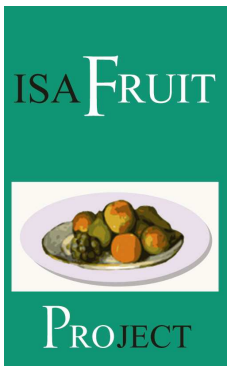


Project no.: 016279

Project acronym: ISAFRUIT

Project title: Increasing fruit consumption through a trans-disciplinary approach delivering high quality produce from environmentally friendly, sustainable production methods

Instrument: Integrated project

Thematic Priority: Food Quality and Safety

D.1.1.7 Final report Isafruit wp 1.1

Due date of deliverable: December 2007
Actual submission date: December 2007

Start date of project: 01-01-2006 **Duration: 54 months**

Organisation name of lead contractor for this deliverable : WUR-PPO

Revision: final version

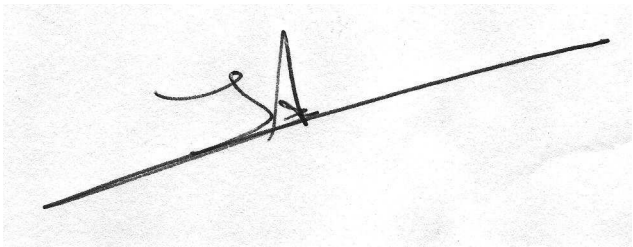
Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Description of deliverable

The present work was carried out within the Project 'Isafruit'. The strategic objective of this project is to increase fruit consumption and thereby improve the health and well-being of Europeans and their environment, by taking a total chain approach, identifying the bottlenecks and addressing them by consumer-driven preferences. The report is a deliverable of Pillar 1, which focuses on the area of 'Consumer driven and responsive supply chain'.
The aim of Work Package 1.1 EUFCON of Isafruit is to conduct a thorough analysis of European Fruit Consumption in order to identify and understand major consumption trends and consumption patterns of European Fruit Consumption. Additionally, the information obtained in this work package (WP) will provide baseline data for most other WP's and also some other pillars and gives an indication of the pre-project situation (without intervention).

This deliverable (D1.1.7) looks back at the work in Work Package 1.1, presenting its major conclusions, limitations, points of discussion, and recommendations. Putting the work of Work Package 1.1 in a broader perspective, it gives additional indications for the usefulness of the results from Work Package 1.1 (an overview of current European fruit consumption and related factors, forecasted future trends and scenarios, actions to be undertaken by members of fruit supply chains and other organizations to exploit possibilities for increasing European fruit consumption) for the other work packages in Pillar 1, for other Isafruit pillars and anyone else who is interested in European fruit consumption and the role of consumer-driven fruit supply chains therein.

This deliverable was made in cooperation between the partners 8 (WUR-PPO, wp-leader) and 10 (WUR-LEI).



Wageningen, January 16th, 2008

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Final report Isafruit wp 1.1

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Acknowledgement

The present work was carried out within the Project 'ISAFRUIT '. The strategic objective of this project is to increase fruit consumption and thereby improve the health and well-being of Europeans and their environment, by taking a total chain approach, identifying the bottlenecks and addressing them by consumer-driven preferences.
The report is a deliverable of Pillar 1, which focuses on the area of 'Consumer driven and responsive supply chain'.

More information: www.isafruit.org

PRAKTIJKONDERZOEK
PLANT & OMGEVING
WAGENINGEN UR

Report number: 2007-30

Project no.: 32.610.700.01 and 32.610.700.24

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Table of contents

Table of contents 5

Summary 7

1 Introduction 9
1.1 Pillar 1 9
1.2 Objectives of WP 1.1 EUFCON 10
1.3 Reading directions 11

2 Discussion of methods used 13
2.1 Collection of fruit-consumption and related data 13
2.2 Trend-Impact Analysis 14

3 Major conclusions European Fruit consumption 17
3.1 European Fruit Consumption 17
3.2 Methods 18

4 Recommendations 19

5 Concluding remarks 21

6 References 23

Summary

The present report, Isafruit deliverable D.1.1.7, gives a final view of the work done in Isafruit work package 1.1. This deliverable discusses the strengths and drawbacks of the used methods and their implementation in work package 1.1 in general, which can be taken into account in future research projects that have the same or similar objectives as WP1.1. In addition, this report gives the major conclusions and concludes with final remarks which can be useful for other work packages as well as pillars of Isafruit.

It can be concluded that though consumption data are only limited and scattered available for free, with the deliverables of WP 1.1 an overview of fruit consumption and future trends is available.
The used method Trend-Impact Analysis (TIA) appears to be suitable and reliable enough for the purpose of forecasting fruit consumption in the future. This is illustrated by the results, which show no divergent image. However, a lot of remarks are to be made.

Confronting the results of work package 1.1 with the original objectives (see Chapter 1.2) learns that:

- Indicators for fruit consumption are formulated, but are, due to the restriction of data of free available sources, difficult to find. Proxies are used, if possible.
- Major consumer trends and developments of last years are identified.
- Trends and developments for future fruit consumption are identified, but with some restrictions due to the method used and the available data. The TIA adds existing expert knowledge to the forecast of fruit consumption and particularizes the influence of each important trend factor.
- Scenarios for future fruit consumption are developed with respect to the fact that the trend lines already show an increasing fruit consumption, but know a bandwidth, which space chain members have to use, to make optimal use of the trend factors.

Confronting the results of work package 1.1 with the original Isafruit objectives learns that:

- Isafruit stated health, convenience, sustainability, quality and price as important to increase fruit consumption. Health, convenience and economic factors (like price) are considered as important trends for future fruit consumption by the interviewed experts. Those trends also show an increasing fruit consumption. Quality is mentioned, but more as a trend of the past. Quality seems to be a standard, i.e. 'a license to deliver'. Sustainability is not mentioned separately, but can be considered as license to produce or as part of the health trend.
- In-Home versus Out-of-Home consumption: Out-of-Home consumption is considered to be an important trend. However, it did not appear as one of the three most important tends as seen by the experts. Besides this, data about out-of-home consumption were not available in free available data sources.
- Isafruit emphasized differences between fresh-prepared-processed fruit (products). This is a good emphasize as it can be seen as part of product variation, which is an upcoming trend in all countries.

1 Introduction

European Fruit Consumption (EUFCON), is one of the work packages of the Isafruit project. Isafruit is a large European project, which consists of 25 work packages and over 60 participants. The mission of Isafruit is to improve human health through increased consumption of fruit, produced in a sustainable way. The vision of Isafruit is that better fruit quality and availability, a higher convenience of fruit and fruit products and improved consciousness of consumers lead to higher consumption. Higher consumption leads to increased health and well-being. The strategic objective of Isafruit is to increase fruit consumption by taking a total chain approach, identifying the bottlenecks and addressing them by consumer driven preferences. Isafruit started at the beginning of 2006 and will last till 2010.

The scientific and technological objectives will be addressed by Research, Technological and Development activities that are clustered in six Pillars encompassing the total fruit chain and one Pillar on Training and Dissemination:
Pillar 1. Consumer driven and responsive supply chains.
Pillar 2. Fruit and human health.
Pillar 3. Improved appeal and nutritional value of processed fruits.
Pillar 4. Quality, safety and sustainability: improved post-harvest chain management.
Pillar 5. Quality, safety and sustainability: improved pre-harvest chain management.
Pillar 6. Genetics of fruit quality and implementation of better fruit cultivars.
Pillar 7. Knowledge management.

This report is part of work package 1 of pillar 1. In the following text a description of pillar 1 and the work package (WP 1.1) is given.

1.1 Pillar 1

Consumer driven and responsive supply chains
The development of consumer-driven, efficient, responsive and innovative supply chains is crucial for the growth of fruit consumption in Europe and for a competitive and sustainable Fruit Industry. Currently, fruit supply chains are characterized by a relatively low level of consumer orientation and consumer-driven innovations.

Objectives of pillar 1
Pillar 1 exists of 5 work packages each with its own objectives, but working together for an improved consumer driven fruit chain. WP 1.1 EUFCON has the objective to describe consumption and fruit trends and to increase and improve interaction among consumers, producers, other supply chain actors and researchers. The objective of WP 1.2 CONPREF is to understand the forces that drive consumers with respect to fruit and fruit products in order to identify consumer segments to stimulate consumption. The objective of WP 1.3 INNOFRUIT is to understand the determinants of adoption and dissemination of innovations by consumers and individual chain members. Using results from CONPREF it yields insight into consumer behavior with respect to new or modified products and identifies opportunities for fruit innovation. WP 1.4 INNOCHAIN aims to identify the supply chain organization and management structure that maximizes supply chain innovativeness and performance, in terms of effectiveness and efficiency, in dynamic and/or developing markets. The objective of WP 1.5 TRANSCHAIN is to collect and integrate relevant results from all work packages and pillars in order to develop strategies for innovation implementation and transition in the fruit chain aimed at increasing fruit consumption and discuss these strategies with the fruit industry, governments and (fruit) researchers.

Results of WP 1.1 EUFCON, WP 1.2 CONPREF, WP 1.3 INNOFRUIT, and WP 1.4 INNOCHAIN are input for other pillars as well as for the development of innovation implementation and associated chain transition strategies performed in WP 1.5 TRANSCHAIN.

1.2 Objectives of WP 1.1 EUFCON

The aim of the WP 1.1 EUFCON is to conduct a thorough analysis of European Fruit Consumption in order to identify and understand major consumption trends and consumption patterns of European Fruit Consumption. Additionally, the information obtained in this work package will provide baseline data for most other WP's and also some other pillars and gives an indication of the pre-project situation (without intervention).

Specified objective of WP 1.1 EUFCON
The market of fruit products in Europe is demand driven. Knowledge about aspects that move consumers towards more fruit consumption is necessary to implement policies to stimulate fruit consumption. Therefore not only a reliable prediction of fruit consumption is needed but also knowledge about the driven strengths: factors/trends which influences fruit consumption.
The objectives as written in the project implementation plan are:

1. To conduct a thorough analysis of European fruit consumption in order to identify and understand major trends and other dynamics regarding fruit consumption and develop scenarios for future fruit consumption.

More specific this means:

- Formulate indicators for analyzing European Fruit consumption and collect data on fruit consumption from existing (and free available) data sources
- Identify major consumer trends and developments in last years

2. To analyse and understand consumption trends, development of fruit consumption indicators, their impact on future fruit consumption and scenario development for fruit consumption.

More specific this means:

- Identify empirical trends and developments which significantly influence fruit consumption
- Develop scenarios for future fruit consumption

The first objective of WP 1.1 EUFCON is reached by collecting data and literature. Isafruit D.1.1.1 (Groot et al, 2006) shows a list of valid indicators of European fruit consumption. Valid indicators are indicators which are comparable between countries and give a good overview of (fruit) consumption. These includes: food and fruit consumption (kg/capita, €/capita), number of fruit buyers, domestic use of fruit (available quantity of fruit in a country), number of fruit buyers, out-of-home consumption (kg/capita) as well as economic, demographic and other indicators like autarchy percentage. The core data of fruit consumption are presented in a Quick Scan, Isafruit D.1.1.2 (Groot et al, 2007a) to identify major trends in fruit consumption and presumed related data. Major conclusions are mentioned in Chapter 3.1 of this report. In addition to the Quick Scan, a report, Isafruit D.1.1.3 (Schreuder et al, 2007a) was made, with more detailed information for seven selected countries: Germany, Greece, Italy, The Netherlands, Poland, Spain and United Kingdom. Where available, the data in this report are based on consumer panel data (this is mentioned in the text). Major conclusions also mentioned in Chapter 3.1.
For the second objective, to analyse and understand consumption trends and to develop fruit consumption indicators, a Trend-Impact Analysis (TIA) is done. This Trend-Impact Analysis is performed on Product Market Combinations (PMC's) that are selected in Isafruit D.1.1.3 (Schreuder et al, 2007a), based on relevant factors of markets and products. The selected PMC's are: apple in Poland, pear in The Netherlands, oranges in Spain and Peach in Greece. A list of trends and developments in European fruit consumption, based on desk research is presented in Isafruit deliverable D.1.1.4 (Schreuder et al, 2007b). Trends were divided in groups: product trends (like convenience, sustainability), consumer characteristics (like awareness of food safety, changing demographic composition), retail trends (like chain approach, foodservice) and marketing trends (like importance of branding, internet). As first step of the Trend-Impact Analysis interviews were held with experts in four countries about their view on trends (past and future) in fruit consumption. Summaries of the answers of the experts (also used in a second round of interviews with the experts, according Delphi-method) are presented in Isafruit D.1.1.5 (Bartels et al, 2007). Important conclusions are mentioned in Chapter 3.1. Other steps of the Trend-Impact Analysis are: calculation of trend lines based on historic data, calculation of the influences of the trend factors given by the experts on the calculated trend lines and finally a description of scenarios with needed activities to react on the forecasts. The results of the Trend-Impact Analysis are presented in Isafruit deliverable D.1.1.6 (Groot et al, 2007b).

The present report, Isafruit deliverable D.1.1.7, gives a final view of the work done in Isafruit work package 1.1. This deliverable will discuss the strengths and drawbacks of the used methods and their implementation in work package 1.1 in general, which can be taken into account in future research projects that have the same or similar objectives as WP1.1. In addition, this report gives the major conclusions and concludes with final remarks which can be useful for other work packages as well as pillars of Isafruit.

1.3 Reading directions

Chapter 2 discusses the methods and materials used during the research for work package 1.1 in a broad perspective.

Chapter 3 describes major conclusions about European fruit consumption.

Chapter 4 gives remarks and recommendations for other Isafruit work packages and pillars.

Chapter 5 gives concluding remarks about work package 1.1: to which extent are the aims of work package 1.1 reached?

2 Discussion of methods used

In this chapter, major and general issues of discussion are given in relation to the methods used for the six earlier deliverables of Isafruit work package 1.1. For more specific discussion subjects, the reader is referred to the discussion chapters of the specific deliverables.

2.1 Collection of fruit-consumption and related data

Background
Isafruit D.1.1.1 (Groot et al, 2006) shows a list of valid indicators of European Fruit consumption. The core data of fruit consumption are presented in a Quick Scan, Isafruit D.1.1.2 (Groot et al, 2007a), identifying major trends in fruit consumption and presumed related data. In addition to this Quick Scan, a report, Isafruit D.1.1.3 (Schreuder et al, 2007a) was made, with more detailed information for seven selected countries: Germany, Greece, Italy, The Netherlands, Poland, Spain and United Kingdom. Where available, the data in this report are based on consumer panel data.

Indicators of fruit consumption
Information on indicators defined as relevant for fruit consumption (Isafruit deliverable D.1.1.1) like number of buyers, out-of-home consumption, average consumer price for fruit, etc. could not, or only partly, be found in free available sources. The indicators are chosen on the basis of literature references as well as in consultation with pillar coordinators and work package leaders of Pillar 1, and they were considered as a basic need to describe the European fruit consumption. Where possible, proxies were used. The data search was not completely successful, but still this list of indicators provided good guidance for the desk search.

Data on fruit consumption
In order to present core data of European fruit consumption which are comparable across all European countries, data from FAOSTAT were used for the Quick Scan (Isafruit deliverable D.1.1.2). FAOSTAT derives estimates of (apparent) fruit consumption based on a.o. production, import, and export data. Unfortunately, the free available FAOSTAT data were incomplete for some European countries and seemed to be incorrect according to some experts. The reliability of these data still remains uncertain (see http://www.fao.org/docrep/006/y5143e/y5143e1a.htm). E.g., Eurofel (EUROFEL 2004) data show in some countries for some fruit varieties differences of more than 20% in fruit consumption compared to the FAO data. Whereas data are sometime exactly the same for both sources, differences are not clear. Eurofel estimates of fruit consumption tend to be lower than FAO estimates. Pomerleau et al (2004) also reports discrepancies between FAO data and survey data. However, FAOSTAT data were the best and most complete, available data. For a realistic Quick Scan it would be better to use complete panel data on fruit consumption, instead of derived figures on apparent human consumption. Panel data are available for a lot of European countries, but not for free. There are, however, also differences in what is actually measured to produce the panel data. Most panel data are based on purchase of fruit, others on real consumption. Still, searching for and elaborating data of free available data is less effective, than the use of available and comparable panel data, generated by commercial organizations.

Apparent Human Consumption versus fresh fruit consumption
Due to the use of FAO data we had to use the Apparent Human fruit Consumption as a proxy for actual human consumption. The Apparent Human Consumption is defined as quantities of products made available for human consumption in all forms: quantities consumed without further processing and quantities supplied by the distributive trades and the food industry. The data are based on the supply balance sheets of agricultural products. This means that these data are based on fresh fruits as well as processed fruits. This means that Apparent Human Consumption is not the same as fresh fruit consumption. For grapes, for example, fresh fruit consumption seems to be about 30% of Apparent human consumption.

Comparison of Eurofel data and FAO data
As mentioned before, Eurofel (EUROFEL 2004) data on fruit consumption tend to be lower than FAOSTAT data. Comparison shows for instance differences of more than 20% for apple in the countries Austria, Czech, France, Germany, Slovakia, Slovenia and United Kingdom. For pear, a deviation of more than 20% was found in Czech, Germany, Greece and United Kingdom. Still data are sometimes exactly the same for both sources, and the source of the differences is not clear.

Comparison of Freshfel data and FAO data
Each individual country has developed its own methodology for measuring fruit and vegetable consumption, making comparisons of results difficult. Freshfel has collected national information available in 16 countries. Some of them provide figures on gross consumption; others provide data on per capita consumption and others on household consumption. The available data of Freshfel show total fruit consumption, not per fruit category. FAO gives data per category. As can be expected, the FAO data show a higher fruit consumption per capita for most countries compared to Freshfel, as Freshfel is only concerned with fresh fruit production.

The more detailed report of fruit consumption, Isafruit D.1.1.3 (Schreuder et al, 2007a), gives more precise data on fruit consumption, using panel data. These data are only limited available and due to many different sources not comparable across different European countries.

2.2 Trend-Impact Analysis

Background
For the second objective, to analyse and understand consumption trends and to develop fruit consumption indicators, a Trend-Impact Analysis is done. Trend-Impact Analysis is performed on Product Market Combinations (PMC's) that are selected in Isafruit D.1.1.3 (Schreuder et al, 2007a), based on relevant factors of markets and products. A list of trends and developments in European fruit consumption, based on desk research, is presented in Isafruit deliverable D.1.1.4 (Schreuder et al, 2007b). As a first step of the Trend-Impact Analysis, interviews were held with experts in four countries about their view on trends in fruit consumption and underlying impact factors. Summaries of the answers of the experts are presented in Isafruit D.1.1.5 (Bartels et al, 2007) and used for a second round of interviews with the experts, following the Delphi method. Other steps of the Trend-Impact Analysis are: calculation of trend lines based on historic data, calculation of the influences of the trend factors given by the experts on the calculated trend lines and finally a description of scenarios with needed activities to react on the forecasts. The results of the Trend-Impact Analysis are presented in Isafruit deliverable D.1.1.6 (Groot et al, 2007b).

Interviews
Interviews were held with experts both from inside and outside the fruit industry. In each of the four countries 12 interviews were held (6 experts from inside and 6 with experts from outside sector. Each expert was asked to mention the five most important trends in fruit consumption for his/her country. The answers from the outside experts were used as base for the interviews with the internal experts. Summarizing the interviews of the outside experts led to the three most important trends of which scenarios are given by the inside experts. The list of trends found in literature, Isafruit deliverable D.1.1.4 (Schreuder et al, 2007b) was much longer. This means a lot of trends mentioned in literature did not emerge in the Trend-Impact Analysis. Due to the fact that five trends seem to be a kind of maximum the experts mentioned spontaneously as important trends, we think the influences of the most important trends are included.
During the interviews, the experts were asked both on qualitative as well as quantitative information on trends. Some experts had difficulties to quantify information on trends although these figures were necessary to forecast future trends in fruit consumption. Also it was difficult for most experts to give specific information on the chosen PMC's regarding the scenarios. Most experts found the interviews too long and lost interest or concentration when the interview took more than one hour.
From the answers, it can be concluded that the given definition of 'scenario' and of 'action on scenario' was not clear because many experts gave a similar answer to these two questions, or just replicated their answer. Also, the understanding of the definition of the trend factors was not clear to every expert.

For a quantitative analysis and forecast of the trends, experts are needed that are used to think in both a qualitative and a quantitative way about trends. As some experts had difficulties with giving quantitative information, which became clear during a number of interviews, it is important to have enough interviews.

The method of Trend-Impact Analysis
The interview questions were planned to deliver the information needed for the Trend-Impact Analysis in a direct way. In spite of the fact that the experts were competent in their area, the estimation of the influence of impacts and their probability of occurrence appeared to be difficult. Some experts were not able to estimate the needed figures, which made the analysis less reliable. This also resulted in a higher rate of uncertainty. An indirect way of questioning might have resulted in more response. On the other hand, such an indirect way of questioning would have led to some loss of information. Looking back, it seems that a more thorough pilot study would have been necessary in order to obtain better result, in the sense of more response and better answered questions.

Most of the impact factors taken into consideration were rather comprehensive. For example, economic factors contain income, EU-membership and price; demographic factors contain different cultures and age structure. For example, two experts both attach value to a certain factor, might think about different aspects of that factor.

In spite of the fact that the research in the participating countries started with uniform definitions of the beforehand distinguished trend factors, these definitions were adjusted during the interviews. For example the trend factor health is in Greece considered to deal only with people's individual health. According to the Dutch experts health deals also with sustainable production and trade. The consequence of these different definitions per country is that the results are not fully comparable. This evolution in definitions during the interviews makes clear how important it is to incorporate many feedback loops after short intervals in a research project like this.

The Trend-Impact Analysis method, as it has been applied, assumes that a difference between the consumption in 1990 and 2007 is fully attributed to the factors experts come up with. One should be aware of this when interpreting the results.

Despite the difficulties with the TIA, the trends estimated with TIA seem to be more reliable than the trend only estimated by extrapolation of historic figures on fruit consumption, although the difference between both predicted future trend lines is not big. The reason for this is the fact that the TIA lines are based on separate trend factors, where separate influences are estimated by experts. The experts based their estimations on their expectation about fruit consumption in future and the term in which impact factors will influence fruit consumption.

The results of the TIA show an increase in fruit consumption, caused by the different impact factors, in all four countries (Poland, Greece, Spain, The Netherlands) in which the research took place. The reason is that the experts distinguish only impact factors which influence fruit consumption in a positive way. This is not due to the way the questions were asked or other influential factors; this is simply the way the experts think that fruit consumption will develop.

The result of the TIA is the estimated fruit consumption in different countries, caused by autonomic strengths. The TIA is followed by scenario analyses with the purpose to indicate how the fruit sector might anticipate on predicted future trends. This seemed to be a contradiction: the trends are autonomous and the scenario's are meant to help the fruit industry to influence the future consumption. However, the rends are still predictions that does not mean they will automatically happen. The fruit industry might be helped with the suggested actions.

Taking conclusions from the scenario part of the research seems to be rather subjective. In any case, this might have been prevented, partly, by an alternative way of determination of the scenarios (e.g. by all researchers involved in doing the interviews).

As can be seen, quite some problems were encountered while doing the TIA and the scenario analyses. Surprisingly, no literature was found reporting similar difficulties, i.e. difficulties in questioning experts and using trend factors in the past for the prediction of the future, in other studies, and as such it has been difficult to anticipate the problems that occurred, beforehand.

Despite the problems mentioned before with the TIA method, the method appears to be suitable and reliable enough for the purpose of forecasting fruit consumption in the future. This is illustrated by the results, which show no divergent image. The results are therefore considered to be useful.

3 Major conclusions European Fruit consumption

In this chapter major conclusions are given, both about European fruit consumption as well as about the methods used. In general, it can be said that the deliverables of Isafruit WP 1.1 give a good, publicly available, overview on European fruit consumption. Also the results of the Trend-Impact Analysis with trends for future fruit consumption are new.

3.1 European Fruit Consumption

- Consumption of fruit varies strongly between countries and fruit categories (D.1.1.2).
- Comparing Apparent Human Consumption (AHC) and available panel data, apple and orange seems to be the most often consumed fresh consumed fruit categories (D.1.1.2).
- Grapes, which show a high AHC in FAO data, seems, when compared with data from panels about fresh consumption, to be consumed in a processed way and less as fresh fruit. Fresh fruit consumption of grapes seems to be around 30% of the AHC (D.1.1.2).
- There seems to be a correlation between geographical situation and fruit consumption: trend is a higher fresh fruit consumption in the southern European countries than in the northern European countries (D.1.1.3). Differences between eastern and western European countries in apple and peach consumption are small (D.1.1.2). D.1.1.3 shows countries with an increasing (Spain), decreasing (Germany, Italy), and more or less stable (Greece, The Netherlands, United Kingdom) fresh fruit consumption.
- Significant differences between channels of fruit purchases per country were found (D.1.1.3). The most important distribution channel varies between supermarkets, traditional retail stores, markets and ambulant retail.
- An important food-related life-style change of the last two decades is the increase in consumption of food prepared away from home. However, there is almost no information found on in-home or out-of-home consumption (D.1.1.3).
- In future scenarios (D.1.1.5) the health aspect is the most important one in all four countries. However, some differences in possible future scenarios can be recognized across the different countries. The convenience aspect is important in The Netherlands and Greece as a future scenario. Except for the Netherlands, economic factors seem to be important according to experts. In Greece as well as in Poland the most important scenario descriptions are concerned with out of home consumption. Also in the Netherlands out of home will become more important. However, this is more specified in availability of products and product variation.
- Out-of-Home consumption, as separate trend, does not belong to the three most important trends, which are the results of the Trend-Impact Analysis.
- Despite the fact that per capita fruit consumption is very high in some countries, evidence, based on historic data, suggests that its will still increase in the next years. The annual rate of increase will be different in each country ranging from 0.67 to 1.95 kg/capita/year (D.1.1.6). It is difficult, using the available data, to identify the factors that will shape this trend in the future but, as it was found in the Delphi method as well as in the focus groups of WP1.2 factors like health concern, demographic as well as economic factors are expected to play an important role in the future.
- The expected growth rate of future fruit consumption differs per country from average 0.85 kg/capita/year (Greece) to 2.14 kg/capita/year (the Netherlands), due to different impact factors and differences between the countries. From these factors, health is the most important for all analysed countries. The importance of fruit quality is decreasing, but is still an important factor. Health appeared to be an important factor in all analysed countries. Taken absolutely, the influence of health on fruit consumption is the biggest in the Netherland, whereas it is relatively (compared to other factors fro Poland) the biggest in Poland. Convenience appeared to be an important factor in Greece, the Netherlands and Spain, with the biggest expected absolutely influence in the Netherlands and relatively in Spain. Economic factors are expected to be important in Greece and Poland, with the

biggest expected influence in Poland (average 1.61 kg/capita/year). Demographic factors are expected to be one of the three most important, only in Poland. This does not imply that other factors would have no influence at all.

3.2 Methods

Data collection for consumer research is very difficult when it depends on free available data sources. It should be taken into account, that these data are priced according market conditions and therefore very expensive and not affordable with the financial regulations of the Isafruit project.

After this research has been finalized, the Trend-Impact Analysis method appears to be suitable and reliable enough for the purpose of forecasting fruit consumption in the future. This is illustrated by the results, which show no divergent image. However, a lot of remarks are to be made, for example the difficulties with the interviews as the experts found it very difficult to answer questions in a quantitative way. The conclusion might be drawn that we learned a lot from this experience.

4 Recommendations

Out-of-home consumption is mentioned as important factor for developments in future fruit consumption, both in D.1.1.3, D.1.1.4 as well as D.1.1.5. However, the experts did not mention it as the one of the three most important trends. It is still seen as an upcoming trend. It is possible that the trends convenience (which makes it easier to eat fruit at different places) as well as product variation cover part of the out-of-home market. This should be kept in mind in the work in other work packages.

The interviews learn that it is difficult for experts, from outside the fruit industry, to focus on certain fruit varieties. Fruit in general is already a specific product for them, as for instance in trade fruit and vegetables are seen as one. At the other hand for experts from inside fruit industry, fruit in general is too big; they are used to think in fruit products. It is therefore very important to consider carefully which experts are best able to provide which information.

The trend lines show an increasing fruit consumption but with an uncertainty. It is up to members of fruit industry chain to use this expected and possible increase. A number of possible activities, to be done by different chain members, are formulated in D.1.1.6.

5 Concluding remarks

Confronting the results of Work package 1.1 with the original objectives (Section 1.2) learns that:

- Indicators for fruit consumption are formulated, but are, due to the restriction of data of free available sources, difficult to find. Proxies are used, if possible.
- Major consumer trends and developments in the last years are identified.
- Trends and developments for future fruit consumption are identified, but with some restrictions due to the method used and the available data. TIA adds extra knowhow to the forecast of fruit consumption and particularizes the influence of each important trend factor.
- Scenarios for future fruit consumption are developed with respect to the fact that the trend lines already show an increasing fruit consumption, but know a bandwidth, which space chain members have to use, to make optimal use of the increasing trends.

Confronting the results of Work package 1.1 with the original Isafruit objectives learns that:

- Isafruit stated health, convenience, sustainability, quality and price as important to increase fruit consumption. Health, convenience and economic factors (like price) are considered as important trends for future fruit consumption by the interviewed experts. Those trends also show an increasing fruit consumption. Quality is mentioned, but more as a trend of the past. Quality seems to be a standard, a license to deliver. Sustainability is not mentioned separately, but can be considered as license to produce or as part of the health trend.
- In-Home versus Out-of-Home consumption: Out-of-Home consumption is considered to be an important trend factor. However, it did not appear as one of the three most important trend factors as seen by the experts. As the division between trend factors is not always as sharp as might be thought, e.g. health includes in The Netherlands also a sustainable way of production, whereas in Greece health is concerned with healthy ingredients, in the same way Out-of-Home can be also found in trends like convenience or product variation. Besides this, data about out-of-home consumption were not available in free available data sources.
- Isafruit emphasized differences between fresh-prepared-processed fruit (products). This is a good emphasize as it can be seen as part of product variation, which is an upcoming trend in all countries.

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