D6.1: Observatory web tool manual

uP_running

Take-off for sustainable supply of woody biomass from agrarian pruning and plantation removal

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Approvals

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ABBREVIATIONS

APPR: Agrarian Pruning and Plantation Removal

CERTH: Centre for Research and Technology Hellas

CIRCE: Research Centre for Energy Resources and Consumption

CONFAGRI: National Confederation of Farming Cooperatives and Credit Agricole, CCRL

EC: European Commission

EuroPruning: Development and implementation of a new and non existent logistics chain for biomass from pruning

HPK: Croatian Chamber of Agriculture

SCDF: Service Coop de France

SECB: Scientific Engineering Centre “Biomass”

UCAB: Association “Ukrainian Agribusiness Club”

UFG: University of Foggia

uP_running: Take-off for sustainable supply of woody biomass from agrarian pruning and plantation removal

WP: Work Package

DEFINITIONS

Prime Mover	It is the pioneer who gives rise to a new biomass value chain. Other key actors might participate, but the chain would not have occurred without its initiative. Usually, it is the actor who invests and takes the largest part of the risk for the implementation of the value chain.
Observatory	The web-based, ma tool that the uP_running project has developed in order to record and display “experiences” with APPR biomass such as field sampling / biomass productivity measurements, mechanized collection of APPR biomass and APPR value chains.

EXECUTIVE SUMMARY

APPR biomass is the accumulated biomass from agricultural pruning and plantation removal operations. In most cases APPR biomass is burnt in open fires or left on the soil, thus remaining unexploited. Therefore, information on the production volumes that can be expected (productivity in t/ha), the means that can be utilized for its mechanized collection, or how do the current existing APPR biomass value chains look like are questions needed to be answered. This information is crucial and due to the limited use of the APPR biomass, it cannot be easily found, and furthermore, is not always of common knowledge, even for grape, olive or fruit growers with many years of farming background.

The main aim of the uP_running Observatory is to collect all these different types of experiences, codify the main parameters relating to each one and visually display them on an online map tool. Users of this tool can then easily see and find material relevant to their own interests. For that purpose the Observatory web tool serves three types of information:

- Field data of APPR biomass productivity from different crop species (grape, olive, apple, pear, peach, cherry, almond, hazelnuts, kiwi, etc.);
- Harvesting techniques utilized in tests, demonstrations or in existing value chain, showing how the mechanized collection can be carried out and its performance;
- Existing value chains of APPR biomass, showing who participates in the value chain and how the business is arranged.

In this sense, the Observatory intends to be a valuable tool of the uP_running project. It aims to contribute to the knowledge gap for practitioners (farmers, agricultural service companies, biomass suppliers, among others), and abate the current skeptical vision of many, which was detected as one of the main non-technical barriers hindering the use of APPR biomass. Browsing the observatory will bring the potential practitioners two main inherent ideas:

- There is a lot of information. So, the use of APPR is already an object of interest explored by many practitioners along Europe.
- APPR biomass utilization for energy purposes is a fact, it is possible.

Beyond of the impact caused in reshaping the mindset of Observatory users, it provides crucial information that may lead them to be more confident and start taking their own steps. For this reason the observatory tool will be available in 8 European languages. These new experiences they start (field measurements, etc.) can also be shared on the Observatory, thus creating a "snowball effect".

The Observatory tool has been designed in a way that it represents the data gathered through systematic questionnaires allowing a direct translate, and thus, the facilitation of the contents in multiple languages. A total of 5 questionnaires have been developed:

- Two questionnaires for registering data of pruning and plantation removal biomass productivity based on field measurements.
- Two questionnaires for describing the mechanized collection of pruning or plantation removal biomass.

- One questionnaire for reporting APPR biomass value chains.

To access the Observatory, it is only needed to go to the web site: http://www.up-running-observatory.eu/. The starting page of the Observatory is illustrated in Figure i. The main objective was to establish a simple website to host the Observatory where all users could fully exploit its potentials and functionalities.

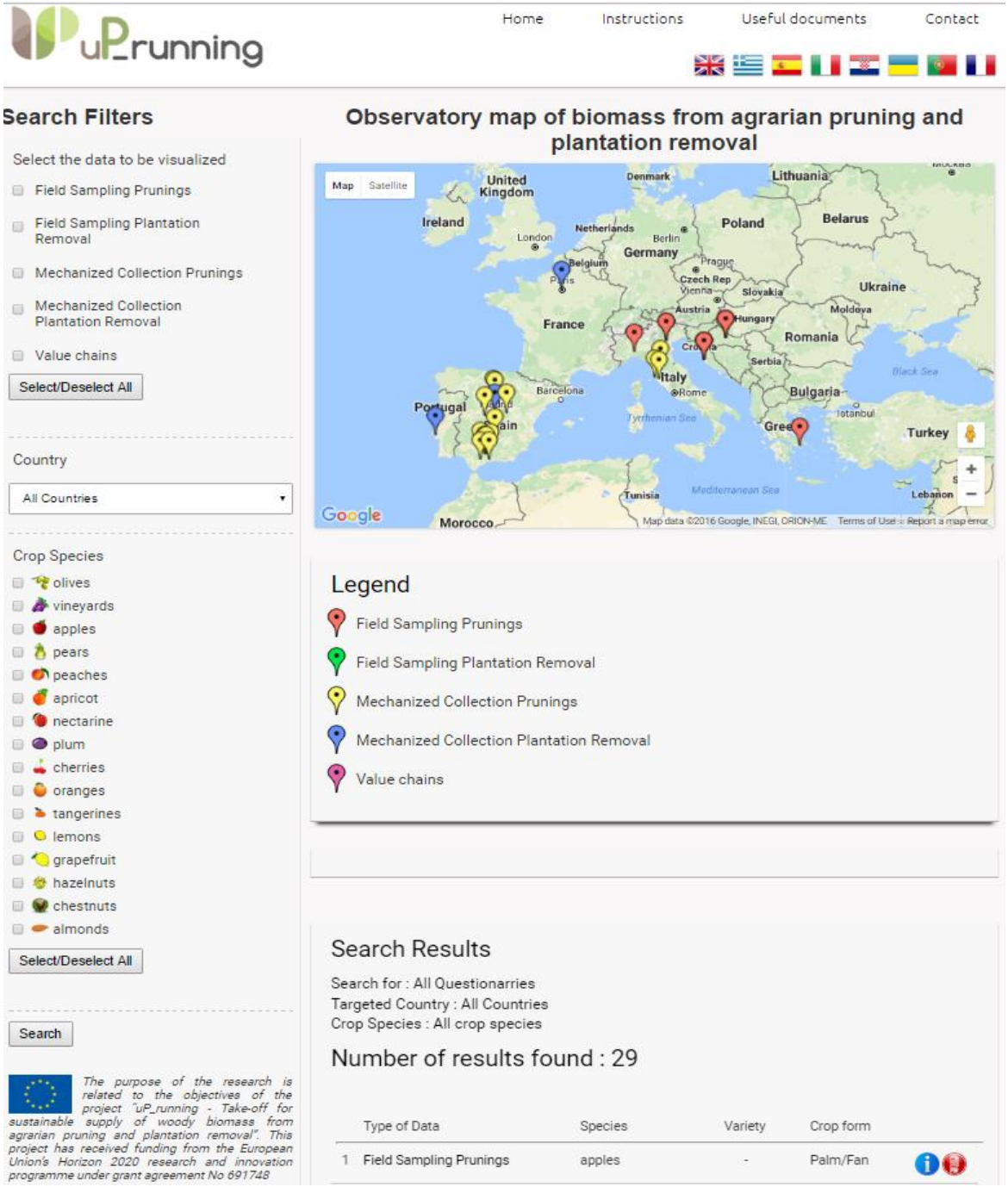

Figure i. Observatory Tool. Source: http://www.up-running-observatory.eu/

Overall, the current deliverable consists constitutes a manual for the developed web tool Observatory. It is a simple guideline on how to use the Observatory. Via the tool, APPR availability and success value chains of APPR are displayed. Thus, the Observatory aims to spread the existing know-how and technologies of APPR, disseminate success cases and motivate interested actors to initiate APPR value chains by finding optimum cases based on their needs.

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INTRODUCTION

The current report constitutes **Deliverable D6.1 "Observatory web tool manual"** of the uP_running project. The report is the result of work undergone in **Task 6.1 "Observatory development and creation of templates"** to be used both in **Task 6.2 "Registry of field data"** and **Task 6.3 "Registry of collection experiences and value chains"**. The main objective of Task 6.1 is the development of an online, public and easy-to-use map tool targeting actors involved in APPR biomass value chains in order to share and exploit successful cases of APPR utilization. The Observatory web tool will be used to visually display experiences regarding:

a) APPR biomass field data;

b) Mechanized collection and;

c) Existing APPR biomass value chains across Europe.

The information will be collected through the activities of Tasks 6.2 and 6.3.

The objective of the current deliverable is to indicate the features of the Observatory tool and act as a manual for public use. In this sense, D6.1 is a step-to-step guideline for adding and searching APPR biomass value chains through Observatory tool and highlight the full potentials of the developed tool.

This Deliverable report is prepared in English, with a summary user's manual translated to the 7 languages of the project's participating countries.

1 PURPOSE OF THE UP_RUNNING OBSERVATORY TOOL

APPR biomass is produced from vineyards, olive groves and fruit plantations and remains mostly unexploited. The aim of WP6 of uP_running is to develop an easy-to-use map tool on which APPR experiences will be recorded. Through the generic term "experiences" herewith we refer to:

- APPR biomass productivity, based on field data measurements
- Harvesting techniques utilized in tests, demonstrations or in existing value chains
- existing APPR biomass value chains

The Observatory tool is a registry of APPR biomass productivity from field sampling, mechanized collection experiences and success cases of APPR value chains. The target actors are all type of stakeholders involved in APPR biomass value chains. The Observatory is expected to be especially useful to practitioners and new entrepreneurs who are not sure about the ways APPR biomass can be exploited.

The reasons for recording each subtype of data is explained next:

APPR biomass productivity

The amount of pruning and plantation removal residues produced is not yet defined properly as it depends on various parameters, such as tree age, crop variety, local climate, weather conditions, soil conditions, intensification, irrigation level, etc. that vary from field to field. The intent is that, by collecting and visualizing actual field data, there will be a better estimation of the true biomass plantation residues and also this will help farmers/ actors to find results from plantations with similar characteristics as their own.

APPR biomass mechanized collection

The modes of mobilizing the biomass from field to field side are the start of any APPR biomass value chain. It fully determines biomass format and quality. The EuroPruning project (http://www.europruning.eu) detected that actors involved or interested or influencing the preparation of new value chains, keep in general doubts on how to perform these operations. It is therefore crucial to show in the Observatory how others arranged the harvest of the pruning and plantation removal woody biomass at field. Furthermore, there are already technologies ready for those biomass types, and thus a unique value of the Observatory is to show practitioners which are those existing machineries.

APPR existing biomass value chains

When starting a new initiative, the pioneering practitioners find difficulties on how to scope the business and how to organize the value chain. Including in the observatory a section for reporting existing value chains is fundamental to show-how to practitioners. The variety and size of the value chains is so different, that explaining how others did, is a key for the replication, and thus, for the wider spreading of the utilization of APPR biomass.

Summary

In overall, the Observatory will facilitate APPR actors with a better understanding of their biomass potential and identify successful exploitation cases for replication. Thus, the uP_running

Observatory tool will motivate key players to identify and develop, based on their needs, optimum value chains of APPR biomass exploitation that can lead to a green and sustainable society.

2 OVERVIEW OF EACH APPR "EXPERIENCE" TYPE

The main aim of the Observatory web tool is the recording and the online visualization of **"experiences"** regarding APPR biomass. In order to facilitate the collection and categorization of data, five (5) different types of experiences are distinguished as follows:

1) Experiences related to the field sampling / biomass productivity of prunings. The main intent is to collect information from farmers, scientists, etc. who have performed a measurement of pruning weight on a determined field.
2) Experiences related to the field sampling / biomass productivity of plantation removal biomass. The main intent is to collect information from farmers, scientists, etc. who have performed a measurement of plantation removal material on the field.
3) Experiences related to the mechanized collection of prunings. The main intent is to collect information from farmers, scientists, equipment providers, etc. who have organized the collection of prunings with the assistance of various types of mechanized equipment.
4) Experiences related to the mechanized collection of plantation removal biomass. The main intent is to collect information from farmers, scientists, equipment providers, etc. who have organized the collection of plantation removal biomass with the assistance of various types of mechanized equipment.
5) Experiences related to value chains of APPR biomass. The main intent is to collect information from various actors (farmers / biomass producers, transport companies / logistic operators, end-users, etc.) who have been involved in the setting up of value chains based on the utilization of APPR biomass.

For each type of experience, a questionnaire / template was created in order to record the data as well as to display the information to the users of the Observatory. The questionnaires were built so that they would be comprehensive but also easy to understand by respondents or users of the tools. Most of the questions can be answered either by ticking boxes, providing numerical values or – in few cases – simple word values. The purpose was that each questionnaire could be filled in about 5 – 10 minutes time by someone with access to the primary data.

Regarding the first two types of experiences, related to the field sampling / biomass productivity of APPR biomass, **guidelines** were also drafted addressing how such a measurement should be performed. They are presented in **Section 4.1** of this document.

Next part contains the description of the sections in each questionnaire. Some of them are repeated. They are left as it is, and not summarised, as they may be utilised in the Observatory or in the description of the questionnaires.

2.1 Biomass productivity of prunings

The field sampling of prunings questionnaire aims to capture the biomass availability- production (in tons per hectare) of different crop fields under various conditions. In order to complete it, the person who answers the questionnaire has to follow simple steps to measure the weight of prunings produced. This questionnaire contains sections to reflect the APPR productivity, the characterization of fields and the influence of various pruning methods performed on APPR production.

The main areas of the questionnaire are briefly described below:

- **Contact Data:** Contact information of the person who fills the questionnaire (name, e-mail, country etc.).
- **Field Data:** Basic information about the field (e.g. slope, size, soil cover) and crop species cultivated (e.g. age, variety, crop form, etc.).
- **Crop Yield:** Basic information on the production of crop, in order to correlate it with the amount of APPR residues produced, and irrigation and intensification level of the field.
- **Pruning Operations Performed:** Information on how pruning operations were performed prior to pruning measurement. It includes questions that ask the farmer to evaluate the intensity of current cropping compared to such operations in previous years, frequency of pruning, type of pruning, pruning method, etc. The intent is that the questionnaire and the field measurement is performed after a farmer has done a pruning operation.
- **Pruning Measurement:** This is the most important part of the questionnaire. There are questions that summarize the results of the field measurement (measurement method, average, final value of prunings produced) and provide some information about the quality of measurement.
- **Consent:** Signature, privacy data, acceptance for acknowledgement, etc.
- **Additional Questions:** Additional-optional information that will not be displayed on the Observatory tool. They refer to the agronomic practices (type of pruning, frequency, operations, use of prunings, etc.) performed typically by the farmer and not just for once because of the measurement. As a result, this information will provide a clear picture on what is happening usually in the field and how it may affect the productivity data or, in other terms, the biomass availability.
- **External links/additional text:** Any other appropriate material (e.g. link to a website, reference to an external paper, photographs, etc.) can be included in this section.

As observed, the questionnaires do not only ask for the APPR biomass productivity, but also for basic information about the field (size, slope, soil, etc.), crop (specie, variety, yields, etc.), typical pruning and up-rooting operations, quality of APPR biomass, etc. The reason is that, knowing just the APPR biomass productivity is not sufficient in order to utilize such data. It is crucial to capture the whole picture (agronomics, operations, etc.) for fully exploiting APPR biomass. In order to facilitate practitioners to do measurements (“do it yourself”) and report in the Observatory voluntary, guidelines (developed in task 6.2) are provided (will be available in the Observatory) for

measuring APPR biomass productivity in order to have secure and uniform results on the Observatory.

2.2 Field sampling / biomass productivity of plantation removal

The field sampling of plantation removal questionnaire aims to capture the biomass availability-production (in tons per hectare) of different crop fields under various conditions. In order to complete it, the person who answers the questionnaire has to follow simple steps to measure the weight of the wood obtained from plantation removal operations. This questionnaire contains sections to reflect the APPR productivity, the characterization of fields and the influence of various plantation removal methods performed on APPR production.

The main areas of the questionnaire are briefly described below:

- **Contact Data:** Contact information of the person who fills the questionnaire (name, e-mail, country, etc.).
- **Field Data:** Basic information about the field (e.g. slope, size, soil cover) and crop species cultivated (e.g. age, variety, crop form, etc.).
- **Crop Yield:** Basic information on the production of crop, in order to correlate it with the amount of APPR residues produced, and irrigation and intensification level of the field.
- **Plantation Removal Information:** Information on how plantation removal operations were performed prior to measurement. It includes questions that ask the farmer the reason for terminating the plantation, which part of the plant is removed, etc.
- **Plantation Removal Measurement:** This is the most important part of the questionnaire. There are questions that summarize the results of the field measurement (measurement method, average, final value of plantation removal produced) and provide some information about the quality of measurement.
- **Consent:** Signature, privacy data, acceptance for acknowledgement, etc.
- **Additional Questions:** Additional-optional information that will not be displayed on the Observatory tool. This section includes questions on previous plantation removal operations performed in the past in the same field and compares it with the current measurement. Also, it includes questions that refer to the pruning practices (type of pruning, frequency, operations, use of prunings, etc.) performed typically by the farmer in order to have an overview of the processes undergone in the field. As a result, this information will provide a clear picture on what is happening usually in the field and how it may affect the biomass availability.
- **External links/additional text:** Any other appropriate material (e.g. link to a website, reference to an external paper, photographs, etc.) can be included in this section.

As for the case of the questionnaire on Pruning productivity, guidelines for the measurements (“do it yourself”) are applicable to plantation removal productivity.

2.3 Mechanized collection of prunings

The mechanized collection of prunings questionnaire aims to capture the mechanized collection of harvesting and treating pruning wood. Via this questionnaire, the alternative routes of mechanized processes for preparing the field prior to harvesting, harvesting methods and type-model of pruning treatment machinery are recorded. This questionnaire addresses actors who own or test machinery during pruning operations to evaluate-record their performance.

The main areas of the questionnaire are briefly described below:

- **Contact Data:** Contact information of the person who fills the questionnaire (name, e-mail, country, etc.).
- **Field Data:** Basic information about the field (e.g. slope, size, soil cover) and crop species cultivated (e.g. age, variety, crop form, etc.).
- **Crop Yield:** Basic information on the production of crop, in order to correlate it with the amount of APPR residues produced, and irrigation and intensification level of the field.
- **Pruning Operations Performed:** Simple information on how pruning operations were performed prior to pruning harvesting. It includes questions that ask the farmer the frequency of pruning, type of pruning, pruning method, etc. The intent is to have a full overview of the pruning operations performed prior to mechanized utilization in order to view its influence on it.
- **Mechanized Collection:** This is the most important part of the questionnaire. There are questions that summarize the machinery used during pruning operations. There are some simple questions on alignment method of prunings, type and model of pruning treatment (windrower, shredder, chipper, baler, etc.), harvesting methods and losses of biomass during the mechanized collection. Furthermore, the evaluation of the machinery is asked in terms of productivity, time, fuel consumption, challenges encountered by the machinery, product quality, etc.
- **Value Chains:** A simple question to indicate if the recorded mechanized experience is based on an existing value chain or it is a trial test. If it is for the first, the person who filled the questionnaire is asked to complete the value chain questionnaire as well (see section 2.5).
- **Consent:** Signature, privacy data, acceptance for acknowledgement, etc.
- **Additional Questions:** Additional-optional information that will not be displayed on the Observatory tool. They refer to the agronomic practices (type of pruning, frequency, operations, use of prunings, etc.) performed typically by the farmer and ask critical questions on the field's APPR performance. As a result, this information will provide a clear picture on what is happening usually in the field and how it affects the biomass availability and quality.
- **External links/additional text:** Any other appropriate material (e.g. link to a website, reference to an external paper, photographs, etc.) can be included in this section.

This questionnaire records mechanized collection experiences, which are of special interest as data points reveal cases where treating and harvesting APPR has been performed by machinery. In addition to this, data on the performance of machinery, machinery models, fuel consumption,

APPR losses, APPR quality, etc. are presented on the Observatory, which is a key item usually unknown by practitioners. In this sense, stakeholders that are interested in APPR biomass can review APPR cases and find the appropriate machinery methods and have an idea of potential performances of the machinery. The template includes details on crop layout, density, age, agronomics, etc. as it fully affects the performance of the harvesting operations. Practitioners can therefore learn to build up estimations based on the real data obtained during the mechanized harvest of APPR biomass in fields with similarities to their own case.

2.4 Mechanized collection of plantation removal

The mechanized collection of plantation removal questionnaire aims to capture the mechanized experiences of harvesting and treating wood produced during plantation removal operations. Via this questionnaire, the alternative routes of mechanized processes for preparing the field prior to harvesting, harvesting methods and type-model of plantation removal treatment machinery are recorded. This questionnaire addresses actors who own or test machinery during plantation removal operations to evaluate-record their performance.

The main areas of the questionnaire are briefly described below:

- **Contact Data:** Contact information of the person who fills the questionnaire (name, e-mail, country, etc.).
- **Field Data:** Basic information about the field (e.g. slope, size, soil cover) and crop species cultivated (e.g. age, variety, crop form, etc.).
- **Crop Yield:** Basic information on the production of crop, in order to correlate it with the amount of APPR residues produced, and irrigation and intensification level of the field.
- **Plantation Removal Information:** Information on how plantation removal operations were performed prior to harvesting. It includes questions that ask the farmer the reason for terminating the plantation, which part of the plant is removed, etc.
- **Mechanized Collection:** This is the most important part of the questionnaire. There are questions that summarize the machinery used during plantation removal operations. There are some simple questions on alignment method of removed material, type and model of treatment machinery (shredder, chipper, baler, etc.), harvesting methods and losses of biomass during the mechanized collection. Furthermore, the evaluation of the machinery is asked in terms of productivity, time, fuel consumption, challenges encountered by the machinery, product quality, etc.
- **Value Chains:** A simple question to indicate if the recorded mechanized experience is based on an existing value chain or it is a trial test. If it is for the first, the person who filled the questionnaire is asked to complete the value chain questionnaire as well (see section 2.5).
- **Consent:** Signature, privacy data, acceptance for acknowledgement, etc.
- **Additional Questions:** Additional-optional information requested that will not be displayed on the Observatory tool. This section includes questions on previous plantation removal operations performed in the past in the same field and compares it with the current biomass productivity. Also, it includes questions that refer to the pruning practices (type of pruning, frequency, operations, use of prunings, etc.) performed typically by the farmer in order to

have an overview of the processes undergone in the field. As a result, this information will provide a clear picture on what is happening usually in the field and how it affects the biomass availability and quality.

- **External links/additional text:** Any other appropriate material (e.g. link to a website, reference to an external paper, photographs, etc.) can be included in this section.

As for the case of the mechanized collection of pruning, the questionnaires include several sections that facilitate the practitioner to understand better the figures of performance, according to crop layout, age, crop form, etc.

2.5 Existing APPR Value Chains

The value chains questionnaire aims to capture the whole existing value chains where APPR residues are involved. Via this questionnaire, the different actors and their roles in the value chain are recorded in order to be replicated as success cases. This questionnaire addresses actors who are currently involved in value chains to provide details, success factors, cost data, end use of the APPR biomass, etc.

The main areas of the questionnaire are briefly described below:

- **Contact Data:** Contact information of the person who fills the questionnaire (name, e-mail, country, organization, etc.). The logo of the company involved in the value chain as a prime mover can also be included.
- **Value Chains: Prime Mover and Main Characteristics:** Basic information on the prime mover of the value chain (location, stakeholder type, etc.). Moreover, it requests simple information on the APPR value chain characteristics that take part (e.g. APPR production, crop species, plantation area that contributes to the value chain, start date of the value chain, etc.).
- **Key success Factors in Value Chain:** This section requests the value chain actor to evaluate the key success factors of the value chain and highlight the most crucial ones.
- **Short Summary of the Initiative:** A simple description of the value chain of less than 100 words.
- **Actors and Roles in the Value Chain:** Identification of the main actors of the existing APPR value chain along with their roles.
- **Fuel Specifications:** Fuel specifications (moisture, ash, heating value, etc.) and final form of APPR prior to end use.
- **Value Chain Details and Price Data:** Further details of the value chain, including end users of the value chain, ownership of the machinery, price of APPR biomass and other competing fuels, etc.
- **Consent:** Signature, privacy data, acceptance for acknowledgement etc.
- **External links/additional text:** Any other appropriate material (e.g. link to a website, reference to an external paper, photographs, etc.) can be included in this section.

Finally, the developed tool is able to record all the existing value chains of APPR biomass, from field to end use. In this light, the Observatory demonstrates entire value chains of APPR biomass by describing actors and their roles in each stage of the value chain. It provides information of

machinery costs, costs of APPR at each process stage, APPR's end use and specifications of APPR prior to consumption.

3 THE OBSERVATORY WEBPAGE AND HOW TO USE IT

The website hosting the Observatory tool is http://www.up-running-observatory.eu/. The website is based on a user friendly interface in such a way that the tool can be operated by all kind of users. In particular, the user will be able to find all the information he/she seeks with just a few-simple clicks.

3.1 Home Page

The home page of the Observatory is illustrated in Figure 1. In the starting page, there is a map focused on Europe with marks displaying all data entries enrolled in the Observatory tool. The map is centered in Europe but can host data points from the whole globe. Furthermore, the map has the option to simply zoom in/out and be scrolled around.

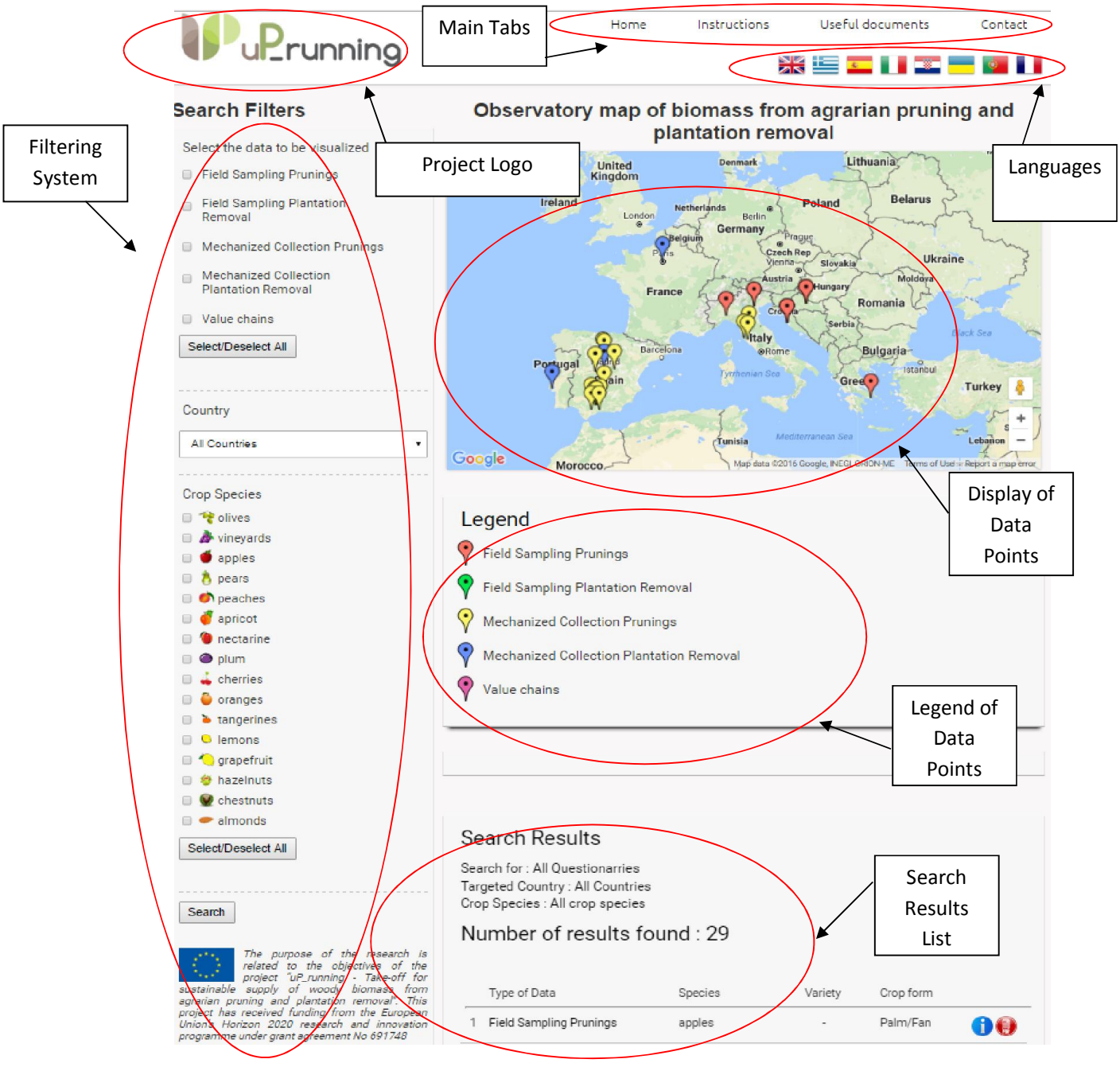


Figure 1. Home page of the Observatory Tool. Source: http://www.up-running-observatory.eu/en/

On the upper left corner there is the logo of the uP_running project whereas on the upper right corner there are the flags of 8 countries that correspond to the main languages used in the uP_running project (English, Greek, Spanish, Italian, Croatian, Ukrainian, Portuguese and French). By clicking each flag, the website is fully translated to the corresponding language. Moreover, above the flags, there are 4 tabs:

- **Home**: brings the user back to the home page of the Observatory web site.

- **Instructions**: presents simple step-to-step instructions on how to use the Observatory tool and how to contribute data.
- **Useful Documents**: includes download links for the main files of interest to the users of the Observatory. On this tab, all the Questionnaires are available for download so that a user can fill them and send them back, thus contributing to new data for the Observatory tool. Moreover, the guidelines on field sampling of APPR biomass (necessary to fill the questionnaires), the manuals and other important files, such as summary reports on the information recorded by the Observatory, are available for download from this tab.
- **Contact:** presents the contact information for the uP_running Observatory responsible in each country. Additionally, a form than can be used to communicate with the site administrator is included.

In addition, there is the filtering system on the left part of the home page. Via the filtering system, the user can search whatever information he is interested in and can be provided by the Observatory tool. More information on the filtering system is available below in section 3.3 “Using the filtering system”.

Finally, on the lower part of the home page, there is the legend that indicates the different kind of data entries on the Observatory tool along with a search result list that display the outcomes of the user’s search. More information is listed on section 3.2 “Display of results”.

3.2 Display of results

The data of the observatory is displayed in two forms:

- Through a mapping of the points of interest according to the search carried out by the user
- Through a list of the results

Observatory MAP display

The data points with the information provided on APPR biomass are displayed with marks on the locations of the sites where a field measurement of biomass productivity, a mechanized collection or a value chain has been reported. These data points are displayed on the Observatory tool only if the person who fills the questionnaires agrees on disseminating the information via the tool. The location of the point does not coincide with the exact location of fields, but the area where biomass was measured or tested (a deviation of 5 km has been included to avoid the specific designation of the parcels where a work was done, to respect the privacy of Observatory collaborators).

According to the type of information, the data points have different color as it can been seen in Figure 2.

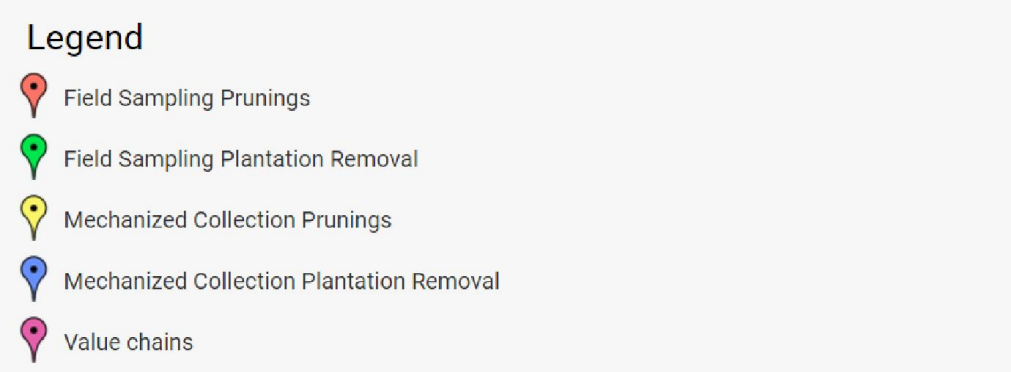


Figure 2. Legend of the Observatory Tool. Source: http://www.up-running-observatory.eu/

The user can click on each data point he is interested in to obtain further information on the case. When the user clicks on the data point, a bubble text appears, as it can be seen in Figure 3, with the main information of the corresponding experience (e.g. type of pruning, amount of APPR measure, machinery used, etc.). That gives the opportunity to the user to check the overview of the enrolled experience.

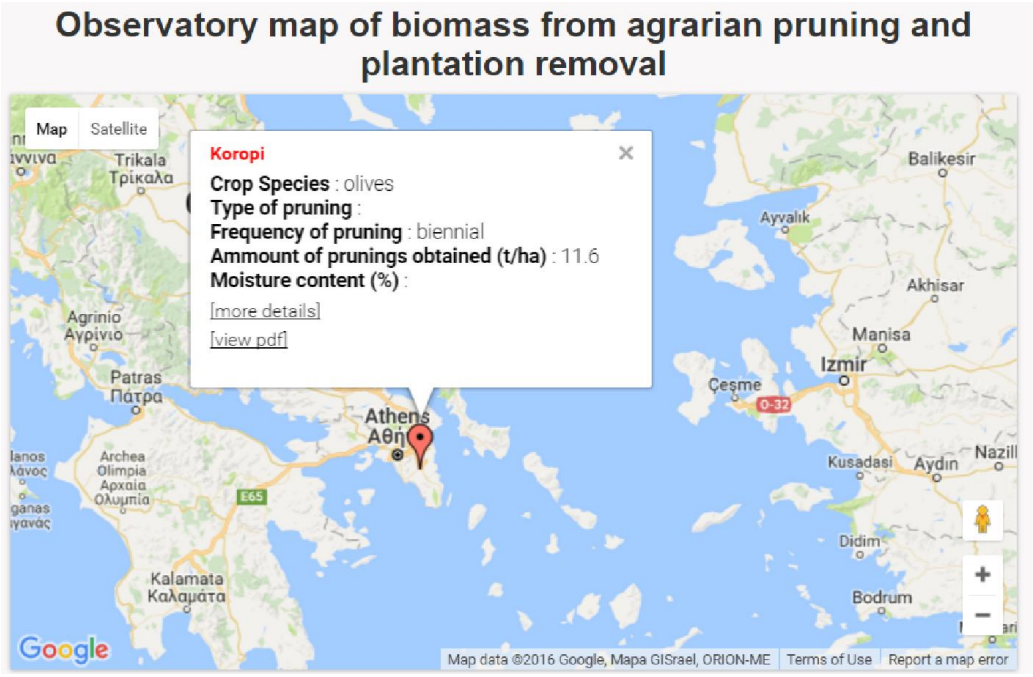


Figure 3. Data points of the Observatory Tool. Source: http://www.up-running-observatory.eu/en/

If the user wants to know more, he has the opportunity to do it by clicking in the bubble text options:

- "More details": a window appears on the screen, as illustrated in Figure 4, with all the available information on the corresponding data entry. All the information provided by

the person who answered the questionnaires is printed on the screen and the user can scroll across the various filled data. The information provided on this window correspond only to the fields of the questionnaires that were answered, thus fields of the questionnaires that were not answered aren't printed on this online form.

- "View pdf": the whole information of the data point is downloaded to the user's computer in the form of pdf.

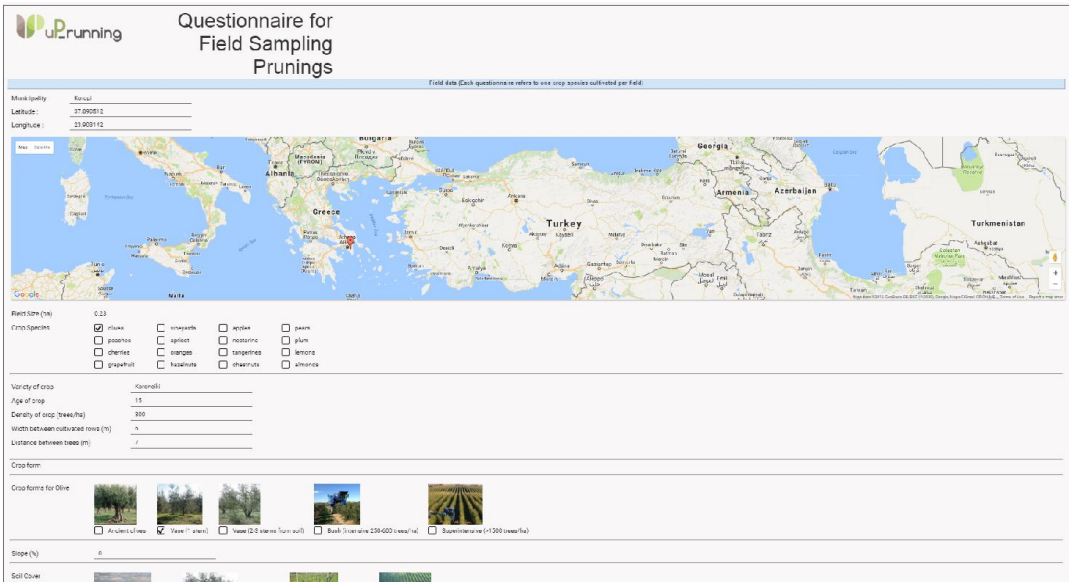
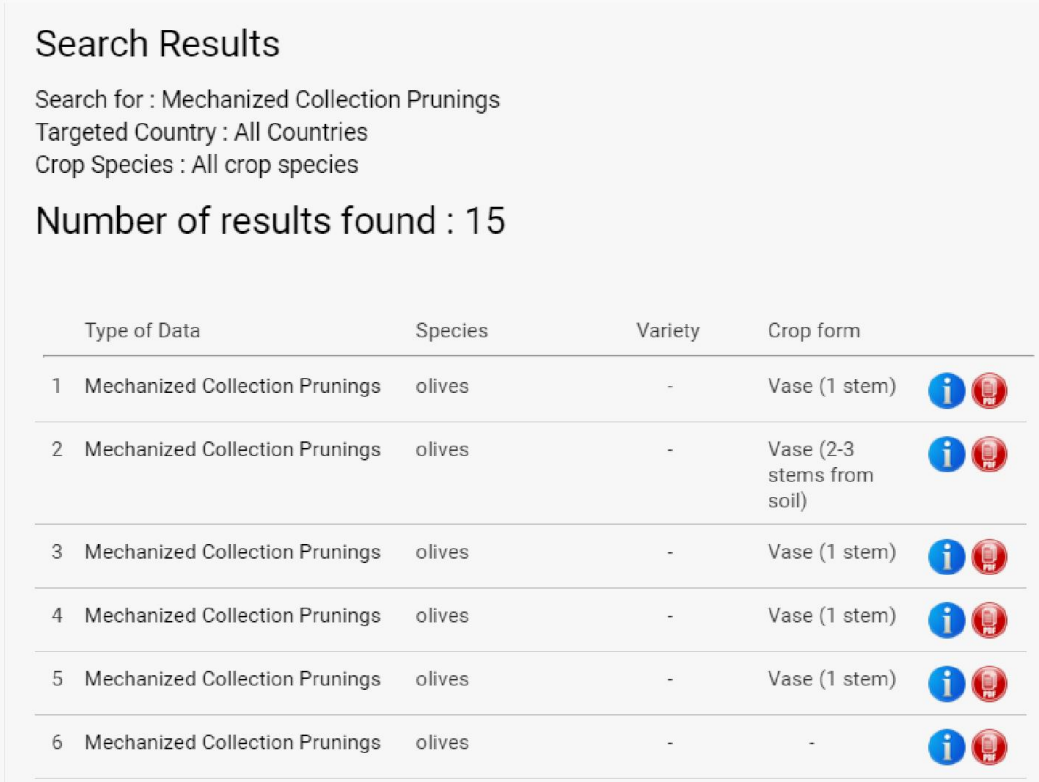


Figure 4. Results of the Observatory Tool. Source: http://www.up-running-observatory.eu/en/

Observatory TABLE display

Apart from the data points displayed on the map of the Observatory Map Tool, the user has the option to view the data points on a list on the lower part of the home page, as seen in Figure 5. This list displays the search outcomes of the user. Whichever data point match the search criteria defined by the user appears on the list. For each data point on the list, there are columns that provide the overview of each result (type of data, crop specie, crop variety and crop form) along with the abovementioned options of "more details" and "view pdf".



Search Results

Search for : Mechanized Collection Prunings
Targeted Country : All Countries
Crop Species : All crop species

Number of results found : 15

	Type of Data	Species	Variety	Crop form
1	Mechanized Collection Prunings	olives	-	Vase (1 stem)
2	Mechanized Collection Prunings	olives	-	Vase (2-3 stems from soil)
3	Mechanized Collection Prunings	olives	-	Vase (1 stem)
4	Mechanized Collection Prunings	olives	-	Vase (1 stem)
5	Mechanized Collection Prunings	olives	-	Vase (1 stem)
6	Mechanized Collection Prunings	olives	-	-

Figure 5. Search Results of Data points in the Observatory Tool. Source: http://www.up-running-observatory.eu/en/

3.3 Using the filtering system

The home page of the Observatory tool provides the option to the user of searching and filtering the data entries depending on his/her needs. The filtering system is presented in Figure 6. Basically, the user can filter the data he/she want to visualize according to three different criterion: the type of experiences (previously described in section 2), the country and the crop species.

Firstly, the user has the possibility to choose one or several types of “experiences” to be visualized in the Observatory tool. Only the data points of the selected “experiences” type will be presented on the map and in the search result list. Furthermore, there is also a button to select/deselect all options in order to facilitate the user. If none of the experience type is selected (or all selected), the Observatory tool will provide and display data entries from all type of “experiences”.

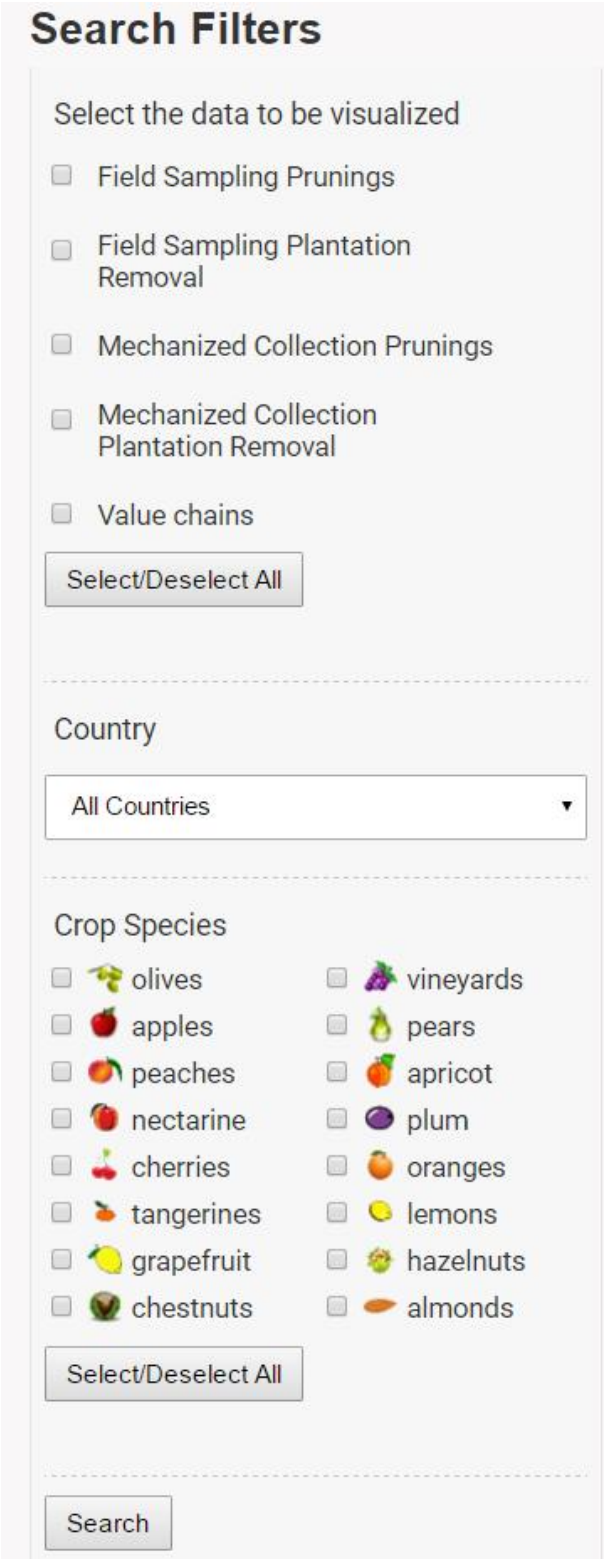


Figure 6. Filtering System of the Observatory Tool. Source: http://www.up-running-observatory.eu/en/

In addition, the filtering system gives the opportunity to the user to search for the data entries according to the country of his/her interest. In this sense, the user can choose from the country list the one(s) where he wants to view the existing APPR experiences and information.

Moreover, the filtering system has a list of crop species with images of each crop specie in order to facilitate the user in their identification (see Figure 6). From the crop species list, the user can tick one or multiple crop species that must be included in the data points in order to be displayed. In this light, the user can view only data points from only the crop specie he is interested in. Again there is a button to select and deselect all crop species. If none of the crop specie is selected (or all selected), the Observatory tool will display data entries from all crop species.

Finally, after the filtering and ticking of the user, the search button must be clicked in order to produce the results of APPR experiences based on the search criteria of the user.

4 How to Contribute Data for The Observatory?

The aim of the Observatory tool, as mentioned above, is to provide the APPR experiences and value chains existing mainly in Europe and to disseminate the success cases to the interested actors. In order to accomplish such task, simple questionnaires were created to capture the information of such experiences. Thus, the questionnaires are the main means for contributing data of the APPR biomass on the web tool. The person who fills the data can download the questionnaires from the “Useful documents” tab on the Observatory web site. He/she answers the questionnaire that suits his/her case and then he/she sends it back.

4.1 Recording Information on APPR biomass

As abovementioned, the data points of APPR biomass regarding the field data, the harvesting techniques and the existing value chains are reported by the APPR actors. The, interested in biomass, persons follow a simple procedure in order to contribute APPR “experiences” on the Observatory tool. They just download the corresponding questionnaire from the site, they fill it and afterwards they send the completed form to the national contact point as described in section 4.2.

In order to fill the two questionnaires about Field Sampling of Prunings and Plantation Removal, simple measurements have to be done to weight the APPR biomass produced during these operations. For that purpose, a guideline with simple measurement methods was created entitled “uP_running guidelines for field sampling”. In this guideline, three main ways are described in which a field measurement can be performed (per tree, per parcel and, finally, per row or across the whole field) along with the tools required for each one. Additionally, it includes a measurement protocol and a table for the recording of the data for each measurement. The full field measurement guidelines can be downloaded from the “Useful documents” section of the uP_running Observatory webpage.

4.2 Contact points

For any doubt, or to provide new data inputs to the observatory, the following contact points per project country are indicated.

Table 1. Contact Points Allocated Across Participating Countries

Contact Points Allocated Across Participating Countries				
Country	Project Partner	Contact Person	Email	Phone
Demo Countries				
Italy	UFG	Massimo Monteleone	massimo.monteleone@unifg.it	+39 0881538223
Greece	CERTH	Manolis Karampinis	karampinis@certh.gr	+30 2111069518
Spain	CIRCE	Daniel García	daniel.garcia@fcirce.es	+ 34 876555511
Ukraine	SECB	Olha Haidai	haidai@biomass.kiev.ua	+38 0976402967
	UCAB	Alla Kravchenko	kravchenko@ucab.ua	+38 0970304533
Outreach Countries				
Croatia	HPK	Tajana Radić	tajana.radic@komora.hr	+38 5(0)16109260
France	SCDF	Camille Poutrin	camille.poutrin@servicescoopdefrance.coop	+33 144175840
		Samir Hadour	samir.hadour@servicescoopdefrance.coop	+33 144175845
Portugal	CONFAGRI	Luís Calaim	luis@confagri.pt	+35 1969891969

It is also possible to contact the Observatory administration team via the contact form of the website.

5 CONCLUSIONS

The uP_running Observatory tool is created with the aim of acquiring a simple to use web tool that registers "experiences" on the APPR biomass across Europe. This includes: a) APPR biomass productivity field data, b) mechanized collection and; c) existing APPR biomass value chains. By developing easy-to-answer questionnaires, the Observatory tool will be continuously populated with data entries during uP_running's lifetime.

The data points on biomass productivity capture the picture of APPR biomass productivity (t/ha) across European countries along with information on the field conditions. This option allows the farmers or other potential entrepreneurs to find cases similar to their own so that they can have a more informed estimation on their actual APPR biomass potential (at least until they perform a field measurement of their own!). Till the end of the project, the Observatory aims to collect and record at least 300 data points on field potential of APPR biomass, either from literature sources or from new measurements performed by farmers working together with the project partners.

Moreover, part of the data points register the mechanized collection experiences of APPR biomass. Via the questionnaires, actors with any experience of using machinery during treating and harvesting of APPR biomass will share their case through the Observatory tool. As a result, farmers or any other key actors to be involved in APPR collection will be able to find know-how of mechanized experiences and new players will be motivated to find an appropriate mechanized case and implement it at their fields. Additionally machinery builders providing APPR biomass harvest technologies, and service companies performing APPR residues management, may become publicly visible, which is an added value for them, and for new entrepreneurs willing to start a new value chain. Within the project's duration, the Observatory aims to record at least 50 experiences on mechanized collection of APPR biomass.

Finally, the Observatory tool will record existing value chains of APPR biomass. It will register data points with existing value chains of APPR starting from the field to the end user, by depicting the step by step actors and their roles in each stage of the value chain. In this sense, the main objective of the Observatory tool is to disseminate the APPR experiences and success cases, spread existing technologies and know-how and motivate prime movers to adapt value chains of APPR and fully exploit the APPR biomass utilization. Till the end of the project, the Observatory aims to record and display at least 20 examples of value chains based on APPR biomass, coming from a wide range of European countries.

The Observatory aims to be a referential point for APPR biomass in Europe. The data contained is expected to reduce the uncertainties of future practitioners, and allow more easily the widespread of APPR biomass use in Europe.

The tool will run on 8 EU languages. Due to the specifically designed structure, the whole information can be easily available in any other language, provided that a willing contributor invests about 2-3 hours of work in translating contents. Therefore, there is the potential to extend the language coverage of the Observatory in many other countries in the future.

ANNEX I – TEMPLATE FOR RECORDING "EXPERIENCES" ON FIELD SAMPLING OF PRUNINGS

Questionnaire for Field Sampling- Prunings

Contact Data

Name: _____ e-mail: _____ Phone no: _____

Profession: _____ Country: _____

Field Data (Each questionnaire refers to one crop species cultivated per field)

Location of field*1 *Location of the farm or X/Y coordinates with decimal-degrees*	Municipality: _____ X/Y: _____
Field size (ha)	_____
Crop Species	☐ *Olives* ☐ *Vineyards* ☐ *Apples* ☐ *Pears* ☐ *Peaches* ☐ *Apricot* ☐ *Nectarine* ☐ *Plum* ☐ *Cherries* ☐ *Oranges* ☐ *Tangerines* ☐ *Lemons* ☐ *Grapefruit* ☐ *Hazelnuts* ☐ *Chestnuts* ☐ *Almonds* ☐ *Other (provide photograph if available)* _____
Variety of crop	_____
Age of crop	_____
Density (trees/ha)	_____
Width between cultivated rows (m)	_____
Distance between trees (m)	_____
Crop form Crop forms for Vineyard	   ☐ *Vase* ☐ *Espalier* ☐ *Marquee* ☐ *Other (provide photograph if available)* _____
Crop forms for Olive	 ☐ *Ancient olives*  ☐ *Vase (1 stem)*  ☐ *Vase (2-3 stems from soil)*  ☐ *Bush (intensive 250-600 trees/ ha)*  ☐ *Superintensive (>1500 trees/ ha)* ☐ *Other (provide photograph if available)* _____

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Crop forms for fruit trees	 ☐ *Natural*  ☐ *Vase*  ☐ *Bush/ Globe (very small trees)*  ☐ *Spindle/ Pyramid*  ☐ *Palm/ Fan*  ☐ *Epsylon transversal* ☐ *Other (provide photograph if available)* _____
Slope (%)	_____
Soil Cover	 ☐ *Bare. No grass cover. Tillage several times per year*  ☐ *Seasonal ocurrence. Herbicides + mowing <50% soil cover*  ☐ *>50% grass cover. Mowed several times per year*  ☐ *100% Grass cover. Mowed several times per year* ☐ *Other (provide photograph if available)* _____
Crop Yield	
Average Crop yield (t/ha)	_____
Crop yield before measurement (t/ha) *Amount of product obtained for the year that the pruning measurement is performed in tonnes per hectare*	_____
Irrigation	☐ *rain fed* ☐ *partial irrigation* ☐ *fully irrigated*
Intensification degree *Specify the amount of fertilizer and pesticides*	☐ *organic* ☐ *low* ☐ *intermediate* ☐ *high*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Pruning Operations Performed (prior to measurement)

Type of pruning

- ☐ Maintenance
- ☐ Grafting
- ☐ Structuring
- ☐ Topping
- ☐ Removal of old branches
- ☐ Blooming
- ☐ other _____

Pruning Method

- ☐ Only manually
- ☐ Mechanised pre-pruning + manual
- ☐ Fully mechanised

Pruning Operations

Specify the pruning operations that are carried out

Check as many as apply

☐ Manually. Shears

☐ Assisted shears

☐ Chainsaw/arm chainsaw

☐ Pre-pruner: hedge trimmer

☐ Pre-pruner: discs

☐ Pre-pruning topping

☐ Other (provide photograph if available) _____

Season of pruning

Check as many as apply

- ☐ January
- ☐ February
- ☐ March
- ☐ April
- ☐ May
- ☐ June
- ☐ July
- ☐ August
- ☐ September
- ☐ October
- ☐ November
- ☐ December

Frequency of pruning

- ☐ annual
- ☐ biannual
- ☐ biennial
- ☐ once per ____ years

Was this type of pruning performed as usual?

- ☐ Yes, it was performed as usual
- ☐ No, less intense than usual
- ☐ No, more intense than usual

Describe the amount of prunings produced compared to other years

- ☐ Much less
- ☐ More
- ☐ Less
- ☐ Much more
- ☐ Same

Reason for different amount of prunings produced?

- ☐ Pruning Intensity
- ☐ Accumulation of previous years
- ☐ Weather
- ☐ other _____

Pruning Measurement

Date of Measurement (DD/MM/YY) _____

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Mode of measurement *Specify the method used for pruning measurement*	*Per tree*    ☐ *One or several single trees selected. Biomass per tree collected manually and weighted* Number of trees: _____
	Per parcel (e.g. 100 m2) in bags    ☐ *One or several parcels selected. Each parcel several trees. Biomass per parcel collected manually and weighted* Total Area measured (m2): _____
	Per several rows (or in whole field)   ☐ *On large parcel, or a whole field is selected. Biomass collected and loaded to a truck. Weight of the load taken in a scale for trucks* Total Area measured (m2): _____ ☐ *Other (provide photograph if available)* _____
Amount of prunings obtained (t/ha) *Specify the tonnes per hectare of prunings collected from the crop*	_____ Losses of prunings that weren't harvested (t/ha): _____
How many days the prunings were on soil before measuring (days)	_____
Moisture content (%) *Specify the moisture content (%) of the biomass collected if available*	_____

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The purpose of the research is related to the objectives of the project "uP_running - Take-off for sustainable supply of woody biomass from agrarian pruning and plantation removal. Personal data will be treated in accordance to the EU Directive 95/46/EC. Data exchange between the project partners via project intranet or encrypted document. Data will be stored in the project intranet during the project lifetime. The information will be used only for the project purposes. Therefore, with the signature "I confirm that my participation is voluntary and I allow the publication of this data via the uP_running obervatory".	☐ *Please check if you agree* _____ *(Signature)*
Do you want to be publicly acknowledged?	☐ *Yes* ☐ *No*
Do you have photographic material that can be provided? *If yes, send them to karampinis@certh.gr*	☐ *Yes* ☐ *No*

**1: uP_running observatory won't display the exact position of your field, but will choose a point in a 5 km radius around. The aim is to mark the area, not the exact point of your field*

The majority of images provided on this questionaire is derived from EuroPruning deliverable report D3.1 (available at www.europruning.eu)

Additional Questions (Optional)

Pruning Operations and Machinery	Use of Prunings	Operations	
Specify the use of prunings and the operations performed typically in your field	A) Shredded to the soil	A.1) Tractor with mulcher to shreder wood into small pieces on the ground	☐
		A.2) Manual windrowing + A.1	☐
		A.3) Haulage with tractor (wth forklift/clamp) and shredding at field side	☐
		A.4) Manual windrowing + A.3	☐
	B) Disposed (burnt/abandoned)	B.1) Haulage with tractor (with forklift/clamp and burning in piles	☐
		B.2) Manual windrowing + B.1	☐
		B.3) Haulage with tractor (with forklift/clamp) and dump nearby the field	☐
		B.4) Manual windrowing + B.3	☐
	C) Collected	C.1) Thick branches crosscut and collected	☐
		C.2) Mechanised collector (pruning harvester)	☐
		C.3) Manual windrowing + C.2	☐
		C.4) Haulage with tractor (with forklift/clamp) and treatment/load at field side	☐

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	C.5) Manual windrowing + C.4 ☐
	Other (please describe): _____ ☐

Pruning Agronomic Practices and Management of the residues

Specify the pruning type, frequency, season and the time and cost spent on pruning operations performed typically in your field

**2: Only information about the management of the pruning residues, not the operation itself*

**3: Include here personnel and machinery costs as a whole cost in €/ha*

	Agronomic Practices					**Management of the Pruning Residues**		
	Frequency					**Work spent on pruning management*2**		**Typical cost for management of pruning*3**
Pruning Type	#of times	Per	#of year(s)	**Season**		#of persons working	Time Required (h/ha)	(€/ha)
Maintenance	____	☐	____	_____		_____	_____	_____
Structuring	____	☐	____	_____		_____	_____	_____
Grafting	____	☐	____	_____		_____	_____	_____
Removal of old branches	____	☐	____	_____		_____	_____	_____
Topping	____	☐	____	_____		_____	_____	_____
Blooming	____	☐	____	_____		_____	_____	_____
_____	____	☐	____	_____		_____	_____	_____

Do you think your crop is too vigorous?

Specify how vigorous is the crop (trees producing much wood)

☐ *Not at all* ☐ *Low* ☐ *Typical for this crop* ☐ *Large* ☐ *Vigorous variety*

Do you think that your field produces more or less prunings than other local fields?

Specify how much wood is produced from your corps in comparison with other fields

☐ *Much less than others*
☐ *Less than others*
☐ *Same with others*
☐ *More than others*
☐ *Much more than others*

Why does your field produce less/more pruning?

☐ *Different Variety*
☐ *I prefer doing soft/severe pruning*
☐ *I can't dedicate sufficient time/I dedicate much time*
☐ *I can't dedicate sufficient resources/I do dedicate much resources*
☐ *Soil*
☐ *Irrigation*
☐ *other* _____

Specify the minimum diameter you consider for "thick" branches used as firewood (mm):

_____

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

References-External links: Provide references on which the information is based on or highlight any comments

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

ANNEX II – TEMPLATE FOR RECORDING "EXPERIENCES" ON FIELD SAMPLING OF PLANTATION REMOVAL BIOMASS

Questionnaire for Field Sampling- Plantation Removal

Contact Data

Name: _____ e-mail: _____ Phone no: _____

Profession: _____ Country: _____

Field Data (Each questionnaire refers to one crop species cultivated per field)

Location of field*1 *Location of the farm or X/Y coordinates with decimal-degrees*	Municipality: _____ X/Y: _____
Field size (ha)	_____
Crop Species	☐ *Olives* ☐ *Vineyards* ☐ *Apples* ☐ *Pears* ☐ *Peaches* ☐ *Apricot* ☐ *Nectarine* ☐ *Plum* ☐ *Cherries* ☐ *Oranges* ☐ *Tangerines* ☐ *Lemons* ☐ *Grapefruit* ☐ *Hazelnuts* ☐ *Chestnuts* ☐ *Almonds* ☐ *Other (provide photograph if available)* _____
Variety of crop	_____
Age of crop	_____
Density (trees/ha)	_____
Width between cultivated rows (m)	_____
Distance between trees (m)	_____
Crop form Crop forms for Vineyard	   ☐ *Vase* ☐ *Espalier* ☐ *Marquee* ☐ *Other (provide photograph if available)* _____
Crop forms for Olive	 ☐ *Ancient olives*  ☐ *Vase (1 stem)*  ☐ *Vase (2-3 stems from soil)*  ☐ *Bush (intensive 250-600 trees/ ha)*  ☐ *Superintensive (>1500 trees/ ha)* ☐ *Other (provide photograph if available)* _____

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Crop forms fruit trees	    ☐ *Natural* ☐ *Vase* ☐ *Bush/ Globe (very small trees)* ☐ *Spindle/ Pyramid*   ☐ *Palm/ Fan* ☐ *Epsylon transversal* ☐ *Other (provide photograph if available)* _____
Slope (%)	_____
Soil Cover	   ☐ *Bare. No grass cover. Tillage several times per year* ☐ *Seasonal ocurrence. Herbicides + mowing <50% soil cover* ☐ *>50% grass cover. Mowed sevferal times per year*  ☐ *Other (provide photograph if available)* _____ ☐ *100% Grass cover. Mowed several times per year*
Crop Yield	
Average Crop yield (t/ha)	_____
Irrigation	☐ *rain fed* ☐ *partial irrigation* ☐ *fully irrigated*
Intensification degree *Specify the amount of fertilizer and pesticides*	☐ *organic* ☐ *low* ☐ *intermediate* ☐ *high*
Plantation Removal Information	
Were the plants removed at a typical age for such crops?	☐ *Yes* ☐ *Older than typical* ☐ *Younger than typical* ☐ *Don't know*

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Reason for plantation removal	☐ *Old age (renovation)* ☐ *Change of crop* ☐ *Change of variety* ☐ *Change of planting pattern* ☐ *Plant disease* ☐ *other* _____
Equipment for uprooting	☐ *Felling with chainsaws* ☐ *Uprooting with excavators* ☐ *other* _____

Intended use of the plantation

Check how do you manage/use the plantation removal wood for each part of the plantation.

Check as many as apply

	Roots	Stems	Thick branches	Fine branches
Abandoned at field side	☐	☐	☐	☐
Burnt in fires at open air	☐	☐	☐	☐
Mulched as soil cover	☐	☐	☐	☐
Shredding and integration to soil	☐	☐	☐	☐
Firewood	☐	☐	☐	☐
Energy	☐	☐	☐	☐
_____	☐	☐	☐	☐

Specify the minimum diameter you consider for "thick" branches used as firewood (mm):	_____
Cost for removing 1 hectare when contracted to a company (€/ha)	_____

Plantation Removal Measurement

Date of Measurement (DD/MM/YY)	_____
Mode of measurement *Specify the method used for pruning measurement*	*Per tree*  ☐ *One or several single trees selected. Biomass per tree collected manually and weighted* Number of trees: _____

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Per parcel (e.g. 100 m2) in bags

☐ *One or several parcels selected. Each parcel several trees. Biomass per parcel collected manually and weighted*

Total Area measured (m2): _____

Per several rows (or in whole field)


☐ *On large parcel, or a whole field is selected. Biomass collected and loaded to a truck. Weight of the load taken in a scale for trucks*

Total Area measured (m2): _____

☐ *Other (provide photograph if available)* _____

Amount of plantation removed

Specify the tonnes per hectare of plantation removed and measured. Specify the moisture content if available. Check which part of plantation is measured and the form of the material-"A":whole piece, "B":chips

Check as many as apply

	Part of plantation measured	Amount (t/ha)	Moisture content (%)	Form of material: A	Form of material: B
Full tree (high content of soil)	☐	_____	_____	☐	☐
Full tree (low content of soil; roots have been cleaned/shaked)	☐	_____	_____	☐	☐
Only tree base and root (high content of soil)	☐	_____	_____	☐	☐
Only tree base and root (low content of soil-parts have been	☐	_____	_____	☐	☐
Only aereal part (stem+branches)	☐	_____	_____	☐	☐
Only stem	☐	_____	_____	☐	☐
Only branches	☐	_____	_____	☐	☐
Only stem + thick branches	☐	_____	_____	☐	☐
_____	☐	_____	_____	☐	☐

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Losses of biomass after harvesting	*(%):* _____ *or (tonnes/ ha):* _____

The purpose of the research is related to the objectives of the project "uP_running - Take-off for sustainable supply of woody biomass from agrarian pruning and plantation removal.

☐ *Please check if you agree*

Personal data will be treated in accordance to the EU Directive 95/46/EC. Data exchange between the project partners via project intranet or encrypted document.

Data will be stored in the project intranet during the projetc lifetime. The information will be used only for the project purposes

Therefore, with the signature "I confirm that my participation is voluntary and I allow the publication of this data via the uP_running obervatory".

_____

(Signature)

Do you want to be publicly acknowledged? ☐ *Yes* ☐ *No*

Do you have photographic material that can be provided? ☐ *Yes* ☐ *No*

If yes, send them to karampinis@certh.gr

**1: uP_running observatory won't display the exact position of your field, but will choose a point in a 5 km radius around. The aim is to mark the area, not the exact point of your field*

The majority of images provided on this questionaire is derived from EuroPruning deliverable report D3.1 (available at www.europruning.eu)

Additional Questions (Optional)

Previous Plantation Removal on the same field

Have you performed before uprooting operations on the same field?	☐ *Yes* ☐ *No*
If yes, was the previous crop the same as the one you are currently removing?	☐ *Yes* ☐ *No*
If yes, how do you compare the volume of wood generated from this uprooting compared to the previous?	☐ *Much less than the previous* ☐ *Much more than the previous* ☐ *Less than the previous* ☐ *More than the previous* ☐ *Same as the previous*
If you got more/less wood in the previous uprooting, why do you think this is the case?	☐ *Different variety* ☐ *Different age of trees* ☐ *Different level of fertilization* ☐ *other* _____ ☐ *Different level of irrigation*

Pruning Operations

Pruning Operations and Machinery	Use of Prunings	Operations	
Specify the use of prunings and the operations performed typically in your field	A) Shredded to the soil	A.1) Tractor with mulcher to shreder wood into small pieces on the ground	☐
		A.2) Manual windrowing + A.1	☐

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

		A.3) Haulage with tractor (wth forklift/clamp) and shredding at field side	☐
		A.4) Manual windrowing + A.3	☐
	B) Disposed (burnt/abandoned)	B.1) Haulage with tractor (with forklift/clamp and burning in piles	☐
		B.2) Manual windrowing + B.1	☐
		B.3) Haulage with tractor (with forklift/clamp) and dump nearby the field	☐
		B.4) Manual windrowing + B.3	☐
	C) Collected	C.1) Thick branches crosscut and collected	☐
		C.2) Mechanised collector (pruning harvester)	☐
		C.3) Manual windrowing + C.2	☐
		C.4) Haulage with tractor (with forklift/clamp) and treatment/load at field side	☐
		C.5) Manual windrowing + C.4	☐
	Other (please describe): _____		☐

Pruning Agronomic Practices and Management of the residues

Specify the pruning type, frequency, season and the time and cost spent on pruning operations performed typically in your field

**2: Only information about the management of the pruning residues, not the operation itself*

**3: Include here personnel and machinery costs as a whole cost in €/ha*

Agronomic Practices					Management of the Pruning Residues		
Pruning Type	Frequency			Season	Work spent on pruning management*2		Typical cost for management of pruning*3
	#of times	Per	#of year(s)		#of persons working	Time Required (h/ha)	(€/ha)
Maintenance	____	☐	____	____	____	____	____
Structuring	____	☐	____	____	____	____	____
Grafting	____	☐	____	____	____	____	____
Removal of old branches	____	☐	____	____	____	____	____
Topping	____	☐	____	____	____	____	____
Blooming	____	☐	____	____	____	____	____
____	____	☐	____	____	____	____	____

Do you think your crop is too vigorous?
Specify how vigorous is the crop (trees producing much wood)

☐ *Not at all* ☐ *Low* ☐ *Typical for this crop* ☐ *Large* ☐ *Vigorous variety*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Do you think that your field produces more or less prunings than other local fields? *Specify how much wood is produced from your corps in comparison with other fields*	☐ *Much less than others* ☐ *Less than others* ☐ *Same with others*	☐ *More than others* ☐ *Much more than others*
Why does your field produce less/more pruning?	☐ *Different Variety* ☐ *I prefer doing soft/severe pruning* ☐ *I can't dedicate sufficient time/I dedicate much time*	☐ *I can't dedicate sufficient resources/I do dedicate much resources* ☐ *Soil* ☐ *Irrigation* ☐ *other* _____

References-External links: Provide references on which the information is based on or highlight any comments

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

ANNEX III – TEMPLATE FOR RECORDING "EXPERIENCES" ON MECHANIZED COLLECTION OF PRUNINGS

Questionnaire for Mechanized Collection- Prunings

Contact Data

Name: _____ e-mail: _____ Phone no: _____

Profession: _____ Country: _____

Field Data (Each questionnaire refers to one crop species cultivated per field)

Location of field*1 *Location of the farm or X/Y coordinates with decimal-degrees*	Municipality: _____ X/Y: _____
Field size (ha)	_____
Crop Species	☐ *Olives* ☐ *Vineyards* ☐ *Apples* ☐ *Pears* ☐ *Peaches* ☐ *Apricot* ☐ *Nectarine* ☐ *Plum* ☐ *Cherries* ☐ *Oranges* ☐ *Tangerines* ☐ *Lemons* ☐ *Grapefruit* ☐ *Hazelnuts* ☐ *Chestnuts* ☐ *Almonds* ☐ *Other (provide photograph if available)* _____
Variety of crop	_____
Age of crop	_____
Density of crop (trees/ha)	_____
Width between cultivated rows (m)	_____
Distance between trees (m)	_____
Crop form Crop forms for Vineyard	   ☐ *Vase* ☐ *Espalier* ☐ *Marquee* ☐ *Other (provide photograph if available)* _____
Crop forms for Olive	 ☐ *Ancient olives*  ☐ *Vase (1 stem)*  ☐ *Vase (2-3 stems from soil)*  ☐ *Bush (intensive 250-600 trees/ ha)*  ☐ *Superintensive (> 1500 trees/ ha)* ☐ *Other (provide photograph if available)* _____

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Crop forms for fruit trees	 ☐ *Natural*  ☐ *Vase*  ☐ *Bush/ Globe (very small trees)*  ☐ *Spindle/ Pyramid*  ☐ *Palm/ Fan*  ☐ *Epsylon transversal* ☐ *Other (provide photograph if available)* _____
Slope (%)	_____
Soil Cover	 ☐ *Bare. No grass cover. Tillage several times per year*  ☐ *Seasonal ocurrence. Herbicides + mowing <50% soil cover*  ☐ *>50% grass cover. Mowed several times per year*  ☐ *100% Grass cover. Mowed several times per year* ☐ *Other (provide photograph if available)* _____
Crop Yield	
Average Crop yield (t/ha)	_____
Crop yield before measurement (t/ha) *Amount of product obtained for the year that the pruning measurement is performed in tonnes per hectare*	_____
Irrigation	☐ *rain fed* ☐ *partial irrigation* ☐ *fully irrigated*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Intensification degree *Specify the amount of fertilizer and pesticides*	☐ *organic* ☐ *low* ☐ *intermediate* ☐ *high*

Pruning Operations Performed

Type of pruning	☐ *Maintenance* ☐ *Grafting* ☐ *Structuring* ☐ *Topping* ☐ *Removal of old branches* ☐ *Blooming* ☐ *other* _____
Pruning Method	☐ *Only manually* ☐ *Mechanised pre-pruning + manual* ☐ *Fully mechanised*
Pruning Operations *Specify the pruning operations that are carried out* *Check as many as apply*	 ☐ *Manually. Shears*  ☐ *Assisted shears*  ☐ *Chainsaw/arm chainsaw*  ☐ *Pre-pruner: hedge trimmer*  ☐ *Pre-pruner: discs*  ☐ *Pre-pruning topping* ☐ *Other (provide photograph if available)* _____
Season of pruning *Check as many as apply*	☐ *January* ☐ *February* ☐ *March* ☐ *April* ☐ *May* ☐ *June* ☐ *July* ☐ *August* ☐ *September* ☐ *October* ☐ *November* ☐ *December*
Frequency of pruning	☐ *annual* ☐ *biannual* ☐ *biennial* ☐ *once per* ___ *years*

Mechanized Collection

Preparation of the field prior to harvesting	 ☐ *No preparation- prunings were left on the soil as they fall from tree*  ☐ *Centre- operators position prunings on the centre of the lane between tree rows*

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☐ *Centre alligned- operators position prunings in a specific position in centre (e.g. alligned with the direction of the row)*

☐ *Previous windrowing- a tractor with windrower is used prior pruning harvester*

☐ *Integrated windrower to the pruning machine*

☐ *Other (provide photograph if available)* _____

Harvesting methods *Check according to the figures below the harvesting method that is used for the pruning biomass*		
	Manual cross-cutting of firewood + gathering at field side	☐
	Forestry chipper towed by tractor + manual feeding	☐
	Hauling the branches + shredding/ chipping at field side	☐
	Hauling the branches + baling at field side	☐
	Harvest with mulcher/chipper in front	☐
	Harvest with mulcher/chipper at rear	☐
	Harvest with rear mulcher/ chipper and bin	☐
	Harvest with rear mulcher/chipper and big-bags	☐
	Automotive shredder/ chipper with rear trailer	☐
	Harvest with standard hay baler	☐
	Harvest with rear baler prepared for wood or tree branches	☐
	Pre-pruning integrated with collection and mulching/chipping	☐
	Pre-pruning integrated with collection and mulching/chipping in an automotive machine	☐
Other (please describe): _____ _____		☐

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Type of pruning treatment and model of machinery

Specify the method that prunings are treated based on the outcome product and manufacturer-model of each machinery (windrower, mulcher, shredder, chipper, baler) that is used if applicable

☐ *Windrower- Machines that allign biomass in a row*

Windrower (manufacturer-model): _____

☐ *Mulcher-big pieces. Machines that break the branches in big pieces. Normally they are an evolution from the typical muchers/cruchers utilised to leave the branches on the soil in pieces*

Mulcher (manufacturer-model): _____

☐ *Shredder-Produce finer material (hammers or hammers with a knife. Do not produce a clear cut)*

Shredder (manufacturer-model): _____

☐ *Chipper- Clean cut. Resembles the typical form of forest woodchips*

Chipper (manufacturer-model): _____

☐ *Round bale*

Baler (manufacturer-model): _____

☐ *Squared bale*

Baler (manufacturer-model): _____

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Processes' Specifications *Specify the specifications of the processes (manpower, gross working time, productivity, fuel consumption)* *Check as many as apply*	**Processes**		**Manpower (Nr of persons)**	**Gross Working time (hr/ha)**	**Productivity (t/ha or t/hr)**	**Fuel consumption (l/hr)**
	Manual Alignment	☐				
	Windrowing	☐				
	Integrated harvesting/ treatment	☐				
	Hauling	☐				
	Treatment at field side	☐				
	Disposal/ dumping of biomass	☐				

End product properties *Specify the properties (moisture, bulk density, particle size, ash) of the prunings after treatment and harvesting, if known*	Moisture (%)		Particle size	
	Bulk density (t/m3)		Ash content (%, dry basis)	

Losses of biomass after harvesting	(%): _____ or (tonnes/ ha): _____
Problems encountered due to the field	☐ Soil uneven ☐ Slope ☐ Stones ☐ *other* _____ ☐ Too much grass
Problems encountered by the machines	☐ Not suitable for the pruning ☐ Manouvering ☐ Unsuitable feeding system (biomass difficult to be conveyed) ☐ Too much soil particles with the biomass to be treated ☐ Problems in discharge ☐ *other* _____
Performance of the machinery	☐ The machinery was performing better than expected ☐ The machinery was performing normally- typical performance ☐ The machinery was underperforming

Value Chains	
Indicate if your experience is based on an isolated test or if it is based on an existing value chain:	☐ My experience is just an experimental trial-machinery test ☐ My experience is part of an existing value chain

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

The purpose of the research is related to the objectives of the project "uP_running - Take-off for sustainable supply of woody biomass from agrarian pruning and plantation removal. Personal data will be treated in accordance to the EU Directive 95/46/EC. Data exchange between the project partners via project intranet or encrypted document. Data will be stored in the project intranet during the project lifetime. The information will be used only for the project purposes. Therefore, with the signature "I confirm that my participation is voluntary and I allow the publication of this data via the uP_running obervatory".	☐ *Please check if you agree* _____ *(Signature)*
Do you want to be publicly acknowledged?	☐ *Yes* ☐ *No*
Do you have photographic material that can be provided? *If yes, send them to karampinis@certh.gr*	☐ *Yes* ☐ *No*

**1: uP_running observatory won't display the exact position of your field, but will choose a point in a 5 km radius around. The aim is to mark the area, not the exact point of your field*

The majority of images provided on this questionaire is derived from EuroPruning deliverable report D3.1 (available at www.europruning.eu)

Additional Questions (not to be displayed in the Observatory)	
Do you think your crop is too vigorous? *Specify how vigorous is the crop (trees producing much wood)*	☐ *Not at all* ☐ *Low* ☐ *Typical for this crop* ☐ *Large* ☐ *Vigorous variety*
Do you think that your field produces more or less prunings than other local fields?	☐ *Much less than others* ☐ *Less than others* ☐ *Same with others* ☐ *More than others* ☐ *Much more than others*
Why does your field produce less/more pruning?	☐ *Different Variety* ☐ *I prefer doing soft/severe* ☐ *I can't dedicate sufficient time/I dedicate much time* ☐ *I can't dedicate sufficient resources/I do dedicate much resources* ☐ *Soil* ☐ *Irrigation* ☐ *other* _____
Specify the minimum diameter you consider for "thick" branches used as firewood (mm):	_____

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

References-External links: Provide references on which the information is based on or highlight any comments

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

ANNEX IV – TEMPLATE FOR RECORDING "EXPERIENCES" ON MECHANIZED COLLECTION OF PLANTATION REMOVAL BIOMASS

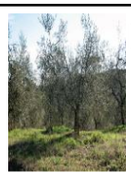
Questionnaire for Mechanized Collection- Plantation Removal

Contact Data

Name: _____ e-mail: _____ Phone no: _____

Profession: _____ Country: _____

Field Data (Each questionnaire refers to one crop species cultivated per field)

Location of field*1 *Location of the farm or X/Y coordinates with decimal-degrees*	Municipality: _____ X/Y: _____
Field size (ha)	_____
Crop Species	☐ *Olives* ☐ *Vineyards* ☐ *Apples* ☐ *Pears* ☐ *Peaches* ☐ *Apricot* ☐ *Nectarine* ☐ *Plum* ☐ *Cherries* ☐ *Oranges* ☐ *Tangerines* ☐ *Lemons* ☐ *Grapefruit* ☐ *Hazelnuts* ☐ *Chestnuts* ☐ *Almonds* ☐ *Other (provide photograph if available)* _____
Variety of crop	_____
Age of crop	_____
Density (trees/ha)	_____
Width between rows (m)	_____
Distance between trees (m)	_____
Crop form Crop forms for Vineyard	   ☐ *Vase* ☐ *Espalier* ☐ *Marquee* ☐ *Other (provide photograph if available)* _____
Crop forms for Olive	 ☐ *Ancient olives*  ☐ *Vase (1 stem)*  ☐ *Vase (2-3 stems from soil)*  ☐ *Bush (intensive 250-600 trees/ ha)*  ☐ *Superintensive (> 1500 trees/ ha)* ☐ *Other (provide photograph if available)* _____

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Crop forms for fruit trees	 ☐ *Natural*  ☐ *Vase*  ☐ *Bush/ Globe (very small trees)*  ☐ *Spindle/ Pyramid*  ☐ *Palm/ Fan*  ☐ *Epsylon transversal* ☐ *Other (provide photograph if available)* _____
Slope (%)	_____
Soil Cover	 ☐ *Bare. No grass cover. Tillage several times per year*  ☐ *Seasonal ocurrence. Herbicides + mowing <50% soil cover*  ☐ *>50% grass cover. Mowed sevferal times per year*  ☐ *100% Grass cover. Mowed several times per year* ☐ *Other (provide photograph if available)* _____
Crop Yield	
Average Crop yield (t/ha)	_____
Irrigation	☐ *rain fed* ☐ *partial irrigation* ☐ *fully irrigated*
Intensification degree *Specify the amount of fertilizer and pesticides*	☐ *organic* ☐ *low* ☐ *intermediate* ☐ *high*
Plantation Removal Information	
Were the plants removed at a typical age for such crops?	☐ *Yes* ☐ *Older than typical* ☐ *Younger than typical* ☐ *Don't know*
Reason for plantation removal	☐ *Old age (renovation)* ☐ *Change of crop* ☐ *Change of variety* ☐ *Change of planting pattern* ☐ *Plant disease* ☐ *other* _____

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Equipment for plantation removal	☐ *Felling with chainsaws* ☐ *Uprooting whole tree with excavators* ☐ *Shredding the whole tree (shredder mounted in front of tractor)* ☐ *other* _____

Intended use of the plantation *Check how do you manage/use the plantation removal wood for each part of the plantation.* *Check as many as apply*	Roots	Stems	Thick branches	Fine branches
Abandoned at field side	☐	☐	☐	☐
Burnt in fires at open air	☐	☐	☐	☐
Mulched as soil cover	☐	☐	☐	☐
Shredding and integration to soil	☐	☐	☐	☐
Firewood	☐	☐	☐	☐
Energy	☐	☐	☐	☐
_____	☐	☐	☐	☐

Specify the minimum diameter you consider for "thick" branches used as firewood (mm):	_____
Cost for removing 1 hectare when contracted to a company (€/ha)	_____

Mechanized Collection

Plantation Removal Method *Check according to the figures below the uprooting method that is used.*		
	Aereal part of the tree felled by operators with a chainsaw	☐
	Aereal part of the tree felled with a machinery	☐
	Only roots treated with an excavator/tractor with shovel	☐
	Full tree up-rooted with excavator	☐

Preparation of the wood prior to treatment *Specify the method that plantation removal are prepared prior to treatment*	 ☐ *No preparation- trees are felled/ up-rooted and left to be gathered by chipper*
	 ☐ *Trees in piles*

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☐ *Roots in piles*

☐ *Trees are felled/up-rooted and left to be gathered by chipper*

☐ *Other (provide photograph if available)* _____

In case roots were collected for producing wood, did the operators shake the whole tree/ root stocks to detach soil before piling or treatment?

☐ *Yes*

☐ *No*

Specifications of preparation processes of biomass

Specify the manpower, time, productivity, fuel consumption, needed in order to prepare the plantation removal for treatment

Check as many as apply

Processes		Manpower (Nr of persons)	Gross Working time (hr/ha)	Productivity (t/ha or t/hr)	Fuel consumption (l/hr)
Up-rooting whole trees (tree+ root)	☐	_____	_____	_____	_____
Felling the trees	☐	_____	_____	_____	_____
Up-rooting roots	☐	_____	_____	_____	_____
Preparing piles	☐	_____	_____	_____	_____

Type of plantation treatment and model of machinery

Specify the method that plantation removed are treated based on the outcome product and manufacturer-model of each machinery (crusher, shredder, chipper) that is used if applicable

Specify the theoretical-from "catalog" volume of plantation per hour that can be processed by the machinery

Check as many as apply

☐ *Crusher- Large pieces after breaking tree/roots*

Crusher (manufacturer-model): _____

Theoretical Capacity of machinery (m3/h): _____

☐ *Shredder- Produce finer material (hammers or knives, not clean cut*

Shredder (manufacturer-model): _____

Theoretical Capacity of machinery (m3/h): _____

☐ *Chipper- Clean cut. Resembles the typical form of forest woodchips*

Chipper (manufacturer-model): _____

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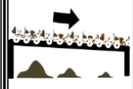
Theoretical Capacity of machinery (m3/h): _____

	Processes			Manpower (Nr of persons)	Productivity (t/ha or t/hr)	Fuel consumption (l/hr)
Treatment Methods *Check according to the figures below the treatment method that is used for the plantation removal biomass.* *Check the process used for either "A": aerial part of the tree, "R": roots or "B": when both aerial part and roots (all tree) is processed together. If A and R are collected and processed separately, check the corresponding boxes for each case.*		Treatment of material with primary crushers	A ☐			
			R ☐			
			B ☐			
		Treatment of material with screening	A ☐			
			R ☐			
			B ☐			
		Treatment of material with shredders/ chippers	A ☐			
			R ☐			
			B ☐			
		Treatment of material with shredders/ chippers with horizontal feeding table	A ☐			
			R ☐			
			B ☐			
		Chipping of crunched pieces in a static chipper	A ☐			
			R ☐			
			B ☐			
	Other (please describe): _____ ☐					

End product properties

Specify the properties (moisture, bulk density, particle size, ash) of the plantations removed after treatment and harvesting, if known

Moisture (%) _____ Particle size _____

Bulk density (t/m3) _____ Ash content (%, dry basis) _____

Losses of biomass after harvesting

(%): _____ or (t/ha): _____

Problems encountered due to the field

☐ Soil uneven ☐ Slope

☐ Stones ☐ *other* _____

☐ Too much grass

Problems encountered by the machines

☐ Not suitable for the biomass ☐ Manouvering

☐ Unsuitable feeding system (biomass difficult to be conveyed) ☐ Too much soil particles with the biomass to be treated

☐ Problems in discharge ☐ *other* _____

Performance of the machinery

☐ The machinery was performing better than expected

☐ The machinery was performing normally- typical performance

☐ The machinery was underperforming

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Value Chains

Indicate if your experience is based on an isolated test or if it is based on an existing value chain:	☐ My experience is just an experimental trial-machinery test ☐ My experience is part of an existing value chain

The purpose of the research is related to the objectives of the project "uP_running - Take-off for sustainable supply of woody biomass from agrarian pruning and plantation removal.

☐ *Please check if you agree*

Personal data will be treated in accordance to the EU Directive 95/46/EC. Data exchange between the project partners via project intranet or encrypted document.

Data will be stored in the project intranet during the projetc lifetime. The information will be used only for the project purposes.
Therefore, with the signature "I confirm that my participation is voluntary and I allow the publication of this data via the uP_running obervatory"

_____

(Signature)

Do you want to be publicly acknowledged? ☐ *Yes* ☐ *No*

Do you have photographic material that can be provided? ☐ *Yes* ☐ *No*

If yes, send them to karampinis@certh.gr

**1: uP_running observatory won't display the exact position of your field, but will choose a point in a 5 km radius around. The aim is to mark the area, not the exact point of your field*

The majority of images provided on this questionaire is derived from EuroPruning deliverable report D3.1 (available at www.europruning.eu)

Additional Questions (Optional)

Previous Plantation Removal on the same field

Have you performed before plantation removal operations on the same field?	☐ *Yes* ☐ *No*
If yes, was the previous crop the same as the one you are currently removing?	☐ *Yes* ☐ *No*
If yes, how do you compare the volume of wood generated from this plantation removal compared to the previous?	☐ *Much less than the previous* ☐ *Less than the previous* ☐ *Same as the previous* ☐ *Much more than the previous* ☐ *More than the previous*
If you got more/less wood in the previous plantation removal, why do you think this is the case?	☐ *Different variety* ☐ *Different level of fertilization* ☐ *Different level of irrigation* ☐ *Different age of trees* ☐ *other* _____

Pruning Operations

Pruning Operations and Machinery	Use of Prunings	Operations	
Specify the use of prunings and the operations performed typically in your field	A) Shredded to the soil	A.1) Tractor with mulcher to shreder wood into small pieces on the ground	☐
		A.2) Manual windrowing + A.1	☐

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

	A.3) Haulage with tractor (wth forklift/clamp) and shredding at field side	☐
	A.4) Manual windrowing + A.3	☐
B) Disposed (burnt/abandoned)	B.1) Haulage with tractor (with forklift/clamp and burning in piles	☐
	B.2) Manual windrowing + B.1	☐
	B.3) Haulage with tractor (with forklift/clamp) and dump nearby the field	☐
	B.4) Manual windrowing + B.3	☐
C) Collected	C.1) Thick branches crosscut and collected	☐
	C.2) Mechanised collector (pruning harvester)	☐
	C.3) Manual windrowing + C.2	☐
	C.4) Haulage with tractor (with forklift/clamp) and treatment/load at field side	☐
	C.5) Manual windrowing + C.4	☐
Other (please describe): _____		☐

Pruning Agronomic Practices and Management of the residues

Specify the pruning type, frequency, season and the time and cost spent on pruning operations performed typically in your field

**2: Only information about the management of the pruning residues, not the operation itself*

**3: Include here personnel and machinery costs as a whole cost in €/ha*

	Agronomic Practices				Management of the Pruning Residues		
	Frequency				Work spent on pruning management*2		Typical cost for management of pruning*3
Pruning Type	#of times	Per	#of year(s)	Season	#of persons working	Time Required (h/ha)	(€/ha)
Maintenance	____	☐	____	_____	_____	_____	_____
Structuring	____	☐	____	_____	_____	_____	_____
Grafting	____	☐	____	_____	_____	_____	_____
Removal of old branches	____	☐	____	_____	_____	_____	_____
Topping	____	☐	____	_____	_____	_____	_____
Blooming	____	☐	____	_____	_____	_____	_____
_____	____	☐	____	_____	_____	_____	_____

Do you think your crop is too vigorous?
Specify how vigorous is the crop (trees producing much wood)

☐ *Not at all* ☐ *Low* ☐ *Typical for this crop* ☐ *Large* ☐ *Vigorous variety*

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

Do you think that your field produces more or less prunings than other local fields?	☐ *Much less than others* ☐ *Less than others* ☐ *Same with others* ☐ *More than others* ☐ *Much more than others*
Why does your field produce less/more pruning?	☐ *Different Variety* ☐ *I prefer doing soft/severe pruning* ☐ *I can't dedicate sufficient time/I dedicate much time* ☐ *I can't dedicate sufficient resources/I do dedicate much resources* ☐ *Soil* ☐ *Irrigation* ☐ *other* _____

References-External links: Provide references on which the information is based on or highlight any comments

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691748.

ANNEX V – TEMPLATE FOR RECORDING "EXPERIENCES" ON APPR BIOMASS VALUE CHAINS

Questionnaire for Value Chains-Prunings and Plantation Removal

Contact Data

Name: _____ e-mail: _____ Phone no: _____

Company/ Organisation: _____ Country: _____

Website (of the company or the APPR initiative): _____ Logo of the company: _____

Value Chains: Prime Mover and Main Characteristics

Stakeholder Type	☐ *Farmer* ☐ *Agrarian Cooperative* ☐ *Public Institution* ☐ *Agro-Services Company* ☐ *Final Consumer* ☐ *Farmer Association* ☐ *ESCO* ☐ *Agro Industry* ☐ *Pellet Producer* ☐ *Biomass Supplier* ☐ *Other (please describe):* _____
Location of Prime Mover *Location of the prime mover or X/Y coordinates with decimal-degrees*	Municipality: _____ X/Y: _____
Type of Residue used in the Value Chain	☐ *Pruning* ☐ *Plantation Removal* ☐ *Both*
Crop Species used in the Value Chain *More than one species can be checked*	☐ *Olives* ☐ *Vineyards* ☐ *Apples* ☐ *Pears* ☐ *Peaches* ☐ *Apricot* ☐ *Nectarine* ☐ *Plum* ☐ *Cherries* ☐ *Oranges* ☐ *Tangerines* ☐ *Lemons* ☐ *Grapefruit* ☐ *Hazelnuts* ☐ *Chestnuts* ☐ *Almonds* ☐ *Other (provide photograph if available)* _____
Total Plantation Area involved in the Value Chain (ha)	_____
Typical APPR biomass production (tonnes/year)	_____
Start Date of the APPR value chain (Month-Year)	_____

Key Success Factors in Value Chain

Keys of success

Select the key success factors of your value chain in scale 0-3. Then indicate the 3 most crucial factors.

Check as many as apply

Factor Group	Description	Check the influence in success: (0)- Not relevant; (1)- May have influenced; (2)- Important for success; (3)- It was crucial; (?)- Unknown					Check the 3 most crucial factors in WHOLE table
		0	1	2	3	?	
Project	*There was an important effort in determing the feasibility and planning prior starting the business*	☐	☐	☐	☐	☐	☐
	The implementation of the chain considered the target consumers and their quality requirements	☐	☐	☐	☐	☐	☐
	Market was analysed, and contracts prepared prior start	☐	☐	☐	☐	☐	☐

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	other	☐	☐	☐	☐	☐	☐
Product Quality	Biomass was labelled or certified according to existing standards	☐	☐	☐	☐	☐	☐
	The quality of the biomass product is object of an assurance process	☐	☐	☐	☐	☐	☐
	other	☐	☐	☐	☐	☐	☐
Community	Permanent crop plantations are quite extended. The use of agrarian residues for biomass was regarded by community as quite beneficial	☐	☐	☐	☐	☐	☐
	There was an intense information campaign to promote social acceptance	☐	☐	☐	☐	☐	☐
	Agrarian residues utilisation for energy was subject of debate by policy makers and/ or by social groups in months, or years before the investment was done	☐	☐	☐	☐	☐	☐
	other	☐	☐	☐	☐	☐	☐
Market	There was already a mature market of biomass	☐	☐	☐	☐	☐	☐
	There was a shortage of usual biomass resources	☐	☐	☐	☐	☐	☐
	There was a high increase of biomass demand (e.g. new power plants opened, increase of household biomass heating)	☐	☐	☐	☐	☐	☐
	The price of biomass locally rose, and made biomass residues of economic interest	☐	☐	☐	☐	☐	☐
	Target biomass market was stable and secure	☐	☐	☐	☐	☐	☐
	other	☐	☐	☐	☐	☐	☐
Local Capacities	There was a recent reconversion of a sector (mining; metal industry etc.) leading to a high need of re-orientate economic activities. Biomass was one of the targeted new economic activities	☐	☐	☐	☐	☐	☐
	There was already service companies/ persons with capacities to start new biomass chains on prunings/ plantation removal	☐	☐	☐	☐	☐	☐
	There was a campaign of information for biomass procurement	☐	☐	☐	☐	☐	☐
	Pruning and/ or agricultural residues were quite an issue in the course	☐	☐	☐	☐	☐	☐
	other	☐	☐	☐	☐	☐	☐
Pruning Management	The management of the pruning/ plantation removal is recognised to be expensive. Farmers found pruning for energy a good idea	☐	☐	☐	☐	☐	☐
	There were already experiences in mobilisation/ treatment of prunings/ plantation removal (pilot experience, etc.)	☐	☐	☐	☐	☐	☐
	The high density of permanent crops plantations in the area	☐	☐	☐	☐	☐	☐
	other	☐	☐	☐	☐	☐	☐
Regulation	There is strict regulation making compulsory treatment/ management of the residues	☐	☐	☐	☐	☐	☐
	Lobbying of stakeholder groups caused policy makers to promote changes in regulation	☐	☐	☐	☐	☐	☐
	other	☐	☐	☐	☐	☐	☐
Support	The subject of agrarian residues for energy was subject of new supporting measures	☐	☐	☐	☐	☐	☐
	Environmental regulations placed funds for subsidising partly pruning/ plantation removal collection	☐	☐	☐	☐	☐	☐
	The biomass consumption sector leading to pruning/ plantation removal utilisation was subject of recent support for expansion	☐	☐	☐	☐	☐	☐
	Availability of financial support (loan guarantees, green banks, etc.)	☐	☐	☐	☐	☐	☐
	There was a combined initiative supported by LIFE (or equivalent) programs (for GHG reduction, for improving competitiveness, etc.)	☐	☐	☐	☐	☐	☐
	other	☐	☐	☐	☐	☐	☐
	There were published plans and/or roadmaps for biomass utilisation (including pruning/ plantation removal utilisation)	☐	☐	☐	☐	☐	☐
	There were clear objectives in mind of policy makers for utilisation of pruning or agrarian residues	☐	☐	☐	☐	☐	☐

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Policy	*Existence of public initiative as pioneer in pruning/ plantation removal utilisation leading to investment in public infrastructure (e.g. private/ public consortium to use pruning for heating in public schools)*	☐	☐	☐	☐	☐	☐
	There were special taxation for the pruning/biomass (or agricultural residue) utilisation	☐	☐	☐	☐	☐	☐
	There was a public media campaign to boost utilisation of prunings/ biomass (e.g. in common by various city councils, or various countries)	☐	☐	☐	☐	☐	☐
	The use of pruning/plantation removal was integrated with other environmental/ public strategies (e.g. landscaping conservation of vineyard scenery)	☐	☐	☐	☐	☐	☐
	There was a ban to burn agricultural residues by open fires	☐	☐	☐	☐	☐	☐
	other _____	☐	☐	☐	☐	☐	☐
Logistic Chain	*There were pre-existent collaborations established between farmers sector and biomass consumers/ traders*	☐	☐	☐	☐	☐	☐
	The introduction of new technologies (machine, handling systems, logistic chain) supported the implementation of new chains	☐	☐	☐	☐	☐	☐
	Private investment for entrepreneurs was incentivised	☐	☐	☐	☐	☐	☐
	other _____	☐	☐	☐	☐	☐	☐

Short summary of the initiative (<100 words)

Summary of the value chain

_____

_____

_____

_____

_____

_____

_____

Actors and Roles in the Value Chain

Main actors and roles in the value chain

Check the main actors and their roles in the whole value chain of the collected biomass in your case. Please add any actors and actions that are not mentioned.

Check as many as apply

Actors	APPR Biomass Producer	Harvesting & Conditioning	Biomass 1st Haulage/ Transport	Pretreatment & Storage	Biomass Further Processing (e.g. Pelletizing)	Biomass Transport	Energy Conversion			
Farmer	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Agrarian Cooperative	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Agro Services Company	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Forest/ other biomass producer	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Agro Industry	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

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	Pellet Producer	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Biomass Intermediary/ distributor	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Energy Service Company (ESCO)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Biomass Consumer/ Energy User	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	_____	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	_____	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	_____	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Fuel Specifications	
Final form of Biomass prior to Exploitation	☐ *Bales of branches* ☐ *Wood chips* ☐ *Hog fuel-Shredded* ☐ *Pellets* ☐ *Other (please describe):* _____
Max Content of Moisture (% a.r.)	_____
Max Content of Ash (% d.b.)	_____
Min LHV (kj/kg a.r.)	_____
Value Chain Details and Prices of fuels	
End-users	☐ *Self-consumption* ☐ *Industrial heating* ☐ *Public-private buildings* ☐ *Distributed heat networks* ☐ *Biomass to Market* ☐ *Other (please describe):* _____
Distance between biomass production and its final use (km)	_____
Storage options	☐ *On-farm storage* ☐ *Intemediate storage prior transporting to end user* ☐ *Direct delivery and storage at final user* ☐ *No storage*

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Ownership of the APPR harvesting machinery	☐ *Farmer* ☐ *Farmer's community* ☐ *Leasing* ☐ *Municipality-public* ☐ *3rd party- private* ☐ *Other (please describe):* _____
Prices of fuels sold to final consumers	☐ *Price of APPR biomass (€/t):* _____ ☐ *Price of regular woodchips (€/t):* _____ ☐ *Price of ENPLUS pellets (bulk- €/t):* _____ ☐ *Price of domestic heating gasoil (€/l):* _____ ☐ *other* _____ _____

Have you filled the questionnaire about mechanized pruning/plantation removal? ☐ *Yes* ☐ *No*

If yes, please provide the name or e-mail you have used on that questionnaire: _____

The purpose of the research is related to the objectives of the project "uP_running - Take-off for sustainable supply of woody biomass from agrarian pruning and plantation removal.

Personal data will be treated in accordance to the EU Directive 95/46/EC. Data exchange between the project partners via project intranet or encrypted document.

Data will be stored in the project intranet during the project lifetime. The information will be used only for the project purposes.

Therefore, with the signature "I confirm that my participation is voluntary and I allow the publication of this data via the uP_running obervatory".

☐ *Please check if you agree*

_____

(Signature)

Do you want to be publicly acknowledged? ☐ *Yes* ☐ *No*

Do you have photographic material that can be provided? ☐ *Yes* ☐ *No*

If yes, send them to karampinis@certh.gr

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References-External links: Provide references on which the information is based on or highlight any comments

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DISSEMINATION POTENTIAL (TO NOT BE SUBMITTED TO THE EUROPEAN COMMISSION)

To be filled by the DLV responsible

What's the confidentiality degree of this deliverable?	☐ Total	☐ Partly	■ Public

Being "Partly" the confidentiality, what are the results that might be disseminated?
1
2
3

Main stakeholders to be addressed by the results of the deliverable			
Name	Type	Sector	Contribution to the project
1	Farmers	Agriculture	Replication of field measurement, provision of data
2	Agricultural equipment producers	Agriculture	Provision of data from machinery demonstrations
3	Biomass end users, transforms, other value chain actors	Energy	Provision of data from existing value chains

Main events related to the results of the deliverable			
Title	Date	Press release	Target audience
1	January 2017	Information about public release of Observatory and guidelines for field measurements / templates on field potential of APPR	Farmers, agricultural cooperatives, etc.

		biomass.		
2				
3				
Dissemination tools: what short of materials can be created to contribute to disseminate the results?				
☐ Photographs	☐ Video	☐ Power point	☐ Papers	☐ Poster
■News for project website	☐ Networking opportunities	☐ Training course	☐ Seminar	■Social network
Potential Paper				
Title	Authors			
Abstract / Public summary (500 words)				
Other dissemination suggestion or comments from the DLV authors				