Action T1 / Deliverable D1.3 – Life+_ Report on legislation, standards and practical know-how and experience on recycled wood and rubber raw materials in the industrial sector

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Executive Summary

The aim of this deliverable is to present essential information regarding the significance/limitations of recovered wood and rubber raw materials in the industry. To do this, questionnaire campaigns were organised for the European industry using raw materials from recycled wood and rubber.

Due to a very poor response by the companies, mainly for competition reasons, the consortium employed the contingency plan as described in detail in the Document of Work. Therefore this deliverable presents the actual situation of recovered wood and rubber sectors in Europe based on qualitative and quantitative data. Reliable data were obtained by the European Panel Federation and by the European Tyre Recycling Association for the wood and rubber sector, respectively.

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PART A: WOOD

1. Inquiry for the wood sector

1.1. Preparation and submission of the inquiry

In order to obtain essential information regarding the significance/limitations of recovered wood raw materials in the industry, a questionnaire for the European wood-based panel industry was prepared with responsibility of AUTH-LFU. The knowledge and practical experience of companies would help to get a significant contribution to identify approaches for a better utilization of recovered wood materials by the European wood industry.

The inquiry can be found in Annex I and contains on total 15 questions regarding:

- categories of recovered wood materials used
- classification systems (legislation, European or national standard, industrial standard, own) for the recovered wood raw materials
- legislation and/ or certification system for the purchase/ use of recovered wood raw materials
- origin of recovered wood
- prices/ quality/ availability of recovered wood
- production data and share of recovered wood used
- future tendency of using recovered wood
- treatments and technical limitations in using recovered wood
- demand/ sales of recovered wood products
- proposals for promoting the utilization of recovered wood

The final version of inquiry together with translations in Greek, Spanish and Italian was ready by April 2011. Also, the addresses of 155 wood companies were gathered (Annex II). The first submission of companies through post office and e-mails took place in May 2011. AIDIMA was responsible for the submissions in Europe and Spain, AUTH-LFU for Greece, COSMOB for Italy, and BRUNEL and ENJILY-INT for UK. Due to a very poor response by the companies direct telephone calls to wood companies were initiated by all partners and two more inquiry submission (post office, e-mail) campaigns were done, one in July 2011 and the last one in September 2011. The explanation given from the companies for not providing data was that this might harm competition. An overview of preparation and submission activities of the inquiry is given below:

Date	Description
April 2011	Final versions of inquiries and 155 addresses of wood companies prepared by AUTH-LFU and sent to involved partners - For Spain/ Greece/ Italy translations were prepared
May 2011	1st submission Europe and Spain: AIDIMA Greece: AUTH-LFU Italy: COSMOB UK: BRUNEL, ENJILY-INT
July 2011	2nd submission
September 2011	3rd submission

1.2. Inquiries received and analysis

The response of the wood companies was extremely low. After 3 submissions of the inquiries and reminders only 4 replies were received. The replies per country as well as a short analysis are shown below:

Sector	Number of replies
Wood	Europe: - Spain: 1 Greece: - Italy: 3 UK: -

Categories of recovered wood

- Spain: Wood chips for board industries and woodchips for energy valorisation
- Italy: Post-consumption based on EWC codes (030105, 150103, 170201, 191207.200138), pre-consumer based on EWC codes (030105, 150103, 170201, 191207.200138), untreated wood waste from pruning, etc.. saw dust, 100% post-consumer, used furniture, pallets, wooden scraps from building materials, wooden bobbins

Reviews:

Classification system for recovered wood raw materials

- Spain: No
- Italy: Two companies follow a classification system (CER codes or internal codes of Trombini Group - see attached), and one company does not

Review: It is not a generally accepted practice for companies to follow a classification system for their recovered raw materials

Legislation and/ or certification system for the purchase/ use of recovered wood raw materials

- Spain: The company follows the PEFC and FSC certification systems
- Italy: Two companies follow the Italian Standard for the input of wood material, and one company does not follow any standard/law

Review: There is no general rule, some companies follow national or international legislation and/ or certification systems (e.g. PEFC and FSC systems) for the purchase/ use of recovered wood raw materials while others do not

Origin of recovered wood

- Spain: 30% own sources, 70% private companies
- Italy: (Company 1) 4-10% own sources, 10-15% public organization, 80-85% private companies (Company 2) 4-5% own sources, 10-15% public organization, 80-85% private companies (Company 1) from public organization and private companies without mentioning shares

Review: On average, recovered wood comes mostly from private companies (up to 80% more or less) while the share of own sources and public organisations is low

Origin of recovered wood

- Spain: 100% National market

- Italy: 75-80-90% National market, 10-20-25% Other European countries

Review: Recovered wood comes almost exclusively from the national market (up to 86% on average). A very small share comes from other European countries outside Europe

Opinion about prices of recovered wood in relation to its quality (1 low – 5 high)

- Spain: 2
- Italy: 1-2

Review: Companies consider prices of recovered as being relatively low

Opinion about the quality of recovered wood

- Spain: satisfactory
- Italy: non-satisfactory (moisture content, physical contamination, variation on supply)

Reviews: There are contradicting opinions about the quality of recovered wood

Availability of recovered wood

- Spain: inadequate
- Italy: inadequate (difficul to find and high cost, not enough)

Review: Companies agree that there is low availability of recovered wood

Reviews regarding recovered wood as raw material

- Spain: There are very low rates for land filing and this causes this option to be preferred to rather than recuperate the wood residues that is more expensive. Moreover, the first and second transformation industries in Spain have suffered shrinkage and therefore, there are fewer residues.
- Italy: A lot of material is collected for biomass power plants, affecting the entire sector of recycling

Reviews:

Products from recovered wood

- Spain: a. Particle board vs. Energy
- Italy: Rawboards, raw panels, Ecological particleboards

Review: Companies use recovery wood both in production and in energy generation

Annual production and corresponding percentage of recovered wood used

Product	Annual production, m^3		Recovered wood, 1000 tons or %	
	Year 2009	Year 2010	Year 2009	Year 2010
Particle board	-	-	35%	40%
Rawboards	228,849	219,662	70-80%	70-80%
Raw panels	299,395	300,812	80-91%	70-80%
Ecological particleboards	1,090,000	1,450,000	950	1,300

Review: It seems to be a slight increase in both annual production and share of recovered wood in rears 2009-10

Future tendency of using recovered wood

Product	Tendency		
	Increase (%)	Decrease (%)	Stable (use an X)
Particle board	10		
Energy	10		
Pannelli truciolari grezzi	X		
Pannelli grezzi	X		
Ecological particleboards			X

Review: The companies expect to use an increasing percentage (some estimate at 10%) of recovered wood for most of the products

Treatments of recovered wood required for production

- Spain: Other (no physical or chemical)
- Italy: Physical

Reviews: In order to use recovered wood, companies treat it with different methods (physical, other)

Technical limitations of using recovered wood

- Particle board: Highest limit of recovered wood (%), Variation in quality, Progress in technology
- Rawboards, rough boards, Ecological particleboards: Variation in quality

Review: Use of recovered wood is associated with technical limitations, mainly variation in quality and also highest limit of recovered wood in % and progress in technology

Market of products from recovered wood

- Spain: National, European, Other countries outside Europe
- Italy: National, European, Other countries outside Europe

Review: Companies sell products from recovered wood to the national and international market

Demand of products from recovered wood (1 low – 4 high)

- Spain: Particleboard & Energy: 2
- Italy: Rawboards, rough boards: 4, Ecological particleboards: 2

Review: There is a medium to high demand of products from recovered wood

Influence parameters on demand/sales of products (1 low – 4 high)

- Spain: Price 4, Quality 3, Market 4, Kind of product 3, Competition 3, Laws and standards 2
- Italy: Price 1-1-4, Quality 2-2-4, Market 3-3-4, Kind of product 1-1-2, Competition 2-3-4, Laws and standards 2-3-1

Review: The most influencing parameter on demand/sales of products is the market followed by equal importance of price, quality and competition. There is a moderate influence of the kind of product, and laws and standards

Main competitors in using recovered wood

- Spain: Inside Europe (Biomass plants for energy production)

- Italy: Inside Europe (Particleboard companies, Power plants)

Review: The main competitors in using recovered wood come from inside Europe and include plants for energy production (mainly) and particleboard companies

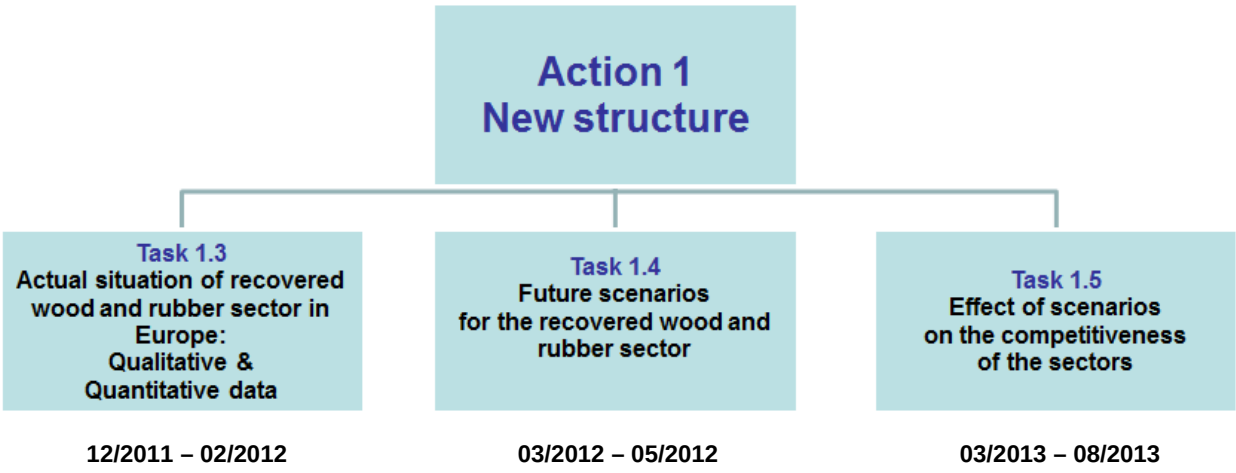
Proposals for promoting the utilization of recovered wood

- Spain: To increase the rates for landfilling, even to forbid this practice is recommended to increase the wood recuperation. To foster recycling and reutilization and to use only wood for energy after all possible wood reutilization as material.
- Italy: (Company 1) Lack of technological solutions reliable at industrial level (Company 2) Usually 2-3 times per year are hypothesized new solutions. New solutions that are not successful; it should be considered that the new material should be easily found in large quantity and low cost (Company 3) No comment

Review:

Obviously, the above replies and analysis do not give the general picture of the sector in a European level but provide a very rough description of the actual situation in a local level.

During the last (3rd) general project meeting in Thessaloniki, Greece (24-25 November 2011), the consortium decided to proceed with the contingency plan as it is described in the Document of Work. The new structure of Action 1 and the timing is the following:



2. Actual situation of recovered wood sector in Europe: Qualitative and Quantitative data

With the term "recovered wood sector" basically we refer to the wood-based panel sector, which is the exclusive user of recovered wood in the industrial manufacturing process. In order to find reliable data that could give a description of the sector in relation to the use of recovered wood, the consortium contacted the European Panel Federation, which is located in Brussels. The contact was established through GLUNZ, which is a member of EPF. The analysis below is based on confidential documents and information provided by EPF.

2.1. Quantitative data

2.1.1. Raw wood consumption by the European wood-based panel industries

Table 1 presents the raw wood consumption by the particleboard industry per European country in in 2010 (total and in major categories: roundwood, industrial by-products, recovered wood).

Table 1: Breakdown of the raw wood consumption by the European particleboard industry in major categories, 2010. Source: EPF.

Country	Total raw wood consumption (x 1,000 dry tonnes)	Share of roundwood	Share of industrial by-products	Share of recovered wood
Austria	1,190	24%	40%	36%
Belgium	839	17%	26%	57%
Bulgaria	293	80%	20%	0%
Czech Republic	709	15%	85%	0%
Denmark	215	32%	29%	39%
Estonia	103	54%	43%	3%
Finland	143	0%	100%	0%
France	2,543	30%	45%	25%
Germany	4,225	27%	55%	18%
Greece	202	95%	3%	2%
Hungary	228	80%	20%	0%
Italy	1,960	4%	21%	75%
Latvia	115	57%	43%	0%
Lithuania	315	60%	40%	0%
Norway	226	12%	88%	0%
Poland	1,778	46%	54%	0%
Romania	650	45%	55%	0%
Slovakia	458	55%	45%	0%
Slovenia	81	3%	7%	90%
Spain	1,121	19%	49%	32%
Sweden	338	60%	40%	0%
United Kingdom	1,425	36%	58%	6%
TOTAL	**19,153**	**30%**	**47%**	**23%**

In 2010, the first source of raw material for the European particleboard producers remained the industrial by-products with a share of 47% of the total raw wood consumption. Roundwood came second followed by recovered wood with shares of 30% and 23% respectively (Figure 1).

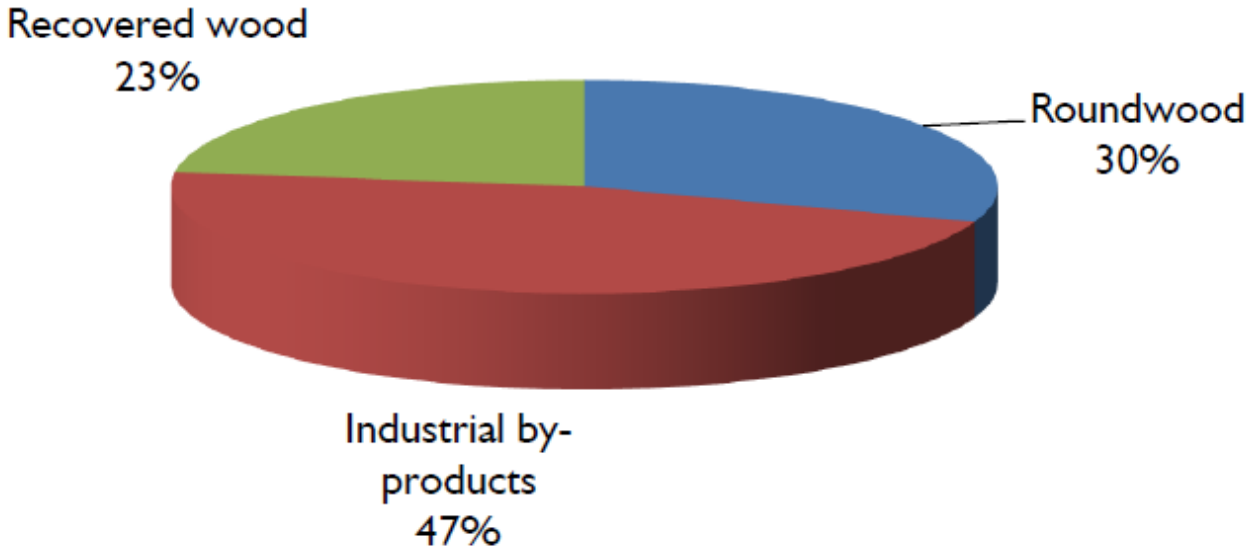


Figure 1: Breakdown of the raw wood consumption mix by the European particleboard industry, 2010. Source: EPF.

Compared to 2009, the use of roundwood increased a little bit from 28% to 30% which is quite surprising as the availability and the cost of wood became a more and more serious problem in all European countries due to the fierce competition with the subsidised energy use of wood.

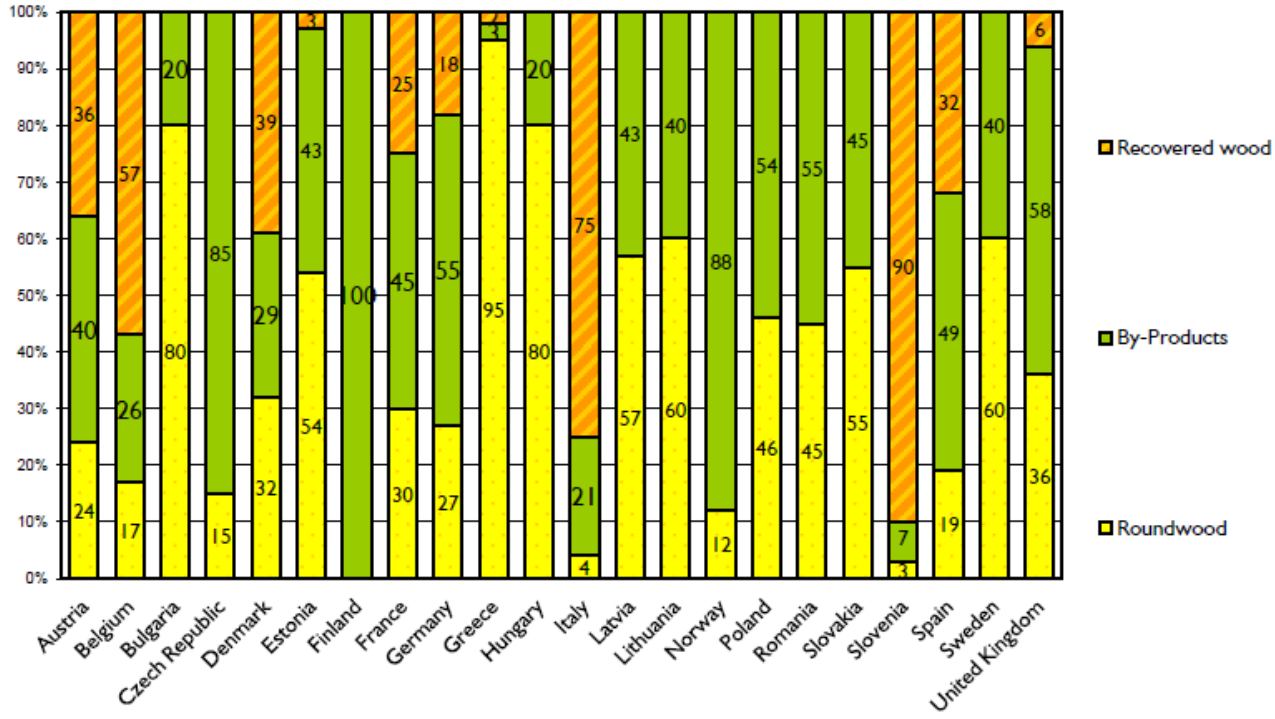


Figure 2: Regional composition of the raw wood consumption mixes in the European particleboard industry, 2010. Source: EPF.

The total volume of wood raw material consumed by the particleboard industry in the EPF member countries amounted to more than 19 million dry tonnes under bark in 2010. The share of industrial by-products slightly increased: from 44% in 2009 to 47% in 2010. The reason for this shift is the fact that the sawmill industry, supplying the large majority of the industrial by-products, was running at a higher capacity rate than in 2009. However, the competition for chips and sawdust from the woody biomass sector continued to intensify. Therefore, more roundwood was processed because of a lack of availability of sawmill co-products. On the other hand, the economic crisis hampered the share of post-consumer wood significantly, as less post-consumer wood was available in recycling parks and therefore competition for this material increased.

Slovenia and Italy used the highest share of recovered wood in their particleboard production during 2010 (Table 1, Figure 2). Belgium, Denmark, Austria, Spain and France followed with a respective share of post-consumer wood used ranging from 57% to 25%. The transport distances and the legally restricted recycling of wood with added substances remained the major constraints to a faster development of this wood resource. The problem of wood availability and cost should nevertheless support the consumption of recovered wood by the particleboard industry in the future. Concerning the Eastern European countries, they are still using very few recycled wood, if any.

For the time being, roundwood continues to be the main source of raw material for Bulgaria, Estonia, Greece, Hungary, Lithuania, Slovakia and Sweden. On the other hand, the Czech Republic, Finland, Germany, Norway, Poland, Romania and the United Kingdom relied on industrial by-products for the majority of their wood procurement in 2010.

The EPF members indicated that the average distance for purchasing wood for particleboard production was 138 km in 2010, which was a little bit less than during the previous years. However, some particleboard producers, for example in Belgium or Greece, had to overcome distances longer than 200 km for their raw material supply. As in 2009, coniferous species accounted for the majority of the wood processed for the particleboard production during 2010: pine had a share of 40% in the total wood supply and spruce 31%. Only minor volumes of broadleaved species were used, with beech as the most important species, accounting for 9% of the overall wood input.

The raw wood consumption by the European MDF industry rose by 9% in 2010 compared to 2009, amounting to 9.4 million dry tonnes under bark (Table 2). Chips accounted for 48% of the wood procurement and industrial by-products as a whole for 52%. Roundwood remained an important source of raw material with a share of 47%. Recovered wood was still not processed in the European MDF industry during 2010.

Table 2: Breakdown of the raw wood consumption by the European MDF industry in dry tonnes, 2009-2010. Source: EPF.

	2009	**2010**
Total raw wood consumption *(on the assumption that 1 m³ of MDF requires 0.78 dry tonnes of raw wood)*	8,580,000	9,360,000
roundwood	48%	47%
chips	47%	48%
sawdust	4%	4%
other	1%	1%
recovered wood	0%	0%
total	100%	100%

The average purchasing distance remains relatively stable at 145 km but can attain 300 km for some MDF producers. Roundwood consumption consisted mainly of coniferous species. Pine,

spruce and other coniferous species represented 14%, 24% and 43% respectively of the roundwood used.

In 2010, the wood consumption by the European OSB industry amounted to 3 million dry tonnes under bark. This consumption was almost exclusively composed of roundwood, especially pine. OSB producers purchased their wood from about 193 km on average although some orders came from distances higher than 300 km.

2.2. Qualitative data

2.2.1. Sustainability in the wood value chain and competitive sectors

The incineration of woody biomass for energy generation is increasing to levels that already affect the availability of wood (raw and recycled) in the EU. As a result pressure is building on all forest industries, but woodworking has been particularly affected.

The global timber harvest in Europe in 2009 was estimated at 446 million m^3, of which 253 million m^3 was used for industrial purposes and 193 million m^3 for energy generation. Currently, the growth rate of the use of biomass and wood for energy production is over 20% per year. Due to strong subsidies for the renewable energy sector, Europe's demand for wood-based energy sources is predicted to grow even faster in the near future– with alarming consequences for the woodworking industries in the EU.

Despite a slump in wood demand from woodworking industries during the economic crisis, wood prices have risen considerably due to growing resource competition between the energy and the product manufacturing sector. In the UK for instance, wood prices have increased by 30% over the past 4 years. Subsidies allow energy firms to outbid traditional users rather than encouraging them to develop innovative new ways to generate power. Wood burning is hardly a revolutionary technology. Subsidies give the UK energy sector the ability to pay an excess €92 per tonne. As a result of such subsidies and other widely varying measures, the market price of softwood chips in Europe has increased by 30 to 50% during the last 5 years.

National subsidy systems for energy production from woody biomass, aiming for the Member States to comply with the EU rules on renewable energies, are therefore slowly eroding one of the most important and economically valuable industry sectors in Europe.

This shift from use of wood as a resource for product manufacture to biomass for energy is counterproductive. As well as being damaging to the environment and to the economy it will inevitably have a significant impact on employment amongst the wood using industries it displaces. Subsidies for energy production from biomass have unintentionally made it more profitable to burn wood than to use it as a raw material for product manufacture.

Overall, the view of EPF regarding use of wood is: "Wood is a valuable and vital resource for the European economy and environment and shouldn't be wasted!"

2.2.2. Legislative measures to promote use of recovered wood in the industry

The European Panel Federation calls on European legislators and Member States:

- To embed the hierarchy of use principle into EU and Member States law, prioritise recycling of wood over burning and ban wood going into landfill
- To reopen discussion on the sustainability criteria for solid biomass taking the environmental benefits of wood into account

- To support the efforts of the wood industry to promote a recycling society
- To increase the sustainable mobilisation of wood
- To rethink the subsidy provision and level the playing field
- To put pressure on the European Commission to conduct a proper evaluation of the National Renewable Energy Action Plans (NREAP) based on appropriate criteria and take into account the carbon life cycle of wood
- To analyse the differential between wood supply and demand, when the NREAPs are being controlled

PART B: RUBBER

1. Inquiry for the rubber sector

1.1. Preparation and submission of the inquiry

In order to obtain essential information regarding the significance/limitations of recovered wood raw materials in the industry, a questionnaire for the European rubber industry was prepared with responsibility of AUTH-LFU. The knowledge and practical experience of companies would help to get a significant contribution to identify approaches for a better utilization of recovered rubber materials by the European rubber industry.

The inquiry can be found in Annex III and contains on total 15 questions regarding:

- categories of recovered rubber materials used
- classification systems (legislation, European or national standard, industrial standard, own) for the recovered rubber raw materials
- legislation and/ or certification system for the purchase/ use of recovered rubber raw materials
- origin of recovered rubber
- prices/ quality/ availability of recovered rubber
- production data and share of recovered rubber used
- future tendency of using recovered rubber
- treatments and technical limitations in using recovered rubber
- demand/ sales of recovered rubber products
- proposals for promoting the utilization of recovered rubber

The final version of inquiry together with translations in Greek, Spanish and Italian was ready by April 2011. Also, the addresses of 88 rubber companies were gathered (Annex IV). The first submission of companies through post office and e-mails took place in May 2011. AIDIMA was responsible for the submissions in Europe and Spain, AUTH-LFU for Greece, COSMOB for Italy, and BRUNEL and ENJILY-INT for UK. Due to a very poor response by the companies, direct telephone calls to wood companies were initiated by all partners and two more inquiry submission (post office, e-mail) campaigns were done, one in July 2011 and the last one in September 2011. The explanation given from the companies for not providing data was that this might harm competition. An overview of preparation and submission activities of the inquiry is given below:

Date	Description
April 2011	Final versions of inquiries and 88 addresses of rubber companies prepared by AUTH-LFU and sent to involved partners - For Spain/ Greece/ Italy translations were prepared
May 2011	1st submission Europe and Spain: AIDIMA Greece: AUTH-LFU Italy: COSMOB UK: BRUNEL, ENJILY-INT
July 2011	2nd submission
September 2011	3rd submission

1.2. Inquiries received and analysis

The response of the rubber companies was extremely low. After 3 submissions of the inquiries and reminders only 2 replies were received. The replies per country as well as a short analysis are shown below:

Sector	Number of replies
Rubber	Europe: - Spain: - Greece: 2 Italy: - UK: -

Categories of recovered rubber

- Greece: Rubber granules

Review: Rubber granules is the category of rubber used

Classification system for recovered rubber raw materials

- Greece: No

Review: Companies do not follow any classification system

Legislation and/ or certification system for the purchase/ use of recovered rubber raw materials

- Greece: One company follows the ISO 9001:2008 standard while the other does not follow any system

Review: It seems that is up to companies if they follow any legislation/ certification system

Origin of recovered rubber

- Greece: private companies

Review: Private companies are the only source for Greece

Origin of recovered rubber

- Greece: 100% National market

Review: Recovered wood comes exclusively from the national market in Greece

Opinion about prices of recovered rubber in relation to its quality (1 low – 5 high)

- Greece: 2

Review: Companies consider prices of recovered rubber as being relatively low

Opinion about the quality of recovered rubber

- Greece: satisfactory

Reviews: Companies consider quality of recovered rubber as being statisfactory

Availability of recovered rubber

- Greece: adequate

Review: Companies agree that there is enough recovered rubber

Reviews regarding recovered rubber as raw material

- Greece: No Reviews received

Products from recovered rubber

- Greece: a. Safety flooring for children playgrounds b. Filling from rubber granules for synthetic football fields

Review: Companies use recovered rubber in flooring products (playgrounds, football fields)

Annual production and corresponding percentage of recovered rubber used

Product	Annual production, 100 tons		Recovered rubber, 1000 tons or %	
	Year 2009	Year 2010	Year 2009	Year 2010
Safety flooring for children playgrounds	0.075	0.075	-	-
Filling from rubber granules for synthetic football fields	0.150	0.150	-	-

Review: There is no change in annual production in rears 2009-10, while no data were provided for the share of recovered rubber

Future tendency of using recovered rubber

Product	Tendency		
	Increase (%)	Decrease (%)	Stable (use an X)
Safety flooring for children playgrounds	10		
Filling from rubber granules for synthetic football fields			X

Review: No dramatic changes are expected in the share of recovered used in the production

Treatments of recovered wood required for production

- Greece: Combination (physical and chemical)

Reviews: Standard procedures are employed in the treatment of recovered rubber

Technical limitations of using recovered rubber

- Safety flooring for children playgrounds: Processing technology
- Filling from rubber granules for synthetic football fields: Variation in quality

Review: Technical limitations exist in using recovered rubber depending on the nature of the product, and are associated with processing technology and variation in the quality of recovered rubber

Market of products from recovered rubber

- Greece: National
- Italy: National, European, Other countries outside Europe

Review: Companies sell products from recovered rubber to the national market

Demand of products from recovered rubber (1 low – 4 high)

- Safety flooring for children playgrounds: 2
- Filling from rubber granules for synthetic football fields: 2

Review: There is a moderate demand of products from recovered rubber

Influence parameters on demand/sales of products (1 low – 4 high)

- Greece: Price 3, Quality 3, Market 3, Kind of product 4, Competition 4, Laws and standards 2

Review: The most influencing parameters on demand/sales of products are the kind of product and competition followed by equal importance of price, quality and market. There is a moderate influence of laws and standards

Main competitors in using recovered rubber

- Greece: Inside Europe (Construction of sport fields/ flooring)

Review: The main competitors in using recovered wood come from inside Europe and include companies with same nature of activity

Proposals for promoting the utilization of recovered rubber

- Greece: Road construction, sport floors

Review: Companies believe that the use of recovered rubber should be expanded also to other businesses such as in road construction and in the manufacturing of sport floors

Obviously, the above replies and analysis do not give the general picture of the sector in a European level but provide a very rough description of the actual situation in a local level (Greece).

During the last (3rd) general project meeting in Thessaloniki, Greece (24-25 November 2011), the consortium decided to proceed with the contingency plan as it is described in the Document of Work. The new structure of Action 1 is presented in Part A (Wood) of this deliverable.

2. Actual situation of recovered rubber sector in Europe: Qualitative and Quantitative data

With the term "recovered rubber sector" basically we refer to companies using recovered rubber in their production process. In order to find reliable data that could give a description of the sector in relation to the use of recovered rubber, the consortium contacted the European Tyre Recycling Association (ETRA), which is located in Brussels. The contact was established through KERIDIS, which is a member of ETRA. The analysis below is based on confidential documents and information provided by ETRA.

2.1. Quantitative data

2.1.1. Available material for the companies in the sector

Until the 90's, the most common use for the used tyres was the landfilling, but since there is a relative directive (1999/31/EC, Ban on the landfilling of tyres, whole 2003; shred etc. 2006), the recovery became more usual. The following table demonstrates the amounts (in kT) of the recovered material in comparison with the total arisings of the used tyres in Europe (EU27, Norway and Switzerland).

Table 1: Material recovery in comparison with the used tyres arising in Europe. 2009.

COUNTRY	USED TYRES ARISING (A) (kT)	END OF LIFE TYRES ARISING (C) (kT)	MATERIAL RECOVERY (B) (kT)	(B/C) %	(B/A) %
AUSTRIA	53	48	22	46	42
BELGIUM	78	69	46	67	59
BULGARIA	32	32	0	0	0
CYPRUS	8	8	0	0	0
CZECH REP.	48	46	8	17	17
DENMARK	40	38	38	100	95
ESTONIA	6	6	3	50	50
FINLAND	41	31	31	100	76
FRANCE	364	309	128	41	35
GERMANY	571	443	177	40	31
GREECE	61	59	32	54	52
HUNGARY	40	39	20	51	50
IRELAND	32	26	22	85	69
ITALY	416	315	90	29	22
LATVIA	6	6	3	50	50
LITHUANIA	7	7	4	57	57
LUXEMBURG	-	-	-	-	-
MALTA	1	0	0	0	0
NL	59	45	34	76	58
POLAND	259	243	53	22	20
PORTUGAL	89	67	49	73	55
ROMANIA	49	47	17	36	35
SLOVAK REP.	19	18	17	94	89
SLOVENIA	13	12	6	50	46
SPAIN	280	238	122	51	44
SWEDEN	70	68	27	40	39

UK	479	331	216	65	45
NORWAY	44	43	32	74	73
SWITZERLAND	37	27	4	11	11
EU27 TOTAL	**3121**	**2551**	**1165**	**46**	**37**
TOTAL	**3202**	**2621**	**1201**	**46**	**38**

As it is demonstrated, a total of 38% of the total arisings of used tyres are going for material recovery. The rest of the used tyres are mostly used for energy recovery (approximately 40%), for reuse/export/retreading (18%) and only 4% are landfilled.

There are some countries with a high rate of material recovery in comparison with the used tyres arisings, such as Denmark (95%), Finland (76%), Ireland (69%), Slovak Rep. (89%) and Norway (73%).

Of course, the overall European rate is defined by the countries with the greatest share on used tyres arisings, which are France, Germany, Italy, Spain and UK, with 2130 of the total 3202 kT of the used tyres arisings. The total amount of the recovered materials on these countries is 733 kT (35%). Another 816 kT (38%) are used for energy recovery on these countries.

These figures are slightly different when the comparison is done with the arisings of the End of Life Tyres (ELTs). The total percentage now is 46%.

Table 2 shows the evolution of the ELTs recovery in comparison with the ELTs arisings from 2004 to 2010. For this period the landfilling of tyres is totally banned in EU and that led to significant increment of the material recovery (from 75% in 2004 to 95% in 2010).

Table 2: Evolution of End of Life Tyres recovery in comparison with the ELTs arisings.

YEAR	ELT RECOVERY (kT)	ELT ARISINGS (kT)	RECOVERY RATE (%)
2004	1863	2488	75
2005	2006	2492	80
2006	2128	2564	83
2007	2413	2690	90
2008	2472	2650	93
2009	2494	2621	95
2010	2563	2699	95

2.1.2. Uses of recycled tyres

As it is demonstrated in the following table, the main stream of the recycled tyres (approximately 80%) is used for product applications and the rest (approximately 20%) is used for civil engineering applications.

Table 3: Applications for the recycled tyres. 2009.

	kT	Applications	Examples	%
Material recycling	1201	Civil Engineering	Foundation for roads, Embankment stabilizers, Draining material, Erosion barriers,…	≈20
		Product Applications	Flooring (playgrounds, sports fields) and Paving blocks, Roofing materials, Wheels for caddies	≈80

2.2. Qualitative data

2.2.1. Actual situation in the sectors using recycled tyres

Due to the economic crisis in Europe of the last years, the use of recycled tyre as raw material for new products is slightly reduced, while there is an increase in exports of recycled tyres in countries outside Europe (the most common destination is Asia).

However, there is a growing need for recycled tyre materials (especially in the civil engineering sector) and eventually, when the economic crisis comes to an end the use of products made by recycled tyre materials in Europe will come back to normal.

The potential growing need for recycled tyre materials is based on the facts bellow:

- ± 7.27 millions of km of regional roads and ± 2,71 millions of km of national roads in Europe require maintenance, periodic repairs and resurfacing – all of which can be utilize recycled tyre materials.
- ± 1.5 millions of km of roads will be built in Europe from 2010 to 2020 using recycled tyre materials.
- In addition to surfaces, new roads also require fill, lining material, expansion joints and drainage systems.
- New noise reduction laws require sound barriers along the ± 354,500 km of European motorways.
- Concern for noise abatement has led to installation of sound barriers adjacent to inhabited areas along more than 470,000 km of passenger-rail tracks within the EU.
- There is an estimation that ±650,000 m^2 of sport fields are build per year in Europe using recycle tyre materials.

On the other hand, in 2010 a EN standard for the specification of the materials produced from end of life tyres was finally adopted. It's CEN/TS 14243: 'Materials produced from end of life tyres - Specification of categories based on their dimension(s) and impurities and methods for determining their dimension(s) and impurities' which will encourage and promote the use of recycled tyre as a material.

2.2.2. Sustainability of sectors using recycled tyres

In the near future for the sustainable development of the sectors using recycled tyres, there will be need to:

- establish alternative sources of funding for development of new recycling technologies and markets, especially in rural areas where transport costs are high and illegal dumping is of concern (e.g. regeneration funds)
- improve sustainability of rubber
- stabilize markets (and market price) e.g. by setting minimum cost for disposal of tyres and preventing over-dominance of market by energy recovery operations
- control current potential growth in energy recovery (which lies close to the bottom of the waste hierarchy) to further recycle, reuse and minimization.

References

European Panel Federation, Brussels, Belgium, http://www.europeanpanels.eu

European Tyre Recycling Association, Brussels, Belgium, http://www.etra-eu.org