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Sustainability Impact Assessment
of the Forestry - Wood Chain

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EFORWOOD

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CONTENTS

CONTENTS 2

1 INTRODUCTION 3

1.1 OBJECTIVE 3
1.2 LIMITATION 3

2 METHODOLOGY 4

2.1 METHODOLOGY 4
2.1.1 AIDIMA – furniture industry 4
2.1.2 FCBA – wood construction industry 5
2.1.3 Innventia – printing and publishing industry 5
2.1.4 Pöyry – bio-energy/pellets industry 6

3 RESULT 6

3.1 GENERAL 6
3.2 SUSTAINABLE STRATEGIES 6
3.2.1 AIDIMA – furniture industry 7
3.2.2 FCBA – wood construction industry 33
3.2.3 Innventia – printing and publishing industry 47
3.2.4 Pöyry – bio-energy/pellets industry 69

4 COMMENTS AND CONCLUSIONS 80

5 REFERENCES 81

ANNEX 1- INNVENTIA QUESTIONNAIRE 82

1 Introduction

1.1 Objective

“Draft of Vision and Pro-active Sustainable Strategies” report has an ambition to present on one hand the way of developing of strategies, and on the other hand introduce created strategies.

The main goal of the activity reported in this document, was creation of pro-active strategies, in the context of different external scenarios as it is described in WP5.3 of Eforwood implementation plan. Strategies should be developed in order to increase sustainability for significant FWC-based sectors in future scenarios. Strategies are related to following aspects identified as key focuses:

1) How to make business customers and consumers interested in environmental advantages of FWC products (with respect to each of WP5.3 sectors)?
2) How to strengthen the environmental credibility of the European FWC industries (with respect to each of WP5.3 sectors)?
3) How the respective sector of WP 5.3 could maintain or increase competitiveness on the market?

1.2 Limitation

The scope of the work is EU, but the activities in this part of Eforwood project may be somewhat biased towards conditions at four different markets: printing and publishing in Sweden, bio-energy/pellets in Finland, furniture in Spain, and wood construction in France.

Second limitation concerned number of developed scenarios as well as scenario’s integrated elements. For each sector, only two extreme scenarios for 2020 have been developed: positive/optimistic and negative/pessimistic.
Due to usage of simplified and manual Morphological Analysis (MA) tool number of variations/elements of each scenario had to be drastically restricted.

Due to shortage of time and other resources, also communication with Stakeholders and Modules upstream in order to present ideas and collect responses was limited.

Literature study was limited to the few main and generally accepted sources, where authors are well known. No in depth literature survey has been carried out.

Another limitation refers to determination of strategies’ measurable objectives and identification of evaluation milestones. Strategies are developed mostly as “guide-lines” highlighting sector relationship to future market significant aspects in both scenarios, and don’t include such detailed elements as e.g. pricing strategy. Strategies are not developed on detailed operational level.

2 Methodology

Each partner of M5 has been carried out strategy development process separately in relation to the following sectors:

- AIDIMA – furniture industry
- FCBA – wood construction industry
- Innventia – printing and publishing industry
- Pöyry – bio-energy/pellets industry

Methodology used while creating strategies has not been unified for all sectors, so each partner had possibility to use own, the most suitable one. Below, methodologies used by each partner separately.

2.1 Methodology

Since the project has very limited resources dedicated, no sophisticated foresight simulating methodology could be used for scenario creation. Morphological Analysis has been chosen.

For the second part, strategies creation, SWOT analysis has been used as a development tool, since this methodology was already recommended in WP description.

SWOT analysis is built on eight corn steps:

- Defining key objectives (what organization/sector is intending to do)
- Scanning of internal and external appraisals (identifying strengths, weaknesses, opportunities and threats)
- Analysis of existing strategies (description of strategies portfolio that currently exist in relation to determined key objectives)
- Development of new strategies (revision of existing strategies or development of new strategies enabling achieving key objectives)
- Definition of strategic issues (it is a result of gap analysis between current and revised/new strategies – key factors and assessments, which needs to be addressed by organization/sector in strategic plan)
- Establish critical success factors (the achievement of objectives and strategy implementation)
- Preparation of project plans for strategy implementation including resources, operations, etc.
- Monitoring (setting up measurable evaluation mile stones)

Implementation of both methodologies vary between partners in this part of project and is described below.

2.1.1 AIDIMA – furniture industry

The methodologies used in this study by the researchers of AIDIMA principally follow the overall methodology agreed by the WP members and are of different characters, due to the different stages of the work. During the first stage of work AIDIMA used the complete morphological analysis (see the document “Manual for methodology for consumption scenario building” elaborated by AIDIMA attached to deliverable D5.3.1) for scenario development purposes. There were two extreme scenarios; the most positive and the most negative ones; selected for being the base of further work. The scenarios were used for identifying the opportunities and threats of the EU furniture industry in 2020. Three research questions were defined for all the industries and AIDIMA has carried out for these three questions a SWOT analysis for each one of the scenarios for the EU furniture industry.   Each one of the SWOT tables and contacts with internal expert were used for strategy development purposes. The elements of SWOT tables used during the strategy development are highlighted before the description of the strategy itself in each scenario and each question in the document. Some of the implications of the recommended strategies in the upstream processes of the EU FWC were identified and analyzed. The geographic scope of the work was the EU, and furniture industry clients are considered to be the business customers and consumers.

2.1.2 FCBA – wood construction industry

The methodology used by FCBA is very close to the general methodology that was agreed to be the base of this study. It involves some adjustments to the wood construction sector. Based on the MA table, two scenarios, the most positive and the most negative, were developed. Scenarios developed under several dimensions related to economics, demography, technology, public policies and consumer behaviors. Scenarios were validated by professional federations to set up the storylines. They were utilized to identify opportunities and threats of wood construction products. Three research questions were defined for all the industries in this study, and a SWOT table was developed for each of these questions in the two scenarios.

2.1.3 Innventia – printing and publishing industry

The methodology used by Innventia followed mainly the general methodology that was agreed to be the base of this study, adjusted suitable to the case of printing and publishing industry. First, the simplified morphological analysis MA was applied to create the future table on the issues that influence consumption of both consumers and professional buyers. The simplicity of MA method is mostly focused on drastically limited number of Components and their Configurations. This limitation was necessary in order to enable manually running the tool. In addition, users of Qualitative ToSIA did not express request for very sophisticated and IT based tool. The third reason was related to an expected result of MA that should be of guidelines character enabling creating restricted number of scenarios.

Based on the MA table, two scenarios, the most positive and the most negative, were developed. The scenarios were utilized to identify opportunities and threats related to the sector. Secondly, simplified SWOT analysis has been running, and following steps of SWOT have been covered:

- Defining key objectives (what organization/sector is intending to do)
- Scanning of internal and external appraisals (identifying strengths, weaknesses, opportunities and threats)
- Development of new strategies (revision of existing strategies or development of new strategies enabling achieving key objectives)
- Partly Definition of strategic issues (it is a result of gap analysis between current and revised/new strategies – key factors and assessments, which needs to be addressed by organization/sector in strategic plan)

2.1.4 Pöyry – bio-energy/pellets industry

The methodology used by Pöyry followed mainly the general methodology that was agreed to be the base of this study, adjusted suitable to the case of pellet industry. Several methods were utilized in the different stages. First the morphological analysis was applied to create the future table on the issues that influence consumption of both consumers and professional buyers. Based on the table, two scenarios, the most positive and the most negative, were developed. The scenarios were utilized to identify opportunities and threats of wood pellets. Three research questions were defined for all the industries in this study, and Pöyry developed a SWOT table for each of these questions in the both scenarios. Each SWOT table was utilized to develop strategy recommendations for the pellet industry, and finally, impacts on the upstream in the forest-wood chain were analysed internally for some of the strategy recommendations. The scope of the work was the EU and the pellet industry clients were assumed to be both home-scale and professional users.

3 Result

3.1 General

It is important to settle on modifications, innovations, as well as changes that should be implemented into sector in each of external scenarios, since assumed scenarios differ much in their conditions. In addition, risks and financial consequences should be considered while planning strategies. All those above mentioned elements' role is to support sector in narrowing the gap between the present state of the performance and its status in future.

Since sectors vary much in their maturity, business conditions, and external environment depending on geographical placement, the scope of pro-active strategy development differs also.

3.2 Draft of Sustainable Strategies

Presentation of strategies has been structured in accordance to sector/Module 5 partners and scenarios.

Each partner presents below:

- MA table including identified components and variations which are evaluated as Opportunities and Threats
- Scenarios description based on above mentioned table
- Each of identified three questions in relation to SWOT analysis in defined scenarios
- Pro-active strategies draft with respect to questions in scenarios conditions

3.2.1 AIDIMA – furniture industry

3.2.1.1 Positive Scenario

Components in positive scenario	**Economic**	**Social**	**Environmental**	**Threats**	**Opportunities**
Political stability and balance of international market regulations	O	O	O		x
Reduction of production delocalization incentives affecting some manufacturing processes in a controlled manner without affecting employment in the developed countries	O	O	O		x
Stability of global macro-economic conditions: fiscal and monetary coordination, stability of exchange rates, etc.	O	O	O		x
Decentralization practices through efficient electronic management	O	O	O		x
Product mix that is based on values and lifestyles and offers complete solutions for the home	O	O	N		x
Innovation in point of sale with elements directed toward	O	O	N		x

generating positive purchasing experiences through additional services that create value for the consumer					
Proliferation of complementary channels (virtual, related to housing sales)	O	N	N		
Concentration on furniture distribution (coexistence of major international operators and manufacturer initiatives in distribution)	O	N	O		x
Ability to support lengthy economic system operations, productivity growth, and market confidence	O	O	O		x
Reactivation in North America and acceleration of growth in the European Union	O	O	N		x
Moderate inflation given the increase in productivity and the advances in energy technology	O	O	O		x
Full employment and advanced retirement age	O	O	N		x
Massive access to qualified and controlled	O	O	N		x

immigration					
Controlled public deficit and structural anti-aging measures	O	O	N		x
Moderate interest rates, family financial sufficiency, and corporate solvency	O	O		O	x
Furniture market in constant growth	O	O	N		x
Balance between advanced and emerging economies; comparison of productive conditions and better competitive practices	O	N	O		x
Reactivation of developed economies; domestic-focused growth and a relative slowdown in emerging countries.	O	O	O		x
Advances in legislation with regard to mergers and acquisitions and limiting antitrust practices.	O	O	N		x
Rational use of resources and creation of renewable alternatives	O	O	O		x
Generalization of advanced	O	O	N		x

lifestyles and strong generational renewal					
Responsible mobility and consumption. Demand for products responding to the new values (ecology, safety, health, beauty, connectivity, etc.)	O	O	O		x
Consumers of innovative furniture who, throughout the piece of furniture's useful life, greatly interact with the company as much in defining the product as during the purchasing process.	O	O	O		x
Value-added requirements in purchasing furniture, primarily in the social and emotional aspects.	O	O	N		x
Growth of several cities in one region	O	T	T	x	
Harmony between urban and rural areas. Development of rural sectors	O	O	O		x
Use of information and communication	O	N	O		x

technology					
Flexible, intelligent housing with multi-usage spaces	O	O	O		x
Varied range of houses (conventional and advanced).	N	O	O		x
Predominant values: - Environment - Cultural cross-influences - Health and wellness - Interactive technology - Flexibility	N	O	O		x

Keywords *- Quality growth - Convergence - Dynamism - Stability - Sustainability - National manufacturing - Differentiation - Dynamic point of service – Shopping experience – Sophistication in housing - Consumption growth - New homes*

The *positive* scenario involves a situation of progress and innovation of the furniture industry in 2020. The threats posed to manufacturers by their competitive environment in 2005 have been overcome thanks to the standardisation of world trade rules and to strategies of differentiation and opening the furniture market towards delivering greater value to consumers. This scenario is therefore one of positive disruption, beneficial to manufacturers in advanced countries where a large part of the furniture industry is maintained with minimum delocalization to emerging countries. Despite distribution concentration, which occupies the low-scale segment, manufacturers find ample opportunities in the mid-scale and upscale market segments.

Furniture purchasing decisions revolve around attributes that are tangible (quality, design, etc.) and intangible (emotional connotation, social evaluation, renovation possibilities, etc.). Moreover, the addition of extra services to the furniture acquires importance, generating more value. The companies' ability to provide value throughout the piece of furniture's useful life becomes strategic (from design to sale to use, renovation, and disposal). It also provides positive purchasing experiences for consumers. As a result, we face a very dynamic market with active consumers who demand more value from companies. In the *positive* scenario, the consumer plays a fundamental role in the furniture market. Factors such as a higher level of information, an ability to participate in the product development process, or a demand for added value during the purchasing process dynamise a differentiation market where companies can successfully develop unique value proposals for various consumer segments. In addition, social networks are developed by retransmitting and

locally popularizing products and solutions for different consumer microsegments. Furniture consumption follows this trend: 40% upscale, 15% midscale and 45% lowscale. Furniture-producing companies in developed countries find differentiation opportunities in the upscale market, where competitive advantages favour national manufacturers. Emerging countries find it difficult to compete in this niche where consumers are more interested in the piece of furniture's traceability in order to ensure that each step, from manufacturing to service, respects their values.
Retail trade through stores maintains a significant position, but proliferation of business models in various channels enables manufacturers in developed countries to redefine their role in terms of knowing the consumer, brand ownership, specific *know-how*, value-added services, products offered, systems owned, and positioning on an international scale.

International Political Situation	• Political stability and balance of international market regulations. • Reduction of production delocalization incentives affecting some manufacturing processes in a controlled manner without affecting employment in the developed countries. • Stability of global macro-economic conditions: fiscal and monetary coordination, stability of exchange rates, etc. • Decentralization practices through efficient electronic management. • Consensus and resolution of general environmental issues. Advanced recycling practices and widespread responsible attitudes.
Strategies of the Retailers	• Product mix that is based on values and lifestyles and offers complete solutions for the home. • Innovation in point of sale with elements directed toward generating positive purchasing experiences through additional services that create value for the consumer. • Proliferation of complementary channels (virtual, related to housing sales). • Concentration on furniture distribution (coexistence of major international operators and manufacturer initiatives in distribution).
Evolution of Economic Variables	• Ability to support lengthy economic system operations, productivity growth, and market confidence. • Reactivation in North America and acceleration of growth in the European Union. • Moderate inflation given the increase in productivity and the advances in energy technology. • Full employment and advanced retirement age. • Massive access to qualified and controlled immigration. • Controlled public deficit and structural anti-aging measures. • Moderate interest rates, family financial sufficiency, and corporate solvency. • Furniture market in constant growth.
Evolution of Demographic Variables	• Younger population. • Controlled integration of immigrants into advanced societies. • Increase in life expectancy and improved quality of life.

Level of International Competition	• Balance between advanced and emerging economies; comparison of productive conditions and better competitive practices. • Reactivation of developed economies; domestic-focused growth and a relative slowdown in emerging countries. • Advances in legislation with regard to mergers and acquisitions and limiting antitrust practices. • Rational use of resources and creation of renewable alternatives.
Attitudes and Behaviour of the Consumer	• Generalization of advanced lifestyles and strong generational renewal. • Responsible mobility and consumption. Demand for products responding to the new values (ecology, safety, health, beauty, connectivity, etc.). • Consumers of innovative furniture who, throughout the piece of furniture's useful life, greatly interact with the company as much in defining the product as during the purchasing process. • Value-added requirements in purchasing furniture, primarily in the social and emotional aspects.
Evolution of Social Variables and House Implications	• Growth of several cities in one region. • Harmony between urban and rural areas. Development of rural sectors. • Use of information and communication technology. • Flexible, intelligent housing with multi-usage spaces. • Varied range of houses (conventional and advanced). • Predominant values: Environment Cultural cross-influences Health and wellness Interactive technology Flexibility

Question no 1:
- How to make business customers and consumers interested in environmental advantages of FWC products?

Strengths	**Weaknesses**
-Product is recyclable -European furniture sector is able to fulfill the norms of strict safety and health ruling -CSR is in focus of furniture companies -Good access of the industry to the well developed recycling facilities -European industry suppliers produce	-High labor and raw material costs in Europe so furniture industry is getting delocalized -Lack of design- and model protection of the products of the industry

high quality materials -Rational use of resources and creation of renewable alternatives (means less contamination) -Closeness to one of the worlds biggest retail market -Closeness to the consumers	
Opportunities --Consumers have a positive perception of wood products (functionality, quality…) -Qualified and controlled immigration **Environmental** -Responsible mobility and consumption, demand for products responding to new values	**Threats** **Economic:** -Copying practices of emerging countries. **Social** -Values of CSR and local origin are not perceived by the final consumers. -Copying practice of emerging countries **Environmental** -Low environmental standards out of Europe (and other developed regions) -Copying practice of emerging countries

Pro-active strategy recommendations
The following elements of the SWOT table were used for creating the pro-active sustainable strategies:

Strength:	-Product is recyclable -Closeness to the consumers
Opportunity:	-Positive consumer perception about products made of wood -Consumer demand for new values which include environmental aspects.

-Information to consumers about European furniture's environmental aspects focusing on:
- -local origin,
- -safety and health issues,
- -production circumstances,
- -post -use destination,
- -the capability of EU industry to fulfill the norms of safety and health ruling

-Promotion of the concept of responsible consumption providing info on benefits of sustainable consuming habits -Showing example for consumers by providing them with additional services for buyers covering: -sustainable disposal, -maintenance with ecological products -Covering the costs of waste management

Wooden furniture has undeniable environmental advantages compared to its substitutes due to the fact that it is recyclable, and consumers have a positive perception about products made of wood.

To obtain the objective to make consumers and customers interested in the environmental advantages of wooden furniture, the furniture industry is recommended to use the opportunity provided by the consumer and customer demands for new values to be incorporated into the product. Some of these new values are related to the environmental issues. Industry should have consumers informed about the aspects that make European furniture environmentally sound.

The environmental benefits of local production of the products should be underlined. CSR that is in focus of European furniture companies is also an important aspect that is linked to local origin and to health and safety issues; the consumers are worried about their health so they are looking for products that are safe and are not causing any kind of harm for them during the use and they are also concerned about the production circumstances and post-use destination of the products. As European industry and their local suppliers are able to fulfill the norms of strict safety and health ruling, at this point industry meets the demands of consumers.
Industry should promote the concept of responsible consumption and provide the buyers with information about the benefits of sustainable consuming habits.
Industry also should provide additional services to consumers and customers that cover sustainable disposal, and maintenance of the products amongst others.
Industry should cover the costs of waste management as well, with the fact that European buyers are not ready to pay extra for environmentally sound products-

Question no 2:
-How to strengthen the environmental credibility of the European FWC industries?

Strengths	**Weaknesses**
-Branding is quite strong, especially in kitchen and office furniture sectors, furniture industry has the possibility to link values of environment to brands buyers trust -CSR is in focus of furniture	-End users requirements are largely unknown, very small number of companies carry out formalized consumer research. - Scarce communication capabilities of SME’s

companies -European suppliers produce high quality materials European industry suppliers produce high quality materials -Rational use of resources and creation of renewable alternatives (means less contamination) -Consumer closeness	-High costs of the production and labor in Europe, so production is getting delocalized
Opportunities **Economic** -Consumers´ trust is strong in European brands, because values of European companies are trustworthy -Well developed and available Information Technology **Environmental** -Responsible mobility and consumption demand for products responding to the new values -Rational use of resources and creation of renewable alternatives means less contamination, that can be communicated and proved -Small group of consumers is ready to pay extra for environmentally sound products	**Threats** **Economic** -Copying practices of emerging countries -Quality perception of the retailers and customers is similar for European furniture and the imported one, **Social** -Values of CSR and local origin are not perceived by the final consumers -Copying practices of emerging countries -Quality perception of the retailers and customers is similar for European furniture and the imported one. **Environmental** -Copying practices of emerging countries -Quality perception of the retailers and customers is similar for European furniture and the imported one

Pro-active strategy recommendations
The following elements of the SWOT table were used for creating the pro-active sustainable strategies:

Strength: -Branding is strong in some segments

Opportunity: -European consumers trust European brands

-Creating brands with environmental aspects / environmental aspects assigned to existing brands

-Creating new, common system of labeling and certification providing understandable information for the buyers of the environmental aspects of the product: -origin of raw material -place of production -circumstances of production -interactive online and digital solutions on informing about eco-parameters of the products in sales points -cooperation with reliable entities that have social acceptance and universal prestige: - Supranational organizations, NGOs.

To strengthen the furniture industry's credibility is needed because consumers and customers are skeptic about the communication of the companies.

As in some segments of furniture the branding is very strong, and end users´ prefer European brands, it is possible to link environmental information to the brands. Industry should find the communication opportunities through branding, emphasizing the advantages of European furniture. The image of European furniture could be improved by a guaranteeing entity that buyers trust, and its contribution to the communication would build credibility towards the products.

The most common way of communication of furniture manufacturers to the consumers and customers is labeling and certification. Labeling system is not fulfilling its objectives in terms of the end users at the moment because the actual systems are not completely applied, and consumers do not understand the information stated on them. European industry is recommended to find a common system that is communicating to the buyers the origin of raw materials and the place of production of the furniture. It should emphasize all environmental characteristics.
In sales points consumers and customers should receive the information that is facilitating their decision making on favor of environmentally sound products. Interactive online and digital solutions on informing about eco-parameters of the products.

The industry can increase public trust concerning its products by strong cooperation with entities – that could be supranational organizations, NGOs – that have social acceptance and universal prestige in the field of environmental values.

Question no 3.
- How the furniture sector could maintain or increase competitiveness on the market?

Strengths	**Weaknesses**
-European furniture manufacturer's capability to create new designs and models is an undeniable competitive advantage -Ability to produce personalized	-high raw material and labor costs make the sector weak in price competition -high labor costs are making the sector less competitive

products; -Closeness to consumer -Innovation in point of sales proliferation of complementary distribution channels	-Weak bargaining positions of manufacturers against retailers -lack of design protection of the sector's product, can be easily copied. -End users requirements are largely unknown very small number of companies carry out formalized consumer research. -Low flexibility of furniture companies (slow reaction to changing market trends)
Opportunities **Economic** -Safe market , stability -proximity and access to one of the world's largest and most sophisticated markets, geographical proximity allows reducing costs of logistics - Qualified and controlled immigration -responsible mobility and consumption -Value added requirements of furniture consumers -Growing "experience" economy	**Threats** **Economic** -Copying practice of emerging countries -Product quality of third country products are increasing, their design as well -Unfavorable price competition with non-EU countries -Furniture is not a priority in the household expenditures

Pro-active strategy recommendations
The following elements of the SWOT table were used for creating the pro-active sustainable strategies:

Strength: -Closeness to consumer,
-Proximity to market
-Ability to produce personalized products
-Ability of industry to create highly personalized products, new designs and models,

Opportunity: -Safe market, stability
-Growing experience economy
-Value added requirements of furniture consumers

-Consumer research

-Consumer participation in value creating -Highly customized products by consumers -Increasing consumer loyalty by collaboration and experience -Extending the company size by cooperation -Industry providing services to distribution -Value creating by use of IT solutions -Creating value for the consumer in each stage of the product life cycle

Distribution:
S-O: innovation in sales points, proliferation of complementary distribution channels-growing experience economy

-Increasing the value perception at sales points by providing consumers with intangible values -Experiential marketing -Implementing new business formats; e.g. concept of manutailer, combination of it with other sector: e.g. hotel and restaurant, this way access not only to local consumers -Increasing the level of cooperation between distribution and manufacturing

A big advantage of the European furniture industry is the proximity and access to one of the world's largest and most sophisticated market, this geographical proximity allows a closer relation to the consumers and customers. This closeness is making the industry to be able to obtain the needed information about the consumer and customer demands to offer them products of the required value added. The needs of end users in each segment could easily be detected and European industry is able to manufacture personalized products and has a great potential in creating new design and models, its favorable situation can be maintained and taken advantage of.
Also due to the closeness, industry should provide additional services to the consumers, who also could participate in value creating. Their collaboration and experience can make them easily loyal to the product.
As European consumers are concerned about social and environmental aspects of the products, companies can provide a value through focusing on CSR.

Distribution:

As formerly furniture purchase was influenced by price and quality, under the positive scenario it is affected by components of the "feel good factor", the social acceptance and pride of ownership, environmental aspects, that are determining the antiquated perception as a functional item rather it is merchandise, but forms integral part of home and lifestyle.

The innovation in sales points and the proliferation of complementary distribution channels are offering the possibility to exploit the opportunity of offering experiences that sell the product as experience economy is growing.
Intangible values provided at sales points are increasing the level of value perception of the product. Also IT solutions should be incorporated to the value creating system of the industry. Adding value at each stage of the product life cycle, paying special attention to the post sales stages, providing services and values during the use, renewal, and disposal.

Business expansion plans are suggested to use the opportunity of focusing on the services that industry can provide to the distribution. The appearance of new business models that are including the fusion of the concepts of manufacturers and retailers, a manufacturer, becoming manutailers.

The word manutailer means a facility where the manufacturer(s) sell their products directly to the consumer. For consumers the idea of buying directly from the manufacturers and cutting the middlemen is very attractive because they are offered a better deal this way. Cooperation with other industries like hotel and restaurant business, offering concentrated services for the buyers at the sales point is also an opportunity that can create a shopping tourism and local enterprises can have access to consumers of other geographic locations as well

3.2.1.2 Negative Scenario

Components in negative scenario	**Economic**	**Social**	**Environmental**	**Threat**	**Opportunity**
Difficulty setting fair market rules among countries	T	T	T	x	
Permanent trade imbalance	T	T	N	x	
Policies that have nothing to do with the global context	T	N	T	x	
Massive delocalization of the furniture industry in search of the lowest production costs.	T	T	N	x	
Concentration of the distribution market	O	T	O		x
Distributor's strong bargaining power with the manufacturer	N	N	N		
Global supply of organized distribution looking for the lowest cost	N	T	T	x	

Static points of sale with no progression in alternative purchasing channels	T	T	N	x	
Slow recovery after a major economic recession in North America and the European Union	N	N	N		
Major inflation and increasing interest rates	T	T	N	x	
Stagnation of employment and salaries	T	T	N	x	
Growing public deficit	N	N	T		
Family debt and decrease in available income and the proportion for furniture	T	T	N	x	
Decrease in renewal frequency and furniture consumption	T	T	N	x	
Demographic stagnation	T	T	N	x	
Aging population	O/T	T	N		
Immigration tensions and problems	N	N	T		
Strong competitive	T	T	N	x	

pressure from emerging countries, led by the BRIC group (Brazil, Russia, India and China)					
High tension between demand for and supply of conventional raw materials, which are decreasing	T	N	T	x	
In developed countries, resistance to change lifestyles: intense consumption of non-renewable resources	T	T	T	x	
Emerging countries become the leaders in global furniture production	T	T	N	x	
Stagnation of corporate responsibility; short-term vision	T	T	T	x	
Perseverance of conventional lifestyles without generational renovation	T	N	T	x	
Conventional furniture purchase based on the lowest price	T	T	N	x	
Consumer not very demanding on quality and design	T	T	T	x	
Consumer interaction with the company is limited to configuring the piece of furniture from a series of	T	T	N	x	

predefined options.					
Expansion of conventional infrastructure and major congestion problems	T	T	T	x	
Predominance of conventional housing and lifestyle	T	T	T	x	
Rigidity of space in the home and difficulty implementing environmentally sound elements	T	T	T	x	
Disorganized, massive urbanization	O	T	T	x	
Predominant values: Simplicity Daily creativity	N	N	N		

Keywords *- Instability - Mistrust - Cost pressure - Stagnation – Lack of credibility of institutions – Unchecked offshore outsourcing - BRIC – Large distribution channels - Prices – Rigidity of housing - Decrease in furniture consumption - Aging of households*

This scenario is the worst future that the furniture manufacturing sector may face in 2020. It involves a radical worsening of the tensions and threats posed to manufacturers by their competitive environment in 2005. This scenario is therefore one of negative disruption with a severe impact on manufacturers of developed countries.

The primary characteristics of this scenario include advanced delocalization of a large part of the furniture industry from advanced countries to emerging countries, whose cost competitiveness eventually imposes it. This is supported by significant concentration of furniture distribution into large multinational corporations, which require continuous cutting of costs and global market prices.

The high prices are passed on to consumers who do not consider furniture as a priority, except for basic needs. Furniture consumption in advanced countries records a major decline as a result.

The following table summarizes the market environment that would predominate in this scenario. In 2020, under this scenario, the furniture market will be characterized by predictable consumers who are not very complex. Their purchasing decisions are based on price because they try to make the most of their available income. They are not looking for consistency in household products, lifestyle and specific values. Only the upper socio-economic classes allow themselves this consistency (a low percentage of the population). Furniture consumption follows the trend: 10% upscale, 20% midscale and 70% lowscale. Couples buy in traditional big-box furniture stores or directly on the Internet to get the best price. The negative economic situation is curbing furniture consumption. Market pressure is causing several closures and favouring the appearance of large companies in emerging countries. The few surviving companies in developed countries are characterized by very efficient processes with flexible structures enabling product customization, while importing furniture from emerging countries to maintain their relationship with distribution channels.

International Political Situation	• Difficulty setting fair market rules among countries. • Permanent trade imbalance. • Policies that have nothing to do with the global context. • Massive delocalization of the furniture industry in search of the lowest production costs.
Strategies of the Retailers	• Concentration of the distribution market. • Distributor's strong bargaining power with the manufacturer. • Global supply of organized distribution looking for the lowest cost. • Static points of sale with no progression in alternative purchasing channels.
Evolution of Economic Variables	• Slow recovery after a major economic recession in North America and the European Union. • Major inflation and increasing interest rates. • Stagnation of employment and salaries. • Growing public deficit. • Family debt and decrease in available income and the proportion for furniture. • Decrease in renewal frequency and furniture consumption.
Evolution of Demographic Variables	• Demographic stagnation. • Aging population. • Immigration tensions and problems.

Level of International Competition	• Sustained growth of emerging countries and consolidation of their competitive advantages. • Strong competitive pressure from emerging countries, led by the BRIC group (Brazil, Russia, India and China). • High tension between demand for and supply of conventional raw materials, which are decreasing. • In developed countries, resistance to change lifestyles: intense consumption of non-renewable resources. • Emerging become the leaders in global furniture production. • Stagnation of corporate responsibility; short-term vision.
Attitudes and Behaviour of the Consumer	• Perseverance of conventional lifestyles without generational renovation. • Conventional furniture purchase based on the lowest price.

	• Consumer not very demanding on quality and design. • Consumer interaction with the company is limited to configuring the piece of furniture from a series of predefined options.
Evolution of Social Variables and House Implication	• Expansion of conventional infrastructure and major congestion problems. • Predominance of conventional housing and lifestyle. • Rigidity of space in the home and difficulty implementing environment-friendly elements. • Disorganized, massive urbanization. • Predominant values: - Simplicity - Daily creativity

Question no 1.
- How to make business customers and consumers interested in environmental advantages of FWC products?

Strengths -Product is recyclable -European furniture sector is able to fulfill the norms of strict safety and health ruling.	**Weaknesses** -High labor and raw material costs in Europe, so furniture industry is getting delocalized, -No efficient use of resources -Lack of design- and model protection of European furniture -Environmentally sound characteristics are not values added to the product.
Opportunities **Economic** -Consumers have a positive perception of wood based products -Consumers´ trust is strong in European brands, because values of European companies are trustworthy	**Threats** **Economic** -Difficulty in setting fair market rules among countries -Copying practice of emerging countries **Social** -Copying practice of emerging countries -resistance to lifestyle changes -Values of CSR and local origin are not perceived by the final consumers **Environment** -For environmentally sound products consumers and customers are not willing to pay extra

Pro-active strategy recommendations

The following elements of the SWOT table were used for creating the pro-active sustainable strategies:

Weakness: -Intense consumption of non renewable resources

Threat: -Resistance to lifestyle changes

-Strong communication campaign on negative consequences of non-conscious consumer behavior (frighten consumers with the unfavorable future perspectives of their children and future generations) -Social dialogue between stakeholders to offer a new way of living, an attractive and environmentally sound lifestyle to the consumers; -to be presented in all social levels by the help of govt. NGOs and industry cooperation -overall education; emotional approach to be used to change attitudes -Remuneration of environmentally conscious consumers (e.g. discounts / gifts upon environmental products purchase, (costs transferred to non environmentally sound products) -Buying process linked to a demonstrative experience -Legislative obligation is also applicable in this scenario for increase the use of renewable resources and for forcing the spread of sustainable consumption – political decision is needed for achieving it.

In the negative scenario the circumstances are causing more difficulties to the industry. Furniture consumption is declined.
As the EU population is showing a resistance to change lifestyles, consumption of non-renewable resources is intense. A strong campaign showing the consequences of their environmentally non-conscious behavior is the recommended starting point of informing the consumers and customers about their attitudes´ aftermaths. A social dialogue should be maintained between all stakeholders, to offer an attractive, environmentally sound lifestyle to the population. This lifestyle should be presented in all levels of the society in alliance with NGOs, governments and all industries.
An overall education could be incorporated into the program about the manners of an environmentally sound lifestyle. The attitude of people can be modified through their emotions so they should be influenced by their feelings. The possible negative effects of consumption in a non-ecologic way on their lives and on the future of the next generations, especially focusing on the possible negative circumstances of their family members.
Products produced in Europe are incorporating the advantages local production advantages.

Distribution:
Industry could remunerate those users and professionals who buy environmentally sound products. It could be a gift or a special discount assigned to environmental characteristics of the product.
As locally produced furniture that is incorporating the environmental values is more expensive than the imported ones, and buyers are price-sensitive, looking for simple and cheap products, they would highly appreciate great discount on them. As

distribution is concentrated, and industry has no bargaining power against it, by a strong cooperation of all stakeholders discounts can be provided through the distribution system.
The shopping process is recommended to be accompanied by an experience that is helping to understand the environmental advantages of wooden furniture of local origin. The experience should be demonstrative and the industry should bear the costs of it. Cooperation with entities of environmental objectives

Question no 2.
- How to strengthen the environmental credibility of the European FWC industries?

Strengths	**Weaknesses**
-Branding is quite strong, in kitchen and office furniture sectors, furniture industry has the possibility to link values of environment to brands buyers trust -Ability to produce personalized products; closeness to consumer, increased competitiveness against	-No efficient use of resources -Branding is weak in the majority of home furnishing, so in home furnishing no opportunity to link values to brands the buyers trust -Environmentally sound characteristics are not values added to the product. -End users requirements are largely unknown, lack of focus on consumers -High price competition with emerging country products, so credibility is an extra cost, that buyers do not want to pay, so the costs should be bore by industry -Scarce communication capabilities of SME’s -Not flexible companies -Information about consumer depends on the retailer
Opportunities	**Threats**
Economic -Consumers´ trust is strong in European brands, because values of European companies are trustworthy -Consumers have a positive perception of wood based products	**Economic** -Difficulty in setting fair market rules among countries -For environmentally sound products consumers and customers are not willing to pay extra

	-Copying practice of emerging countries **Social** -There are no transmittable values -Copying practice of emerging countries

Pro-active strategy recommendations
The following elements of the SWOT table were used for creating the pro-active sustainable strategies:

Weakness:	- Industry is not credible -Scarce communication capabilities of SME´s -No efficient use of resources
Threat:	- Values of CSR are not perceivable for buyers

-Companies should become transparent for public in all terms -Effective common communication and demonstration of industry's environmental commitment, and efforts on CSR: - use of new communication channels -demonstration of commitment -a continuous presence in media with results of CSR -cooperation with entities carrying strong environmental credibility and experience in the topic as a guaranteeing force.

The industry should gain credibility and be able to communicate effectively to the consumers and customers their commitment towards environmental issues. Demonstrating their commitment is possible through a perceivable CSR. As buyers do not perceive the values of CSR, the companies should focus on communication and demonstration. Industry is suggested to become transparent for each member of the community. For demonstrating purposes introducing new communication channels between the industry and buyers is recommended. As perceived value is dependent not exclusively on the aspects of design and sympathetic use of materials, but also the experiences that could forward the message to the buyer about the environmental aspects of the entire value chain, that should be combined to convince users about it.

Question no 3. –
How the furniture sector could maintain or increase competitiveness on the market?

Strengths	**Weaknesses**
-European furniture manufacturer's capability to create new designs and models is an undeniable competitive advantage -Ability to produce personalized	-No efficient use of resources -End users requirements are largely unknown, lack of focus on consumers -high labor costs make the sector weak in

products; closeness to consumer, understanding western lifestyles	price competition -Weak bargaining positions of manufacturers against retailers -No progress in alternative distribution
Opportunities **Economic** -Consumers´ trust is strong in European brands, because values of European companies are trustworthy -Consumers have a positive perception of wood based products -New consumer segments appear on the market (due to aging population, new lifestyles, great number of immigrants…) **Social:** -Massive immigration, -New consumer segments appear	**Threats** **Economic** -Difficulty in setting fair trade rules on the market -Permanent trade imbalance -Emerging countries become leaders in global furniture production -Narrow market low demand. -Furniture is not a priority in the household expenditures **Social** -Values of CSR and local origin are not perceived by the final consumers and customers. **Environmental** Environmental restrictions and regulations are not existing

Pro-active strategy recommendations

The following elements of the SWOT table were used for creating the pro-active sustainable strategies:

Strength: - European Industry is able to produce highly differentiated products

Weakness:
-delocalization of industry
-Weak bargaining positions of manufacturers against retailers
-fragmented industry without bargaining power against concentrated distribution

Opportunity: -massive and not controlled immigration,
-appearance of new segments of the market

-Increasing competitiveness by minimizing cost differences between emerging country and local products in terms of labor by employing the migrated population

-Strengthening innovation and marketing processes of local industries – exploiting the efficiencies of clusters, cooperation between the clusters of the sectors of the habitat.
-Strong cooperation or fusion of the sector's companies, centralized common operations, concentrated power against the external competence
-Reducing the chances of foreign imports by:

-product differentiation due to the new market segments´ demands
-Simply standardized products for the new segments
-quick delivery, providing expected quality and services
-updating EU furniture for adapting it to the changed circumstances.

-Strategic renewal; and completely new business model to be implemented:

-mass customization
-new manufacturing formats
-lean manufacturing
-Just in Time delivery

-Common value creating system with suppliers, business partners, allies, customers and consumers
-role, relation, organizational practices reconfiguration:

-mobilizing consumers and involving them in the value creating system
-providing consumers with a unique experience, dialogue with consumers
-maintaining the offers continuously competitive
-offering attractive packages in new combinations

-Highly efficient transporting and logistic system:

- close cross-sector cooperation with transporting sectors and/or introducing transport and logistics as competencies

-Extending vision for the strong emerging markets and export the products to the competitors market; promoting the creation of a consortium for exporting
-Increasing bargaining power of industry against distribution by establishing strong cooperation or fusion of the sector's companies, centralized common operations
-Access to distribution by implementing importing activities into the EU company profile

-Creating a second hand market for used furniture

Under the negative scenario one of the biggest disadvantages is the delocalization of the industry.

Becoming cost competitive against the emerging country imports is highly improbable. The competitiveness can be increased by minimizing the cost differences in terms of labor, using the cheap labor force that is migrating into Europe in an uncontrolled and massive form.

Local initiatives are recommended, to strengthen innovation and marketing processes of the local industry, local production is suggested because outsourcing is also not a viable solution due to the fact that the international political situation is not stable and safe.

A strategic renewal, and a completely new and more appropriate business model are needed; mass customization, new manufacturing strategies; lean manufacturing, just in time) delivery etc. The value not only has to be added, but also has to be reinvented. The value creating system is the one that should be stressed. The strategic duty is role-, relation- and organizational practices reconfiguration. Common value creating system of suppliers, business partners, allies, customers within the frames of co-working.

Also a recommendable way is to offer attractive “packages” of value that include customers, consumers and suppliers, allies and business partners in new combinations; new business systems and relationship reconfiguration is needed. Mobilizing costumers and involving them into the value creating system providing them with a unique experience, a dialogue is to be created with consumers and maintaining the offers continuously competitive.

Due to social changes; massive immigration, aging population, independent way of living there are more households that are consisting of one single person. New segments are appearing on the market with different demands to the former ones. Satisfying the needs and demands of the new segments is recommended to the industry and match the products with simple standards. In case European furniture industry is able to differentiate its products fitting into the model of new user requirements and is able to deliver quickly while providing the expected quality, and services, the market chances of foreign import could be reduced. Close cross-sector cooperation is to be established with transporting enterprises and/or introducing transporting and logistics as competencies within existing knowledge and innovation centre for furniture production to obtain a highly efficient logistic and transporting system.
Focusing on these factors European manufacturers can also extend their vision to the strong emerging country markets and export European furniture to the competitors markets, where consumers and customers can pay more for personalized and value added products. The European furniture manufacturers which are still operating are flexible and can quickly adapt to the changed environment, should adapt their products as well: update furniture, using design, architecture, and construction, for adapting furniture to the changed circumstances.
Exploiting the efficiencies of clusters, establishing cooperation between the clusters of the different habitat sectors.

Distribution:
Innovation is needed, new sales channels should be applied, in case they do not exist, they should be invented by the industry with or without the support of the existing distribution system.

European furniture industry’s independent companies are recommended to establish strong cooperation with each other, or are suggested to fuse with each other and centralize their operations, this way becoming able to oppose the strong bargaining power of the concentrated distribution and to gain strength against the external furniture suppliers competing for the European consumers. Due to the fact that the remained European industry also plays the role of importer, also has access to the distribution. Using this advantage they also can get closer to the buyers and exploit this opportunity to strengthen the position by changing the traditional role in the chain and extend activities as the market desires.

Summary of pro-active sustainable strategies addressed to the implementation of EU furniture industry between 2010 and 2020

2020	Key question 1: - How to make business customers and consumers interested in environmental advantages of FWC products?	Key question 2: - How to strengthen the environmental credibility of the European FWC industries?	Key question 3: - How the furniture sector could maintain or increase competitiveness on the market?
Strategies for the positive scenario	6/1 **CORPORATE COMMUNICATION** -For increasing value perception of consumers, through environmental benefits of wood products	6/2 **BRANDING** -Building strong brands with environmental values	6/3 **USER CENTERED INNOVATION** -Consumer research **TRADE MARKETING** -Industry/retail cooperation -unique value proposition
Strategies for negative scenario	6/4 **INSTITUTIONAL AND CORPORATE COMMUNICATION** -Campaign for increasing consumer interests for environmental advantages	6/5 **CSR** -Through a strongly communicated CSR	6/6 **GLOBAL BUSINESS MODEL BASED ON VALUE RELATIONS** -Managing actors -Importance of relationships and roles

3.2.2 FCBA – wood construction industry

3.2.2.1 Positive Scenario

Components in positive scenario	Economic	Social	Environmental	Opportunity	Threats
High Housing Demand	+ (O) More demand for housing involves more construction then more wood.		- (T) less construction can reduce GHG emission other things equals		
Energy price increase	+ (O) Wood products use less energy than other materials (increase wood competitive advantage)	(T) reduce Purchasing Power	+ (O) Use of wood product (concrete, metal…) less energy consuming & polluting		
Low Real Interest rate	+ (O) Increase housing demand .	(O) increase access to credit	- (T) Reduce housing demand		
Increasing Demography	+ (O) Increase housing demand .	(O) reduce Probem of pension fundings	- (T) Reduce housing demand		
Household Structure(<2 individuals)	+ (O) Increase housing demand .		- (T) Reduce housing demand		
Technology Development Improving WOOD products quality (robustness, lifetime, easy to use…)	+ (O) Wood products competitive advantage increases	(O) Improve working condition, productivity & wage	+ (O) Use of wood product (concrete, metal…) less energy consuming & polluting	X	
Forest Management: intensive use	+ (O) Increase wood supply	(T) Reduce recreation use of forest	- (T) Resources less protected		
Public Policy (Construction) environmentally oriented	+ (O) Increase Wood demand		- (T) decrease of energy consumption through use of competitive product		

Keywords *- Housing demand – rehabilitation in housing – competitive material – environmental policy*

The positive scenario involves a situation of progress and innovation of the wood construction industry in 2020. The GDP is assumed to have grown dramatically in the last five years generating an increase in housing demand for personal and professional use. Housing demand increases as well because of a low real interest rate facilitating access to property.

In the same time, urban public policies have driven construction to spread cities with a large amount of individual houses and small buildings. Urban public policies are environmentally friendly and encourage wood construction. Environmental awareness of consumers is high. Social policies drive construction plans (mainly houses or small buildings). In addition rehabilitation in housing is high for energy saving and environmental reasons.
Immigration and birth rate are at high level and divorce rate is also important generating a substantial housing demand for small size housing.
Price of oil and energy in general is sufficiently high to make of wood a very competitive material in the construction sector. Forest Management is developed in order to supply a maximum amount of wood. Availability of wood reduces its price and improves its competitiveness. The technology of wood is improved in term of robustness and large advertising campaigns change consumers' perceptions allowing a higher competitiveness of wood regarding to other materials.

Question no 1.
- How to make business customers and consumers interested in environmental advantages of FWC products?

Strengths	**Weaknesses**
Environmental : -Product are renewable and recyclable - Wood sector generate Low pollution and low consumer of energy especially during the transformation and the transportation (distance and density) processes. -Wood construction products stocks CO2 for a long period (lifetime of the house) & Wood construction products substitutes to products based on fossils materials. -Rational use of resources and creation of renewable alternatives (means less contamination) **Social** -European wood sector is able to fulfill the norms of strict safety and health ruling -Some Companies applies CSR system **Economic:** -Closeness to one of the worlds	**Economic:** -High labor and raw material costs in Europe so wood construction industry is getting delocalized - weak culture marketing, sales and lobbying. Professional structure with low cohesion - weak financial strength - Low value added to materials raport competitors that less interest to intermediate traders - lack of professional training in the use of wood in construction **Environmental :** -Difficulty to collect and use the environmental information -Use of toxic additive (glue, biocid, paint,…) and indoor emission

biggest retail market	
Opportunities **Economic :** --Consumers have a positive perception of wood products (functionality, quality…) -the Energy Price increase -Qualified and controlled immigration **Environmental** -Responsible mobility and consumption, demand for products responding to new values **Public policies** -Pro. Env public policies (taxes on CO2 emissions, subsidies…) -The consumer association and NGOs are defending renewable materials	**Threats** **Economic:** -Low environmental standards out of Europe (and other developed regions) -Ability of competing materials: dumping, aggressive communication, marketing torced -Lobby of competing materials to reduce the effect of the environmental taxes **Social** -Values of CSR and local origin are not perceived by the final consumers. **Environmental** -Forest Intensive Use

Pro-active strategy recommendations

Strength: - Product are renewable and recyclable
-Wood construction products stocks CO2 for a long period (lifetime of the house) & Wood construction products substitutes to products based on fossils materials.

Opportunity: -Positive consumer perception about products made of wood
-Consumer demand for new values which include environmental aspects.

-Information to consumers about European Wood products environmental aspects focusing on: -Carbon advantages,
-Local origin
-Sustainable production,
-recycling and re-use.

-Promotion of the concept of sustainable construction with wood and benefits of using wood (PassivHaus,…)
-Creation of Carbon market based on CO2 in Building, in order to interest the consumers to use wood.

The environmental benefits of products of wood constructions are undeniable, indisputable. These benefits cover first production of a renewable material contributing to the fight against climate building, and secondly the use of a local resource that can reduce the impacts of transport. The perception of wood as a material global society is positive, but remains insufficient in the purchase decision.

To ensure that these environmental benefits are becoming a strong signal to buy, it should ensure that consumers will not only be informed of the benefits, but mostly he will be involved in the climate and environmental challenge.

Consumers are of two kinds, end users, and contractors. This is to inform and involve the first, and really train seconds.

The industry should disseminate accurate and understandable information to stakeholders in consumption, collecting environmental data and providing simple communications and easily assimilated. LCA, although full analytical tool, should be simplified to make its use easy and really decisive.
The contractors (builders, architects, local community, distribution of building product ...) will be trained in the use of wood products, and use environmental information.

The impact analysis will allow the industry to continue improving the environmental profile of its products and to maintain its advantage vis-à-vis competing materials. Reducing amissis transport, increased collection and recycling of products and building demolition are all axis of environmental progress .

To engage these consumers, creating a carbon market, allowing consumers the product timber to dispose of CO2 credit that could be exchanged under a stcok exchange from the fact that sequestration of CO2 but also that the choice of wood products in place of more emissive products causes a substitution of fossil CO2 .

Question no 2.
-How to strengthen the environmental credibility of the European FWC industries?

Strengths	**Weaknesses**
-The environmental credibility of European wood sector is good, in terms of CO2 particularly -construction products is accompanied by certification of recognized quality and moving towards environmental indicators -Some Companies applies CSR system -Rational use of resources and creation of renewable alternatives	-Difficulty to collect and use the environmental information -Use of toxic additive (glue, biocid, paint,…) and indoor emission -End users requirements are largely unknown, very small number of companies carry out formalized consumer research. - Scarce communication capabilities of SME’s

(means less contamination)	-High costs of the production and labor in Europe, so production is getting delocalized
Opportunities **Economic** -Consumers´ trust is strong in European standards. -Increase in Energy price **Environmental** -Responsible mobility and consumption demand for products responding to the new values -Rational use of resources and creation of renewable alternatives means less contamination, that can be communicated and proved -Small group of consumers is ready to pay extra for environmentally sound products **Public policies** -Pro. Env public policies (taxes on CO2 emissions, subsidies)	**Threats** **Economic** -Non European country competition (labor cost; environmental cost) -Quality perception of the retailers and customers is similar for European wood products and the imported one, -Ability of competing materials: dumping, aggressive communication, marketing torced (see the loss of credibility of wood products organized by the concrete industry in Europe) **Social** -Values of CSR and local origin are not perceived by the final consumers - uses of exotic timber from illegal or unsustainable harvesting

Pro-active strategy recommendations

Strength: -construction products is accompanied by certification of recognized quality and moving towards environmental indicators

Opportunity: -Consumers´ trust is strong in European standards.

-strengthening or creation of marks and certificates for construction products incorporating environmental criteria

-Implementation of a new common system of labeling and certification providing comprehensible information for purchasers of environmental aspects of the product.

-creation of certification of buildings "bio" sourced

The credibility of the wood construction industry, in terms of respect for the environment is good. Nevertheless, some targeted attacks could have destabilized the confidence of consumers. It is therefore appropriate to reassure the consumer, and show exemplary industrial wood construction.

Consumers seeking an assurance of environmental quality of its products or its home. For this it relies on a system of certification by a credible third party, including European standards, or environmental charters.

It is possible to link environmental information to various existing certifications. The industry must find opportunities communication emphasizes the advantages of EU products.

The implementation of a systematic labeling, simple and have little indicator and directly related to the expected benefit (from local, energy performance, ...) will allow consumers to more easily assimilate and enhance the credibility of the products .

Marketing systems will have the information and training necessary to provide explanations to consumers. Strengthening Internet communication in connection with recognized NGOs will also strengthen the credibility of the products.

Industry can increase public confidence in its products for strong cooperation with entities - which could be supranational organizations, NGOs - who have the social acceptance and universal prestige in the field of environmental values.
The creation of “bio” sourced buildings with independent certification, will be a strong integration of the concepts of sustainable construction. It will ensure the credibility of all, making the link between environmental quality of construction products and building itself.

Question no 3.
- How the wood construction sector could maintain or increase competitiveness on the market?

Strengths **Environment** -Low consumption of energy especially during the transformation and the transportation (distance and density) processes. **Economic** -renewable product without link with oil cost volatility -Relevant Price: when the house is perceived on the long term. -Potential Market important -Potential of industrialization and optimization	**Weaknesses** -high labor costs are making the sector less competitive -distance market, subcontracting of major makers -lack of innovation -End users requirements are largely unknown very small number of companies carry out formalized consumer research. -Low flexibility of wood construction industries
Opportunities **Economic**	**Threats** **Economic**

- Increase in housing demand -Low interest rate -Increase in Energy price -proximity and access to one of the world's largest markets, geographical proximity allows reducing costs of logistics -Pro. Env public policies (taxes on CO2 emissions, subsidies…) - Qualified and controlled immigration -responsible mobility and consumption -Value added requirements of House sellers consumers -Growing "experience" economy **Technology improvement** -Improving WOOD products quality (robustness, lifetime, easy to use…)	-Unfavorable price competition with non-EU countries -the innovation capacity of competing materials, and advanced industrialization

Pro-active strategy recommendations

Strength: -Potential Market important
-Potential of industrialization and optimization

Opportunity: - Increase in housing demand
-Value added requirements of House sellers consumers
-Improving WOOD products quality (robustness, lifetime, easy to use…)

- Increasing industrialization of industrial processes and practices to offer constructive components of buildings and buildings with a rate of standardidation higher to cover larger markets at costs acceptable to the market.
- Offer products for buildings to achieve the very high energy performance of buildings and adapted to be associated with the production system of renewable energy (solar, wind, heat pump, ...)
- Reach a maximum level of prefabrication of all building lots, particularly in batch techniques to achieve very low costs.
- Integrating the upstream production up, either through external growth, either as a partnership, able to make maximum use of local woods.
- Develop a commercial offering by creating an internal force targeted and based on partnerships and alliances with other materials. Associated in

particular with builders using mostly concrete.
- Develop tools to optimize transportation costs and energy consumption with a limited impact on commercial areas.
- Extending the company size by cooperation
- Establish an internal management in light of the environment to be able to track and collect data on physical flows. Analyze the results to optimize costs and help demonstrate the environmental impacts.
- -provide information specific product just enough to the real demand of consumers (decision-maker in the act of purchase)
- Pool great public communication, policy makers, NGOs, ...

The major advantage of the construction industries wood, is the size of the market potential of wood products. Indeed, it represents only 10 to 20% of the construction market in Europe. It is also a rapidly evolving market, especially in search of energy performance and in terms of bio-sourced materials.
Consumers are waiting for its levels of quality but at a price close of tenders competing materials.

The industrialization of the manufacturing process of building elements, but also the process of construction of the building will achieve these price levels. To this end, vertical integration, to cover in a single economic entity supply lumber to the construction of the building represents one of the major routes of response to this challenge. This organizational innovation will meet these new needs and to conquer larger markets.

Marketing, and strong involvement in the market is the sine qua non. New business models will allow for alliances, partnerships with major national manufacturers to enter the market. It will also produce an offer to the market that meets these requirements, and meet most industrial products.

This industrialization inevitably accompanied by an improvement of environmental profiles, a lower energy consumption, improved environmental performance, and greater product substitution of fossil fuels.

3.2.2.2 Negative Scenario

Components in negative scenario	**Economic**	**Social**	**Environmental**	**T**	**O**
Low Housing Demand	- (T) Less demand for housing involves less construction then less wood.		+ (O) Less construction can reduce GHG emission if other things equal		
Energy price decrease	- (T) Wood products use less energy than	(O) increase Purchasing	- (T) Use of other materials (concrete,		

	other materials (reduce wood competitive advantage)	Power	metal…) highly energy consuming & polluting		
High Real Interest rate	- (T) Reduce housing demand	(T) reduce access to credit	+ (O) Reduce construction		
Decreasing Demography	- (T) Reduce housing demand	(T) increase Probem of pension fundings	+ (O) Reduce construction and overall consumption (if other things equal)		
Household Structure(>3 individuals)	- (T) Reduce housing demand		+ (O) Reduce construction		
Technology Development: Improving OTHER products (wood competitive: concrete…) quality (robustness, lifetime, easy to use…)	- (T) Wood products competitive advantage reduced	(O) Improve working condition, productivity & wage	- (T) Use of other materials (concrete, metal…) highly energy consuming & polluting		
Forest Management: Protective use	- (T) Reduce wood supply	(O) Increase recreation use of forest	+ (O) Protect Resources		

Keywords *- Low Housing Demand – Energy Price decrease - Cost pressure – Lack of credibility of institutions –sub-competitiveness*

This scenario represents the worst future which could face the timber industry in construction. This scenario implies a significant strengthening of international competition material world, without real opportunities for wood industries to present sufficient competitiveness.

The GDP is assumed to be relatively low and has not increased significantly in the last few years. Then wealth per capita is relatively low preventing from an increase in the housing demand. Urban Pubic policies are driven by the willingness to concentrate cities as much as possible. These policies increase the construction of high buildings and reduce the construction of individual houses. Consumer's environmental awareness is low and is not encouraged by any urban public policy.
In term of demography, birth rate is low and because of a low GDP growth, immigration is limited. Household structures are medium and there are few single parent families. Then demography tends to reduce housing demand. Additionally, real

interest rate is high preventing people to invest in property. There is no construction plan resulting from social public policy.
Energy price is low preventing from rehabilitation plans dedicated to reduce energy consumption. Alternative materials (energy consuming) such as concrete, masonry or steel remain then highly competitive. Wood availability is limited by a very protective management policy preventing from an improvement in term of price competitiveness with other materials. Quality competitiveness is not better because of a technology stagnation in the wood sector and substantial improvements of alternatives materials' technologies. Wood is the still perceived as a material less resistant.

Question no 1.
- How to make business customers and consumers interested in environmental advantages of FWC products?

Strengths **Environmental :** -Product are renewable and recyclable - Wood sector generate Low pollution and low consumer of energy especially during the transformation and the transportation (distance and density) processes. -Wood construction products stocks CO2 for a long period (lifetime of the house) & Wood construction products substitutes to products based on fossils materials. -Rational use of resources and creation of renewable alternatives (means less contamination) **Social** -European wood sector is able to fulfill the norms of strict safety and health ruling	**Weaknesses** **Economic:** -High labor and raw material costs in Europe so wood construction industry is getting delocalized -No efficient use of resources - weak culture marketing, sales and lobbying. Professional structure with low cohesion - weak financial strength - Low value added to materials raport competitors that less interest to intermediate traders - lack of professional interested in the use of wood in construction -Environmentally sound characteristics are not values added to the product. **Environmental :** -High Difficulty to collect and use the environmental information
Opportunities **Economic :** **-**-Consumers have a positive perception of wood products (functionality, quality…) **Environmental :** - Intense consumption of non	**Threats** **Economic:** -the Energy Price decrease -Ability of competing materials: dumping, aggressive communication, marketing torced -Lobby of competing materials to trust

renewable resources in competing sectors	the maket **Social** -no change in consumer behavior -Values of CSR and local origin are not perceived by the final consumers.

Pro-active strategy recommendations

Weakness:	-lack of professional interested in the use of wood in construction
Threat:	-no change in consumer behavior

-Strong communication campaign on negative consequences of non-conscious consumer behavior (frighten consumers with the unfavorable future perspectives of their children and future generations) -Dialogue between stakeholders to offer a new way of living, an attractive and environmentally sound lifestyle to the consumers; -Remuneration of environmentally conscious consumers (carbon market), (costs transferred to non environmentally sound products)

In the negative scenario, the economic and social circumstances are unfavorable to the use of wood products. Wood is perceived positively, but the production capacity and high costs are the main factors hampering the use of wood.

The EU population has not changed these patterns of consumption to move towards sustainable and renewable products. The consumption of products from non-renewable resources is the most important, motivated by cost more attractive.
The timber industry will conduct communication campaigns and training very strong in two main targets: the end users especially through the younger generations, and policymakers. By focusing the communication to an awareness of younger generations, the industry aims to not only educate future consumers, but in the shorter term to use influence on these young parents.

Based on associations of environmental protection, industry interact with intermediaries and policy makers to create a Win-Win leading to increased use of wood. The circuit courts marketing will be developed in particular highlighting the promotion of heritage and local jobs.

The positive externalities of the timber will be valuated, not only to restore a little competitiveness in the sector, but also to engage positively the consumer in use of wood. Some examples of creating a market for carbon in wood products, and carbon avoid by substitution. Thus consumers in purchasing wood products earn carbon credits they will be able to exchange through international voluntary market.

Question no 2.
- How to strengthen the environmental credibility of the European FWC industries?

Strengths	**Weaknesses**
-The environnemental credibility of European wood sector is good, in terms of CO2 particularly -construction products is accompanied by certification of recognized quality -Rational use of resources and creation of renewable alternatives (means less cost) -Ability to produce personalized products; closeness to consumer, increased competitiveness against	-No efficient use of resources -Consumers and producers don't want to include environmental criteria in certification of quality products -Environmentally sound characteristics are not values added to the product. -End users requirements are largely unknown, lack of focus on consumers -High price competition with competing materials, so credibility is an extra cost, that buyers do not want to pay, so the costs should be bore by industry -Scarce communication capabilities of SME's -Not flexible companies -Information about consumer depends on the retailer -High costs of the production and labor in Europe, so production is getting delocalized
Opportunities **Economic** -Consumers´ trust is strong in European brands, because values of European companies are trustworthy -Consumers have a positive perception of wood based products	**Threats** **Economic** -Decrease in Energy price -Non European country competition (labor cost; environmental cost) -Quality perception of the retailers and customers is similar for European wood products and the imported one, -Ability of competing materials: dumping, aggressive communication, marketing torced (see the loss of credibility of wood products organized by the concrete industry in Europe) -For environmentally sound products consumers and customers are not willing to pay extra

	Social -Values of CSR and local origin are not perceived by the final consumers - uses of exotic timber from illegal or unsustainable harvesting

Pro-active strategy recommendations

Weakness: -No efficient use of resources
-Scarce communication capabilities of SME´s

Threat: - Environmental values are not valuable for buyers

- Companies should involve stakeholders and populations on their territory, and create a social bond.

- The timber industry will focus its marketing efforts in making a living experience "timber". the consumer in a situation that particularly appreciates (in particluier leisure) is surrounded by woods.

The timber industry should enhance the credibility that it is rewarded. It should strengthen the demand for transparency and credibility of the consumer towards the productive sectors. As buyers do not give real value to environmental or social values, it should act through demonstration and involvement of consumers.

This will be an experience with a "timber" that conveys to consumers the environmental and social qualities of the wood industry (wood in TV, Wood in leisure park, wood in story, etc…)

Based on the concept of territory, the industry will directly involve the people, economic actors and decision makers located in the same territory. The defense of this territory, their way of life, preservation of culture, employment, will build a stronger link between the wood material and its users.

Question no 3.
- How the wood construction sector could maintain or increase competitiveness on the market?

Strengths	**Weaknesses**
-Ability to produce personalized products; closeness to consumer, understanding western lifestyles **Environment** -Low consumption of energy especially during the transformation	-No efficient use of resources -lack of innovation -End users requirements are largely unknown, lack of focus on consumers

and the transportation (distance and density) processes. **Economic** -Potential of industrialization and optimization	-high labor costs make the sector weak in price competition -Weak bargaining positions of manufacturers against retailers -distance market, subcontracting of major makers -Low flexibility of wood construction industries
Opportunities **Economic** -Consumers´ trust is strong in European brands, because values of European companies are trustworthy -Consumers have a positive perception of wood based products -New consumer segments appear on the market (due to aging population, new lifestyles, great number of immigrants…)	**Threats** **Economic** -Decrease of housing demand - High Interest rate - Decrease in Energy price -Permanent trade imbalance -Unfavorable price competition with non-EU countries -Innovation capacity of competing materials, and advanced industrialization **Environmental** -Environmental restrictions and regulations are not existing

Pro-active strategy recommendations

Strength: -Potential of industrialization and optimization
- European Industry is able to produce highly differentiated products

Weakness: -Low flexibility of wood construction industries
-Weak bargaining positions of manufacturers against retailers

Opportunity: -appearance of new segments of the market

- Increasing industrialization of industrial processes and practices to offer constructive components of buildings and buildings with a rate of standardidation higher to cover larger markets at costs acceptable to the market. - Offer products for buildings to achieve the very high energy performance of buildings and adapted to be associated with the production system of renewable energy (solar, wind, heat pump, ...) - Reach a maximum level of prefabrication of all building lots, particularly in batch techniques to achieve very low costs. - Integrating the upstream production up, either through external growth, either

as a partnership, able to make maximum use of local woods.
- Develop a commercial offering by creating an internal force targeted and based on partnerships and alliances with other materials. Associated in particular with builders using mostly concrete.
- Develop tools to optimize transportation costs and energy consumption with a limited impact on commercial areas.
- Extending the company size by cooperation
- provide information specific product just enough to the real demand of consumers (decision-maker in the act of purchase)
- Pool great public communication, policy makers, NGOs, ...

The force of production, financial and commercial building materials competitors is in this scenario the major disadvantage of the timber industry.

The industry as a whole may not match the price levels offered on the market. As a differentiated strategy will prevail:

1 - Based on its ability to offer products tailored, customized and near the place of consumption, some of the industry maintain and develop niche markets with high added values.
2 - Industry leaders will gather wood and create large groups based on highly competitive markets. They produce low cost products of standard construction.

The sector is then divided between these two types of industry, SMEs and large industrial groups, leaving no room for intermediate forms.

1 - The SMEs will use local material and local workers. The products are functionalized, sophisticated and well designed. They will develop a direct link with the market and the end consumer.
2 - large groups can employ low-skilled workers at low cost because of the industrialization of production lines. They aim to work lean, minimizing their capital (inventory reduction). These groups will join in various formats with great manufacturers employing all types of materials.

3.2.3 Innventia – printing and publishing industry

With usage of simplified MA methodology components of future scenarios (2020) have been identified. Two extreme scenarios have been chosen, one positive/optimistic and one negative/pessimistic. All elements in each scenario have been reviewed as opportunities or threats from the sector sustainability perspective.

3.2.3.1 Positive Scenario

Components of different character built an optimistic scenario. Some of them are related to external general aspects and some to market and consumer issues.

We assume that GDP is on high level, and has been increasing dramatically during last five years. International trade rules are well developed and create open environment. European government created tax regulations which are equal for the whole Europe, simple and transparent. Protection policies and economic support are of general character and serve the entire printing and publishing industry. Forest management allows intensive use of resources.

Disposal collection systems are unified by public policies and rules. They are not a hinder for international trade. However, those systems are costly for consumers.

We state that household size is decreasing, and its structure is quite traditional where two parents and children are members of household.
Education of 50 percent of the entire European population is high, which means university degree and higher. Knowledge and education is highly ranked.
Europe member states developed further conditions for free movement of labor, which resulted that mobility of people is intensive but well detected and controlled. The positive phenomenon is noticed regarding structure of migration groups, low educated people are migrating from Europe and high educated move to Europe.

Consumers as well as business customers are matured regarding their requirements. Both groups request that distribution of products is so well developed that purchasing possibilities exist everywhere. Since population is aware of knowledge and education value, so this is a main reason for purchasing of printed and published products.

We recognize very individualized society with highly developed request for personified products and additional services. Customers demand a well developed spectrum of varieties in products as well as combinations with other media, e.g. sounds, moving pictures, etc. Demands are well expressed and communicated to the sectors by different channels. Price is not a decisive factor while purchasing products, but it is a significant aspect in relation to the total quality of products. This means that high price is accepted in combination with high and satisfying quality.

Competing industries such as e-media are apprehended as complementary not substituting element.

Customers and consumers are aware of positive aspect of paper as sustainable material and therefore sustainability certification is commonly required. Society expects that those issues are regulated by legislation. Customer organizations are often initiators of sustainability campaigns related to environmental issues of fiber-based products and their sustainable character. Since sustainability requirements are governed and controlled by directives, and should be fulfilled by industries, no local origin is essential.
Positive scenario consists of components presented below in table.

Components in Optimistic Scenario	Economic	Environment	Social
Decreasing Household size	O: Higher per capita consumption of consumables (packaging,	O	T

	newspapers) T: Less money to spend per person		
Parents and children in Household structure	O	T	O
Migration groups structure: low educated from Europe and high educated to Europe	O	O	O
Intensive and controlled Migration mobility	O	T	O
Education of 50% population is high	O: More reading	T	O: More reading
Dramatically increasing of GDP in Europe (exact data from Ref. Futures)	O: Higher consumption	T	O
The way of disposal collection organized by public policies/rules is easy, everywhere but costly for consumers	T: Costly disposal	T	O: Easy disposal
Open International trade rules	O: Access to new markets T: Increased competition	T	O
Protection policies and economic supports are general for the entire industry	O	O	T
Simple and transparent Tax regulations	O	O	O
Forest Management allows intensive use	O: Raw material supply	T	T
Availability for purchasing is practically everywhere	O: Many distribution channels	T	O: Many distribution channels
Local origin request is nonexistent	T:Competition from low-cost countries	T	T
Request for response on individual new demands is high	O:Customised products	T	O:Customised products
Reason of purchasing printed products is related to education needs	O	O	O
Requirements for sustainability certification is regulated by legislation	O	O: Renewable material	O

Request for variety in and many combinations of functionality of the product (the same product but with different extra characters such as sound, video, etc.) is highly developed, common and well expressed	O:Possibilities to develop traditional paper products	T	T: E-media may have higher performance
Request for additional services is highly developed, common and well expressed	O:Possibilities to develop traditional paper products T: E-media may have higher performance	T	T
Price sensitivity while purchasing is only in combination with quality	O	O	O
Consumer perception of paper as sustainable material is highly developed	O	O	O
Development of competitive products (e.g. e-media) is rather low	O	O	O
Communication on positive environmental issues of FWC products is mostly initiated by consumer organisations	T	T	O:Higher credibility

Question no 1.
How to make business customers and consumers interested in environmental advantages of sector products?

Strengths	**Weaknesses**
▪ Strong recognition of changing trends and consequently adjustment of international processes ▪ Combining price and quality	▪ Low level of sustainability labelling
Opportunities	**Threats**
Economic opportunities ▪ Decreasing household size, which gives higher per capita consumption ▪ Migration groups structure (low educated from EU and high educated to EU), which can secure higher environmental consciousness and consequently	Economic threats ▪ The way of disposal collection organised by public policies/rules is easy, everywhere but costly for customers, consequently interests in environmental advantages are difficult to get paid for. ▪ Local origin request is nonexistent

more interest in environmental advantages and willingness to pay for it ▪ High education of 50% of population guarantees spending more resources on reading ▪ Dramatically increasing of GDP in Europe, which can secure higher consumption ▪ Forest Management allows intensive use, which secures raw material supply ▪ Price sensitivity while purchasing is only in combination with quality, which gives opportunity to get paid ▪ Consumer perception of paper as sustainable material is highly developed, which makes easy to get paid for environmental advantages ▪ Development of competitive products (e.g. e-media) is rather low, which means lower costs for marketing environmental advantages Environmental opportunities ▪ Reason of purchasing printed products is related to education needs, where environmental advantages can be easy highlighted ▪ Protection policies and economic supports are general for the entire industry, which creates positive impact on environment ▪ Requirements for sustainability certification is regulated by legislation Social opportunities ▪ Reason of purchasing printed products is related to education needs, where customised products can be easy adjusted to individual needs even in terms of environmental advantages	Environmental threats ▪ The way of disposal collection organized by public policies/rules is easy, everywhere but costly for customers, which means environmental obstacles with introducing more “environmental advantages” ▪ Open International trade rules ▪ Availability for purchasing is practically everywhere Social threats ▪ Local origin request is nonexistent, which means difficulties to highlight environmental advantages ▪ Decreasing Household size ▪ Request for additional services is highly developed, common and well expressed

▪ Education of 50% population is high, encourages for more reading ▪ The way of disposal collection organized by public policies/rules is easy, everywhere but costly for consumers, any way saves environment	

Functional performance and value for money are typically the prime decisive factors for the buyers of printed products. This means that low-cost budget products are essential for some market segments while other segments demand more sophisticated products. In the negative scenario there will be more emphasis on and demand for low-cost budget products, while in the positive scenario there is more demand and emphasis for more sophisticated products. Content is of course a very decisive aspect, with more emphasis on pleasure and time killing in the negative scenario and more focus on high quality and education in the positive scenario. Environmental issues are in general a low priority issue. If everything else is the same, environmental factors will however have a decisive role in some markets. It is often so that environmental benefits are taken for granted, and hence that they offer limited advantages versus other competing products. On the other hand, if the product has environmental drawbacks, it will be disadvantageous.

Proposed strategy: To reduce or eliminate environmental drawbacks of paper printing and publishing products

“Educating” the consumers in sustainability matters is a big, complex and costly task. The forest based sector could hardly accomplish such a task successfully on its own. The credibility of the sector is in many consumers view very limited, so it seems to be a better option to communicate the benefits of the FWC to consumers through, community, government, consumer organisations and other NGOs for better results. In the positive scenario there is more emphasis on communication through consumer organisation, while in the negative scenario the role of community and government is stronger. Tools like Eforwood can be used to scientifically support sustainability performance claims, and are likely to be useful in the lobbying work in society. At the same time the sector should try to constantly improve in all dimensions of sustainability, and be transparent for higher sector credibility.

Proposed strategy: Constantly improving all dimensions of sustainability performance and apply scientific tools (e.g. Eforwood) to confirm progress. Communicate sustainability benefits through other organisations (e.g. NGO and and governmental)

Renewability can be an important aspect to emphasise for the sector. This is quite unique for the sector and can put paper in a good position relative fossil-based alternative substrates. A debate focusing on land-use, may on the other hand put paper substrates in a worse position versus some competing materials. In the positive scenario the sustainability and environmental image is quite well developed, but more efforts will be required in the negative scenario to develop the environmental image of paper. In the context of the future, the provision of adequate recycling systems seems to be a pre-requisite in all scenarios. Little use of sustainability labelling can be a potential weakness for the sector, but can be offset by support and recommendations from NGOs and governmental bodies etc.

Proposed strategy: Emphasise renewability as a unique property of the material. Actively engage and contribute to develop and implement efficient and convenient recycling systems based on a holistic view.
Clearly communicated environmentally adapted products may be a possibility, where a premium price can be charged to some customers for an environmental premium product. This segment is larger in the positive scenario, while low cost is more emphasised in the negative scenario. Traditional low-cost strategy in the sector can only be partially successful in the future. The level of success is somewhat higher in the negative scenario. There are many applications where standard printed products simply cannot compete with e.g. e-media (regardless of price). On the other hand, there are new applications where the unique properties of printed products and e-products can be combined to create totally new product concepts, where the growth potential is large, especially in the positive scenario This could enable the sector, not only to strengthen its competitiveness and gain market shares, but also to expand the total market meaning more total revenue. According to the SWOT, sector strength factors are to combine price and quality and adapt to changing requirements. These could be utilised to realise the growth through differentiation potential.

Proposed strategy: Develop environmentally adapted products. Both highly functional, innovative products and more standard type well performing products with a minimum price. Utilise sector strength factors to combine price and quality adapting to changing needs with a dynamic and differentiated product mix.

For general competitiveness, customised products targeting different user needs are opportunities for the printing and publishing sector. Needs range from lowest possible price (strongly emphasised in the negative scenario) to request for highly sophisticated products offering additional services and features, including recycling and environmental image aspects (more emphasised in the positive scenario). A differentiation strategy could be adopted focusing on innovative value-adding applications catering for the special requirements in different applications. The future outlook for migration patterns, education level, household size etc are very different in different scenarios. With the proposed differentiation strategy, the sector can develop and tailor products to suit the needs of various segments.

Proposed strategy: Use a differentiation strategy, where the sector can develop and tailor products to suit the needs of various segments. Environmentally conscious consumers is one such segment. The availability of adequate products for this segment may contribute to expansion of the segment.

Question no 2.
How to strengthen the environmental credibility of the European FWC industries?

Question no 2 has been highlighted by stakeholders as non relevant for printing and publishing industry for direct concern of strategy development towards end-consumers and business customers.
We will develop strategies that will present a way of overcoming **weaknesses** to pursue **opportunities**.

Weaknesses

- Low level of sustainability labelling

Opportunities

Economic opportunities

- Education of 50% population is high
- Protection policies and economic supports are general for the entire industry
- Forest Management allows intensive use
- Requirements for sustainability certification is regulated by legislation
- Consumer perception of paper as sustainable material is highly developed

Environmental opportunities

- Migration groups structure: low educated from Europe and high educated to Europe
- Protection policies and economic supports are general for the entire industry
- Requirements for sustainability certification is regulated by legislation

Social opportunities

- Education of 50% population is high
- Availability for purchasing is practically everywhere
- Reason of purchasing printed products is related to education needs
- Communication on positive environmental issues of FWC products is mostly initiated by consumer organisations

Since Stakeholder expressed opinion that this question should not be a subject in activities towards the market, we consider that certification and labeling strategy will increase environmental credibility and create fundaments for lobbying activities between printing and publishing sector and consumer organizations.

It is important for industry while building up credibility to achieve environmental certificates that are compatible with environmental certifications for flow both upstream and downstream and which fulfill environmental directives.

Certification and labeling strategy

Certification and labeling strategy will support overcoming *low level of sustainability labeling*, which is recognised as a weakness. Strategy will enable usage of following opportunities:

- Education of 50% population is high
- Migration groups structure: low educated from Europe and high educated to Europe
- Reason of purchasing printed products is related to education needs
- Requirements for sustainability certification is regulated by legislation
- Consumer perception of paper as sustainable material is highly developed
- Communication on positive environmental issues of FWC products is mostly initiated by consumer organisations

Since no local origin is essential and sustainability requirements are governed and controlled by directives, and should be fulfilled by industries, no vertical integration is necessary in order to secure fundaments for environmental certification.

Certification and labeling strategy should cover following fields:

1) own production control, fulfillment of requirements defined in directives
2) sustainable certificates of own work flow given by recognized certification authorities
3) request of environmental certificates from companies upstream and downstream along the value chain
4) implementation of labeling system that should be integrated in production work flow along the value chain in order to secure fulfillment of agreed environmental standards
5) label information clear and reliable

Risks
There are some risks related to certification and labelling strategy:

- different interpretation of directives concerning industries in value chain
- conflict of interests along the value chain while fulfilling sustainability requirements and achieving certificates
- complex and complicated control system
- complex and complicated labelling system

Costs
There are also some costs related to above described strategy:

- control, auditing and certification costs
- labeling system implementation costs
- costs of improvement production that meet directive requirements

Question no 3.
The main objective is to create pro-active strategies in order to maintain or increase competitiveness of printing and publishing sector on the market in positive scenario.

In the positive scenario, while running SWOT analysis of printing and publishing sector with the subject of analysis defined as “maintaining or increasing competitiveness of the sector”, we identified only one weakness, and very few threats, so it seems logic to create strategies that take into consideration **Strengths** and **Opportunities**. This means that strategies will present a way of usage of strengths in order to exploit opportunities.

Strategies will cover following elements:

- Product
- Distribution

In order to construct strategies it was necessary in the first step, to identify relations between strengths and opportunities for respective element.

Product
Sector can take advantages of the opportunities such as reason of purchasing printed products which is related to education needs, and the fact that the education of 50% of population is high, with help of *long superior tradition as a reliable source of content*.

Well developed *ability to combine price with quality* enables exploitation of following opportunities:

- High level of request for response on individual new demands
- Everywhere established purchasing availability
- Buyers show price sensitivity only in combination with quality

Sector offers *huge variation that can satisfy markets different needs and interests in the matter of content, layout, form, price,* etc. This strength will fit and make use of:

- High level of request for response on individual new demands
- Intensive and controlled migration mobility
- Education of 50% of population is high

Distribution

Printing and publishing sector is characterized by well *developed different distribution channels* which can take advantages of following external components:

- Intensive and controlled migration mobility
- Dramatically increasing GDP in Europe
- General for the entire industry developed protection policies and economic supports
- Simple and transparent tax regulations
- Availability for purchasing is practically everywhere
- High level of request for response on individual new demands
- Both parents and children in household structure
- Price sensitivity exists while purchasing only in combination with quality

Pro-active strategies

Strategies will be based on theoretical framework of Model of Competitive Advantage (Porter 1998), Competiveness Strategy and End Market Competitiveness Plan (Barber T. 2007), and Porter's Five Forces Diagram (Porter 1989).

A sector's competitiveness depends on the talent of firms and other actors along the chain to predict and fulfill buyer demands, take advantage of end-market opportunities, and respond to or stimulate changes in market demand. We can recognize two main kind strategies: survival and leader.

Since sector's business environment is of positive character (positive scenario) taking into consideration strengths and external opportunities, we might chose *Leadership Strategy*, which will provide a road map for moving printing/publishing sector towards higher and sustainable rate of growth. This assumption has been taken after selection of value chains, analysis of those chains and creation underpins for positive scenario. Those steps have been taken in the previous parts of Eforwood project.

Results of each step are available in following deliverables:

- Case Study Eforwood, PD 5.2 – selection of value chains
- Case study report containing analysis of the most relevant value chains from a FWC sustainability, consumer/market, and macro-economic perspective. The

report is based on a range of qualitative and quantitative methods including surveys, interviews, and focus groups, D 5.2.3 – value chains analysis
- Intermediate progress report – M5 Partial SIA process tool, D 5.3.1 – future scenarios description

Product Strategy
Product strategy for the sector mainly concentrates on improving products differentiation, implementing innovations in products and in their features as well as create price/product quality structure that enables to follow up individual preferences of customers.

This allows generating combination of two basic advantages:
- cost advantage
- differentiation advantage

We can assume that combination of both advantages is possible since customers and end-consumers expressed price sensitivity while purchasing only in combination with quality.

Sector can deliver printed and published products at lower lost since lower quality is accepted in specific cases.

On the other hand, delivering individualized products that carry benefits that exceed those of competing products enables to secure higher economical rate of growth.

IT system that enables creation of dynamic individual profiles should be implemented along the entire value chain.

Data system should allow detecting automatically changes in individual profiles.

Intimate cooperation between all actors along the value chain might require new forms of relationships that differ from nowadays. Some technological as well as economical alliances might be necessary in order to fulfill individual preferences.

Risks
Some key risks should be in calculated while creating product strategy:
- Dynamic profiles are not reliable in 100 per cent
- It systems are not compatible internally and externally
- High production costs
- Difficulties in cooperation along the value chain

Costs
There are some significant costs related to product strategy:
- Changes in production process
- Implementation of supporting IT systems

Distribution Strategy
Taking advantages from well developed distribution while dealing with high mobility, requests usage of predictive and statistical modeling in order to follow up changes. It also requests continue updating of changes.

Creation of innovations in distribution requires cross-domain collaboration with governments, local authorities, suppliers, IT sector, etc. using extensible workflows that convert great amount of data.

Following well-detected structure of high mobility of well-educated population does not request major changes in traditional distribution of printed and published products. Innovations should be implemented in further exploiting relationships with traditional transport companies, wholesales and retailers places in new mobility areas.

Innovation process should also focus on finding novel distribution channels geographically related to new places of mobility.

Transparent and ease tax regulations enable new forms of relationship with suppliers and customers that might be necessary for the sector while following up business with population mobility.

Since household consists of both parents and children, request for response on individual new demands is well articulated as well as price sensitivity exists while purchasing only in combination with quality further model of distribution might be necessary to develop in order to add to the traditional one.

IT systems supporting both traditional as well as new distribution should be further developed. Systems might require over boundaries cooperation along the value chain.

In order to reduce distribution costs, systems should enable automate and streamline integrated internal and external processes.

Risks
While talking about distribution strategies within 2020 scenario environment some major risks should be highlighted:

- Statistics that should be followed up are not reliable in 100 per cent
- Personal integrity might be an obstacle while following up mobility
- Different physical infrastructure on new mobility place which is not compatible with now existing
- IT systems which are not compatible with each other
- Lack of will for collaboration from new actors' side
- Communication, language and cultural problems

Costs
Following major costs should be taken into consideration:

- Development and implementation of complex IT systems
- Training and improvement of personal skills
- Adjustment of existing distribution

3.2.3.2 Negative Scenario

Also for this scenario, we used different configurations that have been created in Morphological Analysis Matrix. Elements used in scenario description are both of general and market specific nature.

We assume that GDP is onkower level, and development of GDP during last five years was very turbulent. International trade rules are well developed but extremely restricted for import of raw material and export of final products. Those rules are valid for international trade between member states and also between Europe and countries outside Europe. European government created also tax regulations which are complex and complicated. Rules are hinder for establishing new inexperienced companies. Protection policies and economic support serve only parts of printing and publishing industry. This creates an unequal situation on markets for different actors along the entire value chain. Forest management is rather protective and doesn't allow intensive use of forest resources.

Disposal collection systems are unified by public policies and rules. System is easy and free of charge everywhere.

We state that household size is increasing, and its structure is created of father and children.
Education of 50 percent of the entire European population is very low and equal primary school. Knowledge and education is not of high value.
Europe member states developed further conditions for free movement of labor, which resulted that mobility of people is intensive. Legislation doesn't create environment for mobility detection and control. Those conditions create situation when low educated people are migrating to Europe and high educated move from Europe.

Consumers as well as business customers don't express any particular requirements concerning e.g. everywhere purchasing availability of products. Traditional distribution channels which are similar for nowadays are satisfying shopping needs. People buying mainly printed and published products for pleasure and time killing.

We can not recognize a situation where highly developed request for personified products and additional services are present. This means that customers' demand for a well developed spectrum of varieties in products as well as their combinations with other media, e.g. sounds, moving pictures, etc doesn't exist. Price is a decisive factor while purchasing products. This means that high price is generally not accepted.

Competing industries such as e-media are apprehended as cheep, easy accessible, well developed, satisfying and replacing element for printed and published products.

Customers and consumers are not generally aware of positive aspect of paper as sustainable material. This situation can be related to low education level of population. Level of consumers' "environmental consciousness" affects requirements for sustainability certification. Sustainability certification is not regulated by legislation. Local communities and governments initiate sustainability campaigns related to environmental issues of fiber-based products and their sustainable character.

Since sustainability consciousness is rather related to local conditions, so local origin is essential for customers and consumers.

Negative/pessimistic scenario consists of components presented below in table.

Components in Pessimistic Scenario	Economic	Environment	Social
Increasing of Household size	O: More spending power T: More readers sharing products	T	O
Father and children in Household structure	T	T	T
Migration groups structure: high educated from Europe and low educated to Europe	T	T	T
Intensive and non-controlled Migration mobility	O	T	T
Education of 50% population is low, on primary school level	T:Limited reading	T	T:Limited reading
Turbulence of GDP in Europe (exact data from Ref. Futures)	T	T	T
The way of disposal collection organized by public policies/rules is easy, everywhere and free for consumers	T: Industry may have to pay	O: High recycling	O: Easy for consumers
Highly restricted International trade rules	T: Protected industry – not enough innovation	O: Less transport	T: Limited innovation
Protection policies and economic supports focused on particular parts of sectors	T	O	O
Complex and complicated Tax regulations	T	O	O
Forest Management is protective	T: Limited raw material availability	O	O
Availability for purchasing is quite traditional	T	O	T: Channel development needed
Local origin is request by customers	T	O: for industries with large home markets	O

Request for response on individual new demands is low	T	T	T: Limited innovation
Reason of purchasing printed products is related to pleasure and time killing	O: Free magazines T: Books limited	+	T: TV and e-media may be stronger
Requirements for sustainability certification is depending only on customers' consciousness	T	T	T
Request for variety in and many combinations of functionality of the product (the same product but with different extra characters such as sound, video, etc.) is not existing	T	O	T: Limited innovation
Request for additional services is moderate and well expressed	O	O	T
Price sensitivity while purchasing is decisive	O: Paper is low cost T: Low profit	T	T
Consumer perception of paper as sustainable material is low developed	T	0	T: Bad image
Development of competitive products (e.g. e-media) is rather strong	T	T	Higher functional performance of e-media
Communication on positive environmental issues of FWC products is mostly initiated by local community and governments	O	O	O: High Credibility

Question no 1.
How to make business customers and consumers interested in environmental advantages of sector products?

Strengths	**Weaknesses**
▪ Strong recognition of changing trends and consequently adjustment of international processes ▪ Combining price and quality	▪ Low level of sustainability labelling
Opportunities	**Threats**
Economic opportunities ▪ Request for additional services is moderate and well expressed ▪ Communication on positive environmental issues of FWC products is mostly initiated by	Economic threats • Migration groups structure: high educated from Europe and low educated to Europe • Forest Management is protective • Requirements for sustainability

local community and governments Environmental opportunities ▪ The way of disposal collection organized by public policies/rules is easy, everywhere and free for consumers ▪ Local origin is request by customers ▪ Communication on positive environmental issues of FWC products is mostly initiated by local community and governments Social opportunities ▪ The way of disposal collection organized by public policies/rules is easy, everywhere and free for consumers	certification is depending only on customers' consciousness • Consumer perception of paper as sustainable material is low developed Environmental threats • Request for response on individual new demands is low • Requirements for sustainability certification is depending only on customers' consciousness • Price sensitivity while purchasing is decisive Social threats • Migration groups structure: high educated from Europe and low educated to Europe • Education of 50% population is low, on primary school level • Requirements for sustainability certification is depending only on customers' consciousness • Price sensitivity while purchasing is decisive

Functional performance and value for money are typically the prime decisive factors for the buyers of printed products. This means that low-cost budget products are essential for some market segments while other segments demand more sophisticated products. In the negative scenario there will be more emphasis on and demand for low-cost budget products, while in the positive scenario there is more demand and emphasis for more sophisticated products. Content is of course a very decisive aspect, with more emphasis on pleasure and time killing in the negative scenario and more focus on high quality and education in the positive scenario. Environmental issues are in general a low priority issue. If everything else is the same, environmental factors will however have a decisive role in some markets. It is often so that environmental benefits are taken for granted, and hence that they offer limited advantages versus other competing products. On the other hand, if the product has environmental drawbacks, it will be disadvantageous.

<u>Proposed strategy:</u> To reduce or eliminate environmental drawbacks of paper printing and publishing products

"Educating" the consumers in sustainability matters is a big, complex and costly task. The forest based sector could hardly accomplish such a task successfully on its own. The credibility of the sector is in many consumers view very limited, so it seems to be a better option to communicate the benefits of the FWC to consumers through, community, government, consumer organisations and other NGOs for better results. In the positive scenario there is more emphasis on communication through consumer organisation, while in the negative scenario the role of community and government is stronger. Tools like Eforwood can be used to scientifically support sustainability performance claims, and are likely to be useful in the lobbying work in society. At the same time the sector should try to constantly improve in all dimensions of sustainability, and be transparent for higher sector credibility.

Proposed strategy: Constantly improving all dimensions of sustainability performance and apply scientific tools (e.g. Eforwood) to confirm progress. Communicate sustainability benefits through other organisations (e.g. NGO and and governmental)

Renewability can be an important aspect to emphasise for the sector. This is quite unique for the sector and can put paper in a good position relative fossil-based alternative substrates. A debate focusing on land-use, may on the other hand put paper substrates in a worse position versus some competing materials. In the positive scenario the sustainability and environmental image is quite well developed, but more efforts will be required in the negative scenario to develop the environmental image of paper. In the context of the future, the provision of adequate recycling systems seems to be a pre-requisite in all scenarios. Little use of sustainability labelling can be a potential weakness for the sector, but can be offset by support and recommendations from NGOs and governmental bodies etc.

Proposed strategy: Emphasise renewability as a unique property of the material. Actively engage and contribute to develop and implement efficient and convenient recycling systems based on a holistic view.

Clearly communicated environmentally adapted products may be a possibility, where a premium price can be charged to some customers for an environmental premium product. This segment is larger in the positive scenario, while low cost is more emphasised in the negative scenario. Traditional low-cost strategy in the sector can only be partially successful in the future. The level of success is somewhat higher in the negative scenario. There are many applications where standard printed products simply cannot compete with e.g. e-media (regardless of price). On the other hand, there are new applications where the unique properties of printed products and e-products can be combined to create totally new product concepts, where the growth potential is large, especially in the positive scenario This could enable the sector, not only to strengthen its competitiveness and gain market shares, but also to expand the total market meaning more total revenue. According to the SWOT, sector strength factors are to combine price and quality and adapt to changing requirements. These could be utilised to realise the growth through differentiation potential.

Proposed strategy: Develop environmentally adapted products. Both highly functional, innovative products and more standard type well performing products with a minimum price. Utilise sector strength factors to combine price and quality adapting to changing needs with a dynamic and differentiated product mix.

For general competitiveness, customised products targeting different user needs are opportunities for the printing and publishing sector. Needs range from lowest possible price (strongly emphasised in the negative scenario) to request for highly sophisticated products offering additional services and features, including recycling and environmental image aspects (more emphasised in the positive scenario). A differentiation strategy could be adopted focusing on innovative value-adding applications catering for the special requirements in different applications. The future outlook for migration patterns, education level, household size etc are very different in different scenarios. With the proposed differentiation strategy, the sector can develop and tailor products to suit the needs of various segments.

Proposed strategy: Use a differentiation strategy, where the sector can develop and tailor products to suit the needs of various segments. Environmentally conscious consumers is one such segment. The availability of adequate products for this segment may contribute to expansion of the segment.

We will develop strategies that will present a way of overcoming **weaknesses** to pursue **opportunities**.

Weaknesses
▪ Low level of Sustainability labelling
Opportunities
Economic opportunities ▪ Increasing of Household size Environmental opportunities ▪ The way of disposal collection organized by public policies/rules is easy, everywhere and free for consumers ▪ Local origin is request by customers ▪ Communication on positive environmental issues of FWC products is mostly initiated by local community and governments Social opportunities ▪ Increasing of Household size ▪ Communication on positive environmental issues of FWC products is mostly initiated by local community and governments

Question no 2 has been highlighted by stakeholders as non relevant for printing and publishing industry for direct concern of strategy development towards end-consumers and business customers.
This question could be a key issue while developing strategies that will be used between sector and political circles. Strategies related to those questions should be developed with focus on expected results while lobbing sustainability of sectors.

Questions 2 should be connected to SWOT examinations and their results presented in both scenarios' environment, and should be reconsidered in the matter of target group.

Since Stakeholder expressed opinion that this question should not be a subject in activities towards the market, we consider that management strategy of vertical integration could be beneficial in order to underpin fundaments for lobbying activity.

The concept of vertical integration is defined as “Merger of firms at different stages of production and/or distribution in the same industry. When a firm acquires its input supplier it is called backward integration, when it acquires firms in its output distribution chain it is called forward integration.” (Business Dictionary)

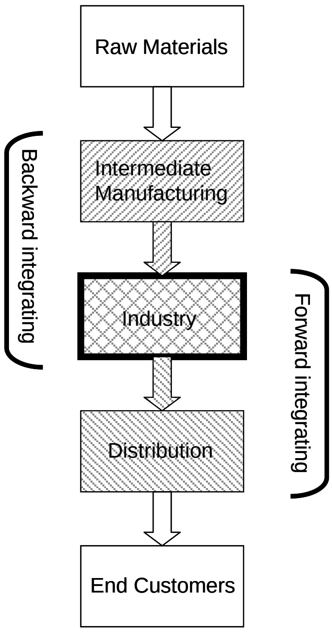
We will also use Porter’s value chain model, which he has introduced in his book in 1985, “Competitive Advantage”, while creating vertical integration strategy.

Vertical integration strategy

Vertical integration strategy will help to overcome the industry’s weakness *low level of Sustainability labelling* and to pursue following external opportunities:

- Increasing of Household size
- Local origin is request by customers
- Communication on positive environmental issues of FWC products is mostly initiated by local community and governments

We will deal with combination of backward and forward integration as presented below.



Industry should consider backward integrating into intermediate manufacturing and combine it with forward integrating into distribution in order to strengthen industry environmental credibility, however printing and publishing technology processes should meet environmental requirements and setup standards.

Vertical integrating allows following:

- Reduce transportation environmental implications
- Improve supply chain coordination both downstream and upstream in order to secure fulfillment of agreed environmental standards and issues

- Facilitate actions and investments in significant sustainable and environmental assets along the value chain that strengthen industry environmental credibility
- Increase level of Sustainability labeling for own industry and vertically integrated industries
- Communicate environmental achievement to local community and governments in order to build credibility

Risks
There are significant risks related to vertical integration such as:

- Request of new core competencies which might compromise existing competences
- Difficulties in coordination activities and environmental requests both backward and forward as well as possibilities to create conflicts caused by variety in industries upstream and downstream
- Increasing responsibility as well as enlarging managerial issues
- New effective tool for coordination and control
- Legislative obstacles
- Problems in communication with local community and governments and in lobbying activities

Costs
Some extraordinary costs may be connected to the strategy and risks, such as:

- Bureaucratic and managerial costs as well as investment costs in tool
- Costs for implementation of particular environment standards
- Costs for certifications, control and external auditing activities

Negative Scenario
Question no 3
How to main objective is to create pro-active strategies in order to maintain or increase competitiveness of printing and publishing sector on the market?

Strategies will present a way of usage of strengths in order to reduce sectors exposure to external threats.
Strategies will cover following elements:

- Product
- Process
- Customer
- Distribution

In order to construct action plans it was necessary in the first step, to identify relations between strengths and threats for respective element.

<u>Product</u>
Strengths such as long superior tradition as a reliable source of content, strong recognition of changing trends, and ability for combination price and quality can be exploited in order to limit following threats:

- Migration groups structure: high educated from Europe and low educated to Europe
- Education of 50% population is low, on primary school level

- Request for response on individual new demands is low
- Request for variety in and many combinations of functionality of the product (the same product but with different extra characters such as sound, video, etc.) is not existing
- Intensive and non-controlled migration mobility
- Price sensitivity while purchasing is decisive
- Development of competitive products (e.g. e-media) is rather strong
- Reason of purchasing printed products is related to pleasure and time killing

Process

Concerning strategies that will be formed with focus on production process, strong recognition of changing trends, and ability for combination price and quality should be taken into account as key strengths to reduce negative impact of following threats:

- Highly restricted International Trade rules
- Forest Management is protective
- Local origin is request by customers
- Requirements for sustainability certification is depending only on customers' consciousness
- Price sensitivity while purchasing is decisive

Customer

Actions that will be planed with focus on customers should be based on strengths such as long superior tradition as a reliable source of content, and strong recognition of changing trends. Strengths could reduce sectors exposure on following external threats:

- Migration groups structure: high educated from Europe and low educated to Europe
- Education of 50% population is low, on primary school level
- Intensive and non-controlled migration mobility
- Reason of purchasing printed products is related to pleasure and time killing

Distribution

Developed different distribution channels, and strong recognition of changing trends should be used as key strengths while creating strategies for distribution. They will limit following external threats:

- Highly restricted International Trade rules
- Local origin is request by customers

Theoretical underpins are mostly related to Global Market Perspective, Value Chain Approach, Survival Strategy, and Competitive Advantages theory.

Formulation of pro-active strategies required multi-perspective approach and combination of above-mentioned theories.

Product Strategies

Printing and publishing sector competes on European market of the product in order to survive.

Product differentiation will not be a successful strategy since there is no request for response on individual new demands neither request for variety in and many combinations of functionality of the product (the same product but with different extra

characters such as sound, video, etc.) is existing, and price is a decisive factor while purchasing.
Pro-active strategy could be focused on manufacturing modest products that can be consumed by any customer. Content should be relatively neutral in order to satisfy as large customer group as possible, however it should be related to major and global trends.
Since price is a decisive aspect while purchasing products, low price should be calculated, and a consequence no product sophisticated innovations should be implemented. Traditional content and layout related to “pleasure and time killing” should be taken into consideration.
Population mobility is rather intensive but not controlled, which means that industry cannot “follow up” streams with its products. No particular and refined segmentation and diversification of products are motivated that follow up mobility pattern, instead of, geographical placement of market should be direct connected to products.

Risks
Some obvious future risks should be considered:

- Easy, global and standard access to substituting products (electronic media) can compete out printing sector
- Cheep competing products from e.g. electronic media can take share of printed markets
- Since printed products are mostly related to “pleasure and time killing”, any other activity than reading, can take over market e.g. travelling.

Costs
No particular and extra costs have been recognized.

Process strategy
Technology process regarding printing and publishing should be focused on usage of paper supplied by manufacturers that have raw material with local origin, since import of material is clearly restricted by international trade rules.

Efficiency and optimization of printing and publishing process regarding usage of paper with local origin should be taken into consideration, since management of forest is of protective character, which can limit access to fiber. Focus should be on increasing yield of paper in printing and publishing process.

Waste from technology processes should be minimized, especially this part containing fiber.

Risks
There are risks related to assurance of total quality. “Half good” products could appear on market in order to minimize printing/publishing waste.

Requirements for local origin can also influence printing quality.

Costs
They might be costs related to optimization of printing/publishing process. Additional costs could be linked with upgrading of technology line.

Distribution strategy
Distribution strategy should cover adjusted transport mode for optimized distribution if in own management, strategic alliances with transport sector, and strategic alliances with business customers. Those actions should guarantee two solutions:

- decreasing distribution costs and
- overcoming of restricted International Trade Rules.

Risks
Some risks are allied with both action directions.

- Own management of distribution and transportation requires changes within sector
- Printing and publishing sector has limited experiences concerning optimizing and adjusting of transportation.
- Strategic alliances can mean legislative uncertainty

Costs
Costs might be connected to reorganization of sector, optimizing of production processes, and developing own transportation infrastructure.

Development of strategic alliances might also mean extraordinary costs.

3.2.4 Pöyry – bio-energy/pellets industry

3.2.4.1 Positive Scenario

The price of fossil energy has constantly been increasing, which helps pellets to keep their competitiveness high. There are more population outside the urban centres, so potential of pellet heating users is growing.

Environmental awareness is increasing and people take actions to care about the environment. This results that pellets are feasible heating option for many. The European support policies favour renewable energy, including bioenergy and thus pellets. Requirements for mandatory renewable energy use are high.

Production technology of pellets has improved and raw materials outside forest sector can be used. This increases raw material availability and thus pellet production is not depending only on one field of industry. The incineration technology has developed and resulted in increased fuel flexibility, which means more pellet use opportunities in the industry. Lower quality and higher ash content pellets can only be used in large scale, and this creates more user potential for them.

Small-scale pellet heating systems are very easy to use, and this has lowered the barriers to choose that option and increased the attractiveness of the pellet heating system to households. The process of purchasing pellet heating systems is made customer-friendly and improved service packs are available, e.g. integrated heating system, architectural and furnishing design.

Pellets are produced mainly in local mills, so no long distance transport is needed. This also supports the local economy and thus employment. There are no fierce competition for pellet raw material for other uses, e.g. paper and board.

Components in positive scenario	**Economic**	**Social**	**Environmental**	**Main opportunity**	**Main threat**
Price of fossil energy increases	O: Competitiveness of pellets increases T: Competitiveness of other renewable energy sources increases, too	O: More work in pellet industry	O: More renewable energy used	**X**	**X**
Population outside urban centers increases	O: More potential customers	O: More work in pellet industry	O: More renewable energy used T: Increased transports		
Environmental awareness exist and people act accordingly	O: More customers T: People may choose other renewable heating options	O: More work in pellet industry	O: More renewable energy used		**X**
Increased support / requirement for renewable energy	O: Competitiveness of pellets increases	O: More work in pellet industry	O: More renewable energy used	**X**	
Production technology: Possibilities to combine raw materials outside forest industry	O: Better availability and decreased raw material costs	O: More work in pellet industry	O: Wider renewable energy options	**X**	
Increased fuel flexibility in incineration system technology	O: More potential pellet users	N	O: Possibilities to replace fossil fuels with pellets	**X**	
Increased raw material availability for pellets	O: Better availability and decreased raw material costs	O: More work in pellet industry	N		

Origin of the product mainly local	O: More business for local pellet industry T: Dependency on local raw material availability	O: More work in local pellet industry	O: Less transport		
Small-scale pellet heating systems easier to use	O: More potential small-scale pellet users	O: More work in pellet industry	O: More renewable energy used	**X**	
Improved service packs for customers in heating system purchasing process	O: Pellets more desirable small-scale heating option	O: More work in pellet industry	O: More renewable energy used	**X**	

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Pellets are produced mainly in local mills, so no long distance transport is needed. This also supports the local economy and thus employment. There are no fierce competition for pellet raw material for other uses, e.g. paper and board.

<u>Question no 1.</u>

How to make business customers and consumers interested in environmental advantages of wood pellets?

Strengths	**Weaknesses**
▪ Wood pellet is a renewable energy source ▪ Local supply in Europe ▪ Efficient use of raw materials through creating a valuable product from a low-value side stream	▪ Limited supply of raw material ▪ Extensive removal of wood residues for raw material generates a need to fertilise forests ▪ Dependency on financial support ▪ Not totally emission free
Opportunities	**Threats**
Economic opportunities ▪ Competitiveness of pellets increases as the price of fossil energy increases ▪ Competitiveness of pellets increases with increased support/requirement for renewable energy ▪ Better availability and decreased raw material costs by combination of raw materials outside forest industry Environmental opportunities ▪ More renewable energy used ▪ Wider renewable energy options ▪ Possibilities to replace fossil fuels with pellets ▪ Less transport thanks to local production Social opportunities ▪ More work in pellet industry, generally or locally	Economic threats ▪ Competitiveness of other renewable energy sources increases, too, as the price of fossil energy increases ▪ People may choose other renewable heating options even if environmental awareness exists

Pro-active strategy recommendations

An important strength of wood pellets is that they are a renewable energy source. The increasing support / requirement for renewable energy is an opportunity for pellets, but simultaneously there is a threat of people choosing other renewable heating options. To prevent this, we suggest that the pellet industry could make business customers and consumers more interested in environmental advantages of pellets by promoting e.g. carbon footprints and other quantitative comparisons between pellets and other renewable energy options. This would give customers understandable and fact-based information about the pros and cons of pellets compared to other renewable heating options.

The industry could also emphasize the other strength of pellets, the locality of the product, to customers. Locality can be considered as an environmental, social and economic asset of pellet usage in heating. Independent information about pellet heating compared to other heating options by an industry external organisation would also help customers to make environmentally and socially friendly decisions. External assessment would make it more reliable to customers. To be able to affect the image of pellets, the industry could also consider a "facelift" of pellets to be trendier and especially sustainable way of heating compared to other possibilities.

Question no 2.
How to strengthen the environmental credibility of wood pellets?

<table>
<tr><th>Strengths</th><th>Weaknesses</th></tr>
<tr><td>Wood pellet is a renewable energy source
Local supply in Europe
Efficient use of raw materials through creating a valuable product from a low-value side stream</td><td>Limited supply of raw material
Extensive removal of wood residues for raw material generates a need to fertilise forests
Dependency on financial support
Not totally emission free</td></tr>
<tr><th>Opportunities</th><th>Threats</th></tr>
<tr><td>Economic opportunities
Competitiveness of pellets increases as the price of fossil energy increases
Competitiveness of pellets increases with increased support/requirement for renewable energy
Better availability and decreased raw material costs by combination of raw materials outside forest industry
Environmental opportunities
More renewable energy used
Wider renewable energy options
Possibilities to replace fossil fuels with pellets
Less transport thanks to local production
Social opportunities
More work in pellet industry, generally or locally</td><td>Economic threats
Competitiveness of other renewable energy sources increases, too, as the price of fossil energy increases
People may choose other renewable heating options even if environmental awareness exists</td></tr>
</table>

Pro-active strategy recommendations
Wood pellets have environmental strengths, as they are renewable and production uses raw materials efficiently. To strengthen the environmental credibility of pellets the cooperation with different environmental organisations would be recommendable. The evaluation and the communication of the strengths together with environmental

organisations can give products environmental credibility more efficiently than “normal” campaigns.

Some kind of pellet certificate could be also designed for pellets, raw materials used in production and incineration instruments. Certificate should be agreed through the industry and it should require third party examinations.

Question no 3.
How the pellet sector could maintain or increase competitiveness on the market?

<table>
<tr><th>Strengths</th><th>Weaknesses</th></tr>
<tr><td>Wood pellet is a renewable energy source
Local supply in Europe
Efficient use of raw materials through creating a valuable product from a low-value side stream</td><td>Limited supply of raw material
Dependency on financial support
Laborious energy source for small scale users</td></tr>
<tr><th>Opportunities</th><th>Threats</th></tr>
<tr><td>Economic opportunities
Competitiveness of pellets increases as the price of fossil energy increases
Competitiveness of pellets increases with increased support/requirement for renewable energy
Better availability and decreased raw material costs by combination of raw materials outside forest industry
More potential pellet users thanks to increased fuel flexibility in incineration system technology (allowing lower quality and higher ash content pellets)
More potential small-scale pellet users thanks to small-scale pellet heating systems that become easier to use
Pellets become a more desirable small-scale heating option thanks to a customer-friendly heating system purchasing process and improved service packs (e.g. an integrated heating system, architectural and furnishing design)
Environmental opportunities</td><td>Economic threats
Competitiveness of other renewable energy sources increases, too, as the price of fossil energy increases
People may choose other renewable heating options even if environmental awareness exists</td></tr>
</table>

▪ More renewable energy used ▪ Wider renewable energy options ▪ Possibilities to replace fossil fuels with pellets ▪ Less transport thanks to local production Social opportunities ▪ More work in pellet industry, generally or locally	

Pro-active strategy recommendations
In this scenario environmental issues are still impacting on the decisions of consumers, and so certification and provision of environmental information to customers (as suggested in the previous questions) can increase competitiveness of pellets on the market. Local supply is a strength, and it is an opportunity to further develop logistics together with forest industry because it could increase competitiveness of pellets by reducing the costs of transport. Because the industry is still dependent of the governmental support, lobbing on behalf of the beneficiary support formats is crucial.

Due to laborious small scale pellet heating systems there is a threat that consumers choose other renewable heating options, but this could be avoided by developing easier-to-use and more comfortable pellet heating systems.

3.2.4.2 Negative Scenario

The price of fossil energy has constantly been decreasing, which weakens the competitiveness of pellets in relation to fossil energy sources. There are less population outside urban centres. As a result the potential of pellet heating users is decreasing.
Environmental awareness is increasing in knowledge but not in caring. As the customers don't really care about the environment, pellets are not an attractive option for consumers. Bioenergy has been left out of the support policies for renewable energy.
There have been no changes in the pellet production technology. The incineration system technology has also remained undeveloped.
In the heating system usability there has been no development and thus the pellet heating has not gained much attraction among consumers. The purchase processes for other renewable heating systems have been developed further than for pellets, so the consumers find it easier to choose something else.
The competition of raw material is increasing as the other industries are more solvent and new industrial uses are invented. In Europe pellets are imported and they have to be transported long distances. This causes negative impacts on all the three dimensions of sustainability from the local point of view.

Components in negative scenario	**Economic**	**Social**	**Environmental**	**Main opportunity**	**Main threat**
Price of fossil	T:	T:	T:		**X**

energy decreases	Competitiveness of pellets decreases	Less work in pellet industry	Less renewable energy used		
Population outside urban centers decreases	T: Less potential customers	T: Less work in pellet industry	O: Less transport T: Less renewable energy used		
Environmental awareness exist but people don't act accordingly	T: Less customers	T: Less work in pellet industry	O: Attempts to influence behaviour of people T: Less renewable energy used		
Support for other renewable energy sources except bioenergy	T: Competitiveness of pellets decreases	T: Less work in pellet industry	N		**X**
No development in production technology	T: No increase in competitiveness of pellets	N	N		
No development in incineration system technology	T: No increase in potential users	N	T: No increasing possibilities to replace fossil fuels with pellets		
Increased competition of raw material for other uses	T: Raw material price increases	T: Less work in pellet industry	N		**X**
Product imported from long distances	O: Less dependency on local raw material availability T: Less business in local pellet industry	T: Less work in local pellet industry	T: More transports		
No development	T: Consumers find	T: Less	N		**X**

in small-scale pellet heating system usability	other (renewable) heating options more desirable	work in pellet industry			
Purchasing process services for other renewable heating systems further developed	T: Consumers choose easier renewable heating options	T: Less work in pellet industry	N		**X**

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Environmental awareness is increasing in knowledge but not in caring. As the customers don't really care about the environment, pellets are not an attractive option for consumers. Bioenergy has been left out of the support policies for renewable energy.

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The competition of raw material is increasing as the other industries are more solvent and new industrial uses are invented. In Europe pellets are imported and they have to be transported long distances. This causes negative impacts on all the three dimensions of sustainability from the local point of view.

<u>Question no 1.</u>

How to make business customers and consumers interested in environmental advantages of wood pellets?

Strengths	**Weaknesses**
▪ Wood pellet is a renewable energy source ▪ Efficient use of raw materials through creating a valuable product from a low-value side stream	▪ Limited supply of raw material ▪ Extensive removal of wood residues for raw material generates a need to fertilise forests
Opportunities	**Threats**
Economic opportunities ▪ Opportunities for financial support Environmental opportunities ▪ Environmental awareness starts	Economic threats ▪ Competitiveness of pellets decreases as the price of fossil energy decreases ▪ Competitiveness of pellets

affecting decision-making ▪ Opportunities for local supply in Europe	decreases due to support for other renewable energy sources ▪ Raw material prices increase with increased competition of raw material for other uses Environmental threats ▪ Less renewable energy used Social threats ▪ Less work in pellet industry

Pro-active strategy recommendations
In this scenario business customers and consumers show no caring for the environment, it is challenging to generate interest in environmental advantages of wood pellets. However, based on the strengths of pellets it is recommended to campaign strongly (or even dramatically) for the benefits of pellet usage contributing to the slowing down of climate change.

To support the opportunity of growing impact of environmental awareness in decision-making, quantitative comparisons between the renewable heating options should be served to the potential users of wood pellets. To avoid the threat of people choosing relatively inexpensive heating options, lifting the image of pellets to a comfortable and fashionable heating option would be beneficial for the pellet industry.

Question no2.
How to strengthen the environmental credibility of wood pellets?

Strengths	**Weaknesses**
▪ Wood pellet is a renewable energy source ▪ Efficient use of raw materials through creating a valuable product from a low-value side stream	▪ Limited supply of raw material ▪ Extensive removal of wood residues for raw material generates a need to fertilise forests ▪ Not totally emission free
Opportunities	**Threats**
Economic opportunities ▪ Opportunities for financial support Environmental opportunities ▪ Environmental awareness starts affecting decision-making ▪ Opportunities for local supply in Europe	Economic threats ▪ Competitiveness of pellets decreases as the price of fossil energy decreases ▪ Competitiveness of pellets decreases due to support for other renewable energy sources ▪ Raw material prices increase with increased competition of raw material for other uses Environmental threats

	▪ Less renewable energy used Social threats ▪ Less work in pellet industry

Pro-active strategy recommendations
In this scenario people are environmentally aware, but do not care about the environment in their activities. Hence the effect of strengthening the environmental credibility of pellets might not be as efficient as in the case of the positive scenario. Anyway, increased credibility may lead to increased interest to care about the environment. The pellet industry could strengthen the credibility by cooperating with different environmental organisations and developing independent certificates for pellets and for pellet heating equipment. Naturally, this requires environmentally sound activities in the pellet and heating equipment production, too.

Question no 3.
How the pellet sector could maintain or increase competitiveness on the market?

Strengths	**Weaknesses**
▪ Wood pellet is a renewable energy source ▪ Efficient use of raw materials through creating a valuable product from a low-value side stream	▪ Limited supply of raw material ▪ Laborious energy source for small scale users ▪ Not totally emission free
Opportunities	**Threats**
Economic opportunities ▪ Opportunities for financial support Environmental opportunities ▪ Environmental awareness starts affecting decision-making ▪ Opportunities for local supply in Europe	Economic threats ▪ Competitiveness of pellets decreases as the price of fossil energy decreases ▪ Competitiveness of pellets decreases due to support for other renewable energy sources ▪ Raw material prices increase with increased competition of raw material for other uses ▪ Customers find other (renewable) heating options more desirable as there is no development in small-scale pellet heating system usability ▪ Consumers choose easier renewable heating options as the purchasing process services for other renewable heating systems are further developed Environmental threats ▪ Less renewable energy used

	Social threats ▪ Less work in pellet industry

Pro-active strategy recommendations
In this scenario supply of wood pellet raw material is limited, so it is an opportunity for the pellet industry to develop exploiting other renewable raw materials for pellet production in addition to wood. So investing in this type of research would be recommendable. This would lighten the competition from the raw material. Optimisation of transports could bring cost-efficiency for the industry, too.

As the price of fossil energy decreases, renewable heating options are growingly depended on the governmental support. Ensuring support policies for renewable heating, especially for pellets, is important for the pellet industry.

Due to laborious small scale pellet heating systems there is a threat that consumers choose other renewable heating options, but this could be avoided by developing easier-to-use and more comfortable pellet heating systems, similarly as in the positive scenario.

4 Comments and conclusions

"Would you tell me, please, which way I ought to go from here?"
"That depends a good deal on where you want to get to," said the Cat.
"I don't much care where --" said Alice.
"Then it doesn't matter which way you go," said the Cat.
"--so long as I get somewhere," Alice added as an explanation.
"Oh, you're sure to do that," said the Cat, "if you only walk long enough."
(*Alice's Adventures in Wonderland* by Lewis Carroll)

The main comment is that the result is of draft character which ought to be evaluated by and communicated to Stakeholders and Modules upstream in order to collect relevant comments that should lead to improvements of strategies.

Besides, strategies should be further developed in order to possess all elements that are required as integrated parts.

Since statements concerning future have high level of uncertainty as well as predictions related to 10 years period and concerning dynamic aspects such as market, consumers and business customers, trends, policy aspects we should be as open as possible on changes.

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Annex 1- Innventia questionnaire

Question 1
Do you agree that three recognized questions for SWOT analysis purpose of printing/publishing sector are important generally?

- If yes, explain why.
- If no, explain why.
- If you agree partly explain why.

Question 2
Which of three recognized SWOT questions are relevant for printing/publishing sector having in mind EU perspective?
Explain your opinion.