address is www.tra-pm.org and the website is still available.

3.3.3 Strategic reports

The strategic reports aimed at informing EC RTD programme planners and other players in the field of polymer materials on the state of the art and the future research needs in this area. Three major reports have been published in co-operation with the cluster and project co-ordinators and representatives of industrial organisations.

In September 1999 the first elaborate state-of-the-art review was released. This review not only indicated the main science and technology gaps and assigned priorities for research to fill needs from industry and society, but also identified potential research overlaps and areas of possible synergies and complementarities within the projects of the cluster and between the clusters.

Strategic notes on the future research needs for polymer materials were released in May 2000 and, among others, distributed at the third annual workshop in Clermont-Ferrand. In this paper the TRA-PM presented its view on the research needs in the field of polymer materials in the near future (<5 years). These needs were divided into scientific needs and requirements concerning the structural environment for RTD.

The second elaborate state-of-the-art review was released in April 2002. In addition to the purposes of the first elaborate state-of-the-art review, this review also aimed at contributing to the further details of the Sixth Framework Programme.

3.4 Conclusions

The network events and deliverables mentioned in the previous sections have largely contributed to achieve the objectives of the TRA-PM. Although the network has achieved most of its objectives, it did not succeed to achieve them all. Generally it can be said that the TRA-PM was successful, since the general aim of establishing an interface between related RTD projects has been achieved.

The first objective was to provide a European forum for the development, dissemination and exchange of scientific and technological knowledge, and of ideas relating to all aspects of production and use of polymer materials. With the activities and deliverables mentioned before it can be said that the TRA-PM has contributed to provide this European forum. The possibility to meet other research people who speak the same ‘polymers’ language and not necessarily work in the same specialised field is well appreciated by the participants. The meetings created an excellent environment for fruitful discussions, new ideas and views, new application possibilities, and new

contacts and project partners. New projects that had joined the TRA-PM and invited guest speakers provided fresh blood in the network.

The second objective was to accelerate the dissemination and exploitation of research results to meet the need of industry and society for a sustainable development. The TRA-PM has contributed to accelerate the dissemination of research results by means of organising annual workshops and cluster meetings. These activities were extra opportunities for researchers to present their results to people active in the same field. However, to the exploitation of research results the TRA-PM has hardly contributed. Of course this topic was often part of discussion, but it concentrated rather on the prerequisites of successful projects and the identification of barriers than on the real exploitation itself.

The third objective was to inform RTD programme planners of the research needs and priorities of tomorrow. In three strategic reports the TRA-PM has given its view on the main science and technology gaps and the priorities for research to fill needs of industry and society. With these reports and the position papers of the Round Table meetings the TRA-PM has informed the RTD programme planners. However, it is not known to which extent this information has helped the planners, although it certainly does.

The fourth objective was to improve the synergy and co-ordination of research being carried out in EC programmes. In the elaborate state-of-the-art reviews the TRA-PM has also identified the potential research overlaps and areas of possible synergies and complementarities within the projects of the cluster and between the clusters. However, these views were very limited and it is questionable if this information has been of use for the EC.

The last objective was to support socio-economic targets by scientific and technical excellence. Although the TRA-PM did not carry out any research activities by itself, it provided a European forum for developing, disseminating and exchanging scientific and technological knowledge. In this way it has contributed to support socio-economic targets, not only those set in the projects participated in the TRA-PM, but also those set in other ongoing and new projects of the partners of the network.

4. Dissemination practices and follow-up actions

4.1 Dissemination practices

The TRA-PM presented itself to a wider audience in several ways. The aforementioned meetings parallel to the JEC Composites Show attracted many participants outside the TRA-PM. The joint meetings organised by cluster 4 developed contacts outside the network. The TRA-PM was also represented at the conference to launch the Fifth Framework Programme in Essen (D) in 1998.

The network delegate of the TRA-PM established several contacts with other related thematic networks (e.g., European Research Network for Sustainable Technologies (ERNST), Thematic Network on Advanced Manufacturing Systems (TEAMS), TRA on Environmentally Friendly Construction Technologies (TRA-EFCT), TRA on Waste Minimisation and Recycling (TRAWMAR)) and organisations (e.g., Association of Plastics Manufacturers in Europe (APME), European Chemical Industry Council (CEFIC), European Composites Industry Association (GPRMC), European Council for Automotive R&D (EUCAR), European Plastics Converters (EuPC), European Polymer Federation (EPF)) by participation in workshops, conferences and meetings.

The TRA-PM made two press releases available to editors of magazines, journals and reviews in order to make the network known in the world of polymers. The first press release introduced the TRA-PM to people active in the field of polymer materials. The second press release introduced the e-mail discussion groups on the website of the TRA-PM and invited people to join one or more discussion groups.

The TRA-PM distributed a leaflet containing a short overview of the structure, added value and activities of the network.

The website of the TRA-PM is public and attracts about hundred visitors per month. Most visitors are from Europe, but they are also from Northern America and Asia. Visitors do not only access the site through its direct address, but also through search engines and links placed on websites of the partners of the TRA-PM.

4.2 Follow-up actions

The TRA-PM has been invited to participate in the projects entitled “Pan-European Clean Coating Technology Alliance” (PECCTA) and “Adoption of Best Practice Technology Cases” (ADOPT).

4.2.1 Pan-European clean coating technology alliance

The aim of the PECCTA project was to establish a sustainable, pan-European network of independent research and technology organisations with complementary expertise and technical facilities that will provide to users and applicators of surface coatings with objective technical support through consulting and technical services. The initiative was intended to cover all aspects of organic surface coating and was not confined to particular substrate materials.

In forming a European wide network, it is sought to make the expertise and that of other participants in the joint venture available to SME engineering enterprises throughout the member states and nations seeking access to the EU.

By providing a focus for state-of-the-art coating technology it was expected that the alliance would aid European industry competitiveness in world markets through product and process improvement throughout the EU. The alliance would also form the base of future common research activities in the coating field that would help to improve the state of knowledge and technology within the EU.

Appropriate participants of the TRA-PM, most participating in cluster 2, have been invited to join the alliance. Although the proposal had been approved by the EC, the project did not get off the ground due to deficiencies in the contractual settlement. The PECCTA idea has now been submitted to the EC as an expression of interest to assist in preparing the Sixth Framework Programme.

4.2.2 Adoption of best practice technology cases

The TRA-PM is one of the five thematic networks that participate in the ADOPT project under the GROWTH programme. The project commenced at October 1st 2001 and is scheduled to operate for twenty-four months. The network co-ordinator represents the TRA-PM in the contract.

The ADOPT project addresses the issues of limited take up and exploitation of RTD results in the Fifth Framework Programme and limited participation of SMEs in RTD activities. The project partners will detailed examine the existing barriers preventing RTD result adoption by enterprises, analyse the data provided by this research activity, and provide reports defining proposals to overcome these barriers in the development of future EC RTD programmes.

The final outcomes anticipated for the ADOPT project should consist in the edition of a White Paper consisting in a proposal for integrated projects in the Sixth Framework Programme, and of Practical Guidelines consisting is a document for SMEs and other companies seeking involvement in EC projects.

Concerning the TRA-PM, polymer recycling has been chosen as industrial sector to concentrate on. In this way the ADOPT project is in the first place of interest for the participants belonging to cluster 4, but the outcomes will of course be of the interest of all participants.