



**AGENT-BASED
SUPPORT TOOL FOR
THE DEVELOPMENT
OF AGRICULTURE POLICIES**

D1.2 Details and agreements for accessing the selected data sources



| | |
|---------------------|-------------------------------------|
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Executive Summary

Because the process of gaining access to non-publicly available data of interest of the researcher(s) willing to undertake an Impact Assessment (IA) of the (changes in) agricultural policy either at the national or international level might be significantly time-consuming, Deliverable 1.2 provides the researcher wishing to gain access to selected non-publicly available datasets with a few details on the administrative and bureaucratic processes she needs to undertake to complete the necessary requests for access. Therefore, Deliverable 1.2 hopes to help the research community in planning, and possibly speeding up, the process of acquiring (selected) non-publicly available datasets of possible interest, such that sufficient time and resources are allocated to this activity and the overall research effort might be more adequate and effective.

Deliverable 1.2 presents evidence of the need for relying on non-publicly available data for the modelling and the IA of (changes in the) agricultural policy, especially if undertaken at the EU or (whole) national level. Because of the scope and objectives of the AGRICORE Project, which foresees the implementation and demonstration of the AGRICORE suite in two national (UC2 and UC3) and one regional (UC1) Use Cases (UCs), the data required exceed those provided in the national or EU version of the FADN. The latter are frequently employed by agricultural economists in their modelling and IA of (changes in the) agricultural policy. The attribute of interest for the construction of the AGRICORE agent include also soil and climatic characteristics which, for instance, in Poland are not publicly available and obtaining access to them is demonstrably taking a long time and requiring significant effort.

Deliverable 1.2 has documented the extent to which the strong personal and professional relationships developed over time by reputable researchers, often involved in collaborative projects like the H2020 Project AGRICORE, facilitates gaining access to otherwise non-publicly available datasets. Despite the personal contact details of the people who were crucial in giving access to the data could not be shared in this Deliverable for obvious confidentiality and privacy reasons, the partners of the AGRICORE Consortium involved in retrieving the datasets described above remain available to reputable members of the scientific community to facilitate the successful completion of similar requests.

Abbreviations

| Abbreviation | Full name |
|--------------|---|
| AC | Autonomous Communities of Spain |
| AOI(s) | Attribute(s) of Interest |
| ARDIT | Agricultural Research Data Index Tool |
| ARMA | Agency for Restructuring and Modernisation of Agriculture |
| CAAND | Cooperativas Agroalimentarias de Andalucía |
| CER | Common Electronic Register |
| CSV | Comma Separated Values |
| EC | European Commission |
| ES | Economic Size |
| ESYRCE | Spanish Survey on Crops and Yields (by its Spanish acronym) |
| EU | European Union |
| FADN | Farm Accountancy Data Network |
| FSS | Farm Structure Survey |
| Hectares | ha |
| IA | Impact Assessment |
| IUNG | Institute of Soil Science and Plant Cultivation |
| MAPA | Ministry of Agriculture, Fisheries and Alimentation (by its Spanish acronym) |
| NMS(s) | New Member State(s) |
| OCA | Agrian Region Office (by its Spanish acronym) |
| RDP | Rural Development Programme |
| RECAN | Red Contable Agraria Nacional (by its Spanish acronym) |
| SIPEA | Sistema de Información de la producción ecológica en Andalucía (by its Spanish acronym) |
| SO | Standard Outputs |
| TF | Type of Farming |
| UC(s) | Use Case(s) |
| UTM | Universal Transverse Mercator |

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1 Introduction

Agricultural policy impact assessment (IA) and modelling has relied upon, and continues to do so, making use of a large quantity of data, from different sources. The AGRICORE Project provides a characterisation of the breadth and significant volume of data that a researcher, wishing to complete an IA of the (changes in) agricultural policy either at the national or international level, might be interested in using through Deliverables D1.3 to D1.7. These Deliverables will be compiled employing the Agricultural Research Data Index Tool (ARDIT), resulting from the work done in Task 1.9 which in the proposal foresaw the development of an "EU Index Tool", intended primarily to assist the user in the task of identifying proper data sources she might be interested in using for agricultural policy IA on the basis of the characterisation and ontology developed in Deliverable 1.1. The ARDIT will comprise the characterisations of both publicly and non-publicly accessible datasets which might be deemed of interest for agricultural policy IA and modelling.

Because the process of gaining access to non-publicly available data of interest of the researcher(s) might be significantly time-consuming, this Deliverable aims to provide the researcher wishing to gain access to selected non-publicly available datasets with a few details on the administrative and bureaucratic processes she needs to undertake to complete the necessary requests for access. Therefore, Deliverable 1.2 hopes to help the research community in planning, and possibly speeding up, the process of acquiring (selected) non-publicly available datasets of possible interest, such that sufficient time and resources are allocated to this activity and the overall research effort might be more adequate and effective. Besides reporting the details on how to acquire the European Union (EU) most frequently used in agricultural policy IA and modelling (i.e., the EU version of the Farm Accountancy Data Network (FADN)), because the AGRICORE Project is centred around three national Use Case(s), Deliverable 1.2 focuses on detailing the process of acquiring the non-publicly available datasets which have been deemed useful to employ the AGRICORE suite to evaluate the M11 measure "Ecologic agriculture" (i.e., assessing the environmental impacts of the olive sector in Andalusia (UC1)), the M10.1 measure "Agri-environment-climate commitments" (i.e., focusing mainly on the provision of ecosystem services and the environmental and climate impacts of agriculture (transformation) in Poland (UC2)) and the M6.1 measure "Start-up aid for young farmers" and its effects on Greek agriculture (UC3).

2 Access procedure to non-public EU data sources

2.1 European Farm Accountancy Data Network (EU-FADN)

Access to EU-FADN microdata requires an application process and subsequent approval by the group in charge of the data (DG-AGRI Unit C-3). Historically, this process has been quite lengthy and cumbersome for quantitative agricultural researchers who have initiated the procedure asking for access to the data. In fact, DG-AGRI is very concerned with the ability of prospective users of the data to ensure that they are kept private, securely on the premises of those employing them as well as that the confidential and anonymous nature of the information contained in the dataset is respected and preserved at all times. In turn, this has resulted in only a limited number of requests for access being accepted.

Beyond complying with all the technical, legal and security requirements established in the request, the fundamental problem is that not all the variables in the dataset are provided, but only a small part (in principle, up to 300 of the 4,882 variables available in the whole EU-FADN dataset) and only for a period of up to 10 years. In the case of AGRICORE, the restriction on the number of years is not relevant (since the aim is to produce a synthetic population that represents the population only in the last available year and the 2 or 3 preceding years). On the other hand, the restriction on the number of variables is relevant, since the AGRICORE model aims to cover almost any type of Farm Type and enterprise (crop or livestock) as well as the basic economic-financial component of the farm. The latter means that a large number of variables are required. To ensure that all the variables we request are strictly indispensable and to minimise the possibility of subsequent additional requests (with variables not initially requested but which turn out to be necessary), it has been decided to postpone the completion of the request for EU-FADN micro-data. This decision has been further reinforced by the fact that we have received information about the difficulties experienced in accessing FADN microdata by the other two sister projects of the AGRIMODELS cluster funded under the RUR-04-2018 call, including two consecutive request refusals.

However, the formal application is prepared and drafted, with data processing security mechanisms in place both at the level of hardware and software infrastructure. Also, procedures have been established for future access to data by the persons for whom authorisation is to be requested. All that remains is to manually select the variables to be requested in the corresponding Excel file. This selection is currently being finalised. For this purpose, and taking into account the list of attributes of interest (AOIs) for the AGRICORE agents, the mapping of those EU-FADN variables (selected by means of their individual FADN code) that can be used to generate the values for any of these AOIs has been carried out (see Table below). In the meantime, each UC is working with data from the respective national FADN datasets, analysing which additional variable might be needed as well as what groupings of variables could be made to obtain the maximum possible information from the ~300-400 EU-FADN variables that can finally be obtained.

Table 1 Mapping between FADN variables and some of the AGRICORE Agents' AOIs.

| AGENT AOI (and Type of Attribute) | USEFUL FADN VARIABLES | | | |
|--|---|----------------------------|----------------------------|----------------------------|
| Farm holding | | | | |
| Number of owners (Parameter) | <i>C_UR_10_P, C_UR_20_P</i> | | | |
| Economic size (State) | <i>A_TY_90_ES</i> | | | |
| Structure (State) | <i>A_TY_90_TF</i> | | | |
| Mechanisation level (State) | <i>D_OV_4010_V, D_AD_4010_V, D_DY_4010_V, D_IP_4010_V, D_S_4010_V, D_SA_4010_V, D_CV_4010_V</i> | | | |
| Regular workforce (State) | <i>C_UR_40_P, C_UR_40_Y1, C_UR_50_P, C_UR_50_Y1, C_PR_50_P, C_PR_50_Y1</i> | | | |
| Workforce management (Agromanagement decision) | <i>C_UC_60_Y1, C_PC_60_Y1, H_LM_1010_V</i> | | | |
| Contracted machinery (Agromanagement decision) | <i>H_LM_1020_V, H_LM_1030_V, H_LM_1040_V, H_LM_1050_V</i> | | | |
| Farm owner | | | | |
| Age (Parameter) | <i>C_UR_10_B, C_UR20_B</i> | | | |
| Gender (Parameter) | <i>C_UR_10_G, C_UR20_G</i> | | | |
| Farm manager | | | | |
| Age (Parameter) | <i>C_UR_10_B, C_UR_30_B, C_PR_70_B</i> | | | |
| Gender (Parameter) | <i>C_UR_10_G, C_UR_30_G, C_PR_70_G</i> | | | |
| Parcel | | | | |
| Location (Parameter) | <i>A_LO_40_N</i> | | | |
| Area (Parameter) | <i>B_UO_10_A, B_UT_20_A, B_US_30_A</i> | | | |
| Chemical management: total amount of manure (Agromanagement decision) | <i>H_SC_3034_V</i> | | | |
| Chemical management: ammonia amount (Agromanagement decision) | <i>H_SC_3032_Q, H_SC_3033_Q, H_SC_3030_V</i> | | | |
| Chemical management: nitrate amount (Agromanagement decision) | <i>H_SC_3031_Q</i> | | | |
| Land prince (Disturbance) | <i>H_FO_5071_V</i> | | | |
| Crop | | | | |
| Type (Parameter) | <i>I_FC_40320_TC_MD_V,</i> | <i>I_FC_40130_TC_MD_V,</i> | <i>I_A_40320_TC_MD_TA,</i> | <i>I_OV_40320_TC_MD_V,</i> |
| | <i>I_CV_40320_TC_MD_V,</i> | <i>I_A_40310_TC_MD_TA,</i> | <i>I_OV_40310_TC_MD_V,</i> | <i>I_CV_40310_TC_MD_V,</i> |
| | <i>I_A_40330_TC_MD_TA,</i> | <i>I_OV_40330_TC_MD_V,</i> | <i>I_CV_40330_TC_MD_V,</i> | <i>I_A_30200_TC_MD_TA,</i> |
| | <i>I_OV_30200_TC_MD_V,</i> | <i>I_CV_30200_TC_MD_V,</i> | <i>I_A_10120_TC_MD_TA,</i> | <i>I_OV_10120_TC_MD_V,</i> |
| | <i>I_CV_10120_TC_MD_V,</i> | <i>I_A_10605_TC_MD_TA,</i> | <i>I_OV_10605_TC_MD_V,</i> | <i>I_CV_10605_TC_MD_V,</i> |
| | <i>I_A_11220_TC_MD_TA,</i> | <i>I_A_10110_TC_MD_TA,</i> | <i>I_OV_10110_TC_MD_V,</i> | <i>I_CV_10110_TC_MD_V,</i> |
| | <i>I_A_50200_TC_MD_TA,</i> | <i>I_A_40130_TC_MD_TA,</i> | <i>I_OV_40130_TC_MD_V,</i> | <i>I_CV_40130_TC_MD_V,</i> |
| | <i>I_A_10220_TC_MD_TA,</i> | <i>I_OV_10220_TC_MD_V,</i> | <i>I_CV_10220_TC_MD_V,</i> | <i>I_A_10603_TC_MD_TA,</i> |
| | <i>I_OV_10603_TC_MD_V,</i> | <i>I_CV_10603_TC_MD_V,</i> | <i>I_A_50210_TC_MD_TA,</i> | <i>I_OV_50210_TC_MD_V,</i> |
| | <i>I_CV_50210_TC_MD_V,</i> | <i>I_A_10190_TC_MD_TA,</i> | <i>I_OV_10190_TC_MD_V,</i> | <i>I_CV_10190_TC_MD_V,</i> |

| | |
|---|--|
| | <i>I_A_10140_TC_MD_TA, I_OV_10140_TC_MD_V, I_CV_10140_TC_MD_V, I_A_1015_TC_MD_TA, I_OV_10150_TC_MD_V, I_CV_10150_TC_MD_V, I_A_30100_TC_MD_TA, I_OV_30100_TC_MD_V, I_CV_30100_TC_MD_V, I_A_10210_TC_MD_TA, I_OV_10210_TC_MD_V, I_CV_10210_TC_MD_V, I_A_40210_TC_MD_TA, I_OV_40210_TC_MD_V, I_CV_40210_TC_MD_V, I_A_11210_TC_MD_TA, I_OV_11210_TC_MD_V, I_CV_11210_TC_MD_V, I_A_50900_TC_MD_TA, I_A_30300_TC_MD_TA, I_A_40460_TC_MD_TA, I_OV_40460_TC_MD_V, I_CV_40460_TC_MD_V, I_A_10290_TC_MD_TA, I_OV_10290_TC_MD_V, I_CV_10290_TC_MD_V, I_A_10300_TC_MD_TA, I_OV_10300_TC_MD_V, I_CV_10300_TC_MD_V, I_A_40451_TC_MD_TA, I_OV_40451_TC_MD_V, I_CV_40451_TC_MD_V, I_A_10604_TC_MD_TA, I_OV_10604_TC_MD_V, I_CV_10604_TC_MD_V, I_A_10737_TC_MD_TA, I_OV_10737_TC_MD_V, I_CV_10737_TC_MD_V, I_A_40452_TC_MD_TA, I_OV_40452_TC_MD_V, I_CV_40452_TC_MD_V, I_A_10711_TC_MD_TA, I_OV_10711_TC_MD_V, I_CV_10711_TC_MD_V, I_A_10712_TC_MD_TA, I_OV_10712_TC_MD_V, I_CV_10712_TC_MD_V, I_A_40411_TC_MD_TA, I_OV_40411_TC_MD_V, I_CV_40411_TC_MD_V, I_A_10922_TC_MD_TA, I_OV_10922_TC_MD_V, I_CV_10922_TC_MD_V, I_A_10160_TC_MD_TA, I_OV_10160_TC_MD_V, I_CV_10160_TC_MD_V, I_A_40114_TC_MD_TA, I_OV_40114_TC_MD_V, I_CV_40114_TC_MD_V, I_A_40113_TC_MD_TA, I_OV_40113_TC_MD_V, I_CV_40113_TC_MD_V, I_A_20000_TC_MD_TA</i> |
| Irrigation volume (Agromanagement decision) | <i>I_A_40320_TC_MD_IR, I_A_40310_TC_MD_IR, I_A_40330_TC_MD_IR, I_A_30200_TC_MD_IR, I_A_10120_TC_MD_IR, I_A_10605_TC_MD_IR, I_A_10110_TC_MD_IR, I_A_40130_TC_MD_IR, I_A_10220_TC_MD_IR, I_A_10603_TC_MD_IR, I_A_50210_TC_MD_IR, I_A_10190_TC_MD_IR, I_A_10140_TC_MD_IR, I_A_10150_TC_MD_IR, I_A_30100_TC_MD_IR, I_A_10210_TC_MD_IR, I_A_40210_TC_MD_IR, I_A_11210_TC_MD_IR, I_A_40460_TC_MD_IR, I_A_10290_TC_MD_IR, I_A_10300_TC_MD_IR, I_A_40451_TC_MD_IR, I_A_10604_TC_MD_IR, I_A_10737_TC_MD_IR, I_A_40452_TC_MD_IR, I_A_10711_TC_MD_IR, I_A_10712_TC_MD_IR, I_A_40411_TC_MD_IR, I_A_10922_TC_MD_IR, I_A_10160_TC_MD_IR, I_A_40114_TC_MD_IR, I_A_40113_TC_MD_IR,</i> |
| Irrigation type (Agromanagement decision) | <i>A_OT_210</i> |
| Livestock | |
| Type (Parameter) Livestock units (State) | <i>J_CV_100_N, J_CV_210_N, J_CV_220_N, J_CV_240_N, J_CV_252_N, J_CV_269_N, J_CV_311_N, J_CV_319_N</i> |
| Purchase livestock (Agromanagement decision) | <i>J_PU_100_N, J_PU_100_V, J_PU_210_N, J_PU_210_V, J_PU_220_N, J_PU_220_V, J_PU_240_N, J_PU_240_V, J_PU_252_N, J_PU_252_V, J_PU_269_N, J_PU_269_V, J_PU_311_N, J_PU_311_V, J_PU_319_N, J_PU_319_V</i> |
| Sell livestock (Agromanagement decision) | <i>J_SA_100_N, J_SA_100_V, J_SA_210_N, J_SA_210_V, J_SA_220_N, J_SA_220_V, J_SA_240_N, J_SA_240_V, J_SA_252_N, J_SA_252_V, J_SA_269_N, J_SA_269_V, J_SA_311_N, J_SA_311_V, J_SA_319_N, J_SA_319_V</i> |
| Breed livestock (Agromanagement decision) | <i>J_SR_100_N, J_SR_100_V, J_SR_210_N, J_SR_210_V, J_SR_220_N, J_SR_220_V, J_SR_240_N, J_SR_240_V, J_SR_269_N, J_SR_269_V, J_SR_311_N, J_SR_311_V, J_SR_319_N, J_SR_319_V</i> |
| Slaughter livestock (Agromanagement decision) | <i>J_SS_100_N, J_SS_100_V, J_SS_210_N, J_SS_210_V, J_SS_220_N, J_SS_220_V, J_SS_240_N, J_SS_240_V, J_SS_252_N, J_SS_252_V, J_SS_269_N, J_SS_269_V, J_SS_311_N, J_SS_311_V, J_SS_319_N, J_SS_319_V</i> |
| Products | |
| Stocks (State) | <i>K_CV_330_Q, K_CV_330_V, J_CV_100_V, J_CV_210_V, J_CV_220_V, J_CV_240_V, J_CV_252_V, J_CV_269_V, J_CV_311_V, J_CV_319_V</i> |
| Production level (Agromanagement decision) | <i>I_PR_40320_TC_MD_Q, I_PR_40310_TC_MD_Q, I_PR_40330_TC_MD_Q, I_PR_30200_TC_MD_Q, I_PR_10120_TC_MD_Q, I_PR_10605_TC_MD_Q, I_PR_10110_TC_MD_Q, I_PR_40130_TC_MD_Q, I_PR_10220_TC_MD_Q, I_PR_10603_TC_MD_Q, I_PR_10190_TC_MD_Q, I_PR_10150_TC_MD_Q, I_PR_30100_TC_MD_Q, I_PR_10210_TC_MD_Q, I_PR_40210_TC_MD_Q, I_PR_11210_TC_MD_Q, I_PR_40460_TC_MD_Q, I_PR_10290_TC_MD_Q, I_PR_10300_TC_MD_Q, I_PR_40451_TC_MD_Q, I_PR_10604_TC_MD_Q, I_PR_10737_TC_MD_Q, I_PR_40452_TC_MD_Q, I_PR_10711_TC_MD_Q, I_PR_10712_TC_MD_Q, I_PR_40411_TC_MD_Q, I_PR_10922_TC_MD_Q, I_PR_10160_TC_MD_Q, I_PR_40114_TC_MD_Q, I_PR_40113_TC_MD_Q, I_PR_10140_TC_MD_Q, K_PR_330_Q,</i> |

| | |
|---------------------------------------|--|
| Sale prices (Disturbance) | I_SA_40113_TC_MD_Q, I_SA_40113_TC_MD_V, I_SA_40114_TC_MD_Q, I_SA_40114_TC_MD_V, I_SA_10160_TC_MD_Q, I_SA_10160_TC_MD_V, I_SA_10922_TC_MD_Q, I_SA_10922_TC_MD_V, I_SA_40411_TC_MD_Q, I_SA_40411_TC_MD_V, I_SA_10712_TC_MD_Q, I_SA_10712_TC_MD_V, I_SA_10711_TC_MD_Q, I_SA_10711_TC_MD_V, I_SA_40452_TC_MD_Q, I_SA_40452_TC_MD_V, I_SA_10737_TC_MD_Q, I_SA_10737_TC_MD_V, I_SA_10604_TC_MD_Q, I_SA_10604_TC_MD_V, I_SA_40451_TC_MD_Q, I_SA_40451_TC_MD_V, I_SA_10300_TC_MD_Q, I_SA_10300_TC_MD_V, I_SA_10290_TC_MD_Q, I_SA_10290_TC_MD_V, I_SA_40460_TC_MD_Q, I_SA_40460_TC_MD_V, I_SA_11210_TC_MD_Q, I_SA_11210_TC_MD_V, I_SA_40210_TC_MD_Q, I_SA_40210_TC_MD_V, I_SA_10210_TC_MD_Q, I_SA_10210_TC_MD_V, I_SA_30100_TC_MD_Q, I_SA_30100_TC_MD_V, I_SA_10150_TC_MD_Q, I_SA_10150_TC_MD_V, I_SA_10140_TC_MD_Q, I_SA_10140_TC_MD_V, I_SA_10190_TC_MD_Q, I_SA_10190_TC_MD_V, I_SA_50210_TC_MD_V, I_SA_10603_TC_MD_Q, I_SA_10603_TC_MD_V, I_SA_10220_TC_MD_Q, I_SA_10220_TC_MD_V, I_SA_40130_TC_MD_Q, I_SA_40130_TC_MD_V, I_SA_10110_TC_MD_Q, I_SA_10110_TC_MD_V, I_SA_10605_TC_MD_Q, I_SA_10605_TC_MD_V, I_SA_10120_TC_MD_Q, I_SA_10120_TC_MD_V, I_SA_30200_TC_MD_Q, I_SA_30200_TC_MD_V, I_SA_40330_TC_MD_Q, I_SA_40330_TC_MD_V, I_SA_40310_TC_MD_Q, I_SA_40310_TC_MD_V, I_SA_40320_TC_MD_Q, I_SA_40320_TC_MD_V, K_SA_330_Q, K_SA_330_V |
| Economic financial module | |
| Assets (State) | D_OV_1010_V, D_CV_1010_V, D_OV_1020_V, D_CV_1020_V, D_OV_1030_V, D_CV_1030_V, D_OV_1040_V, D_S_1040_V, D_SA_1040_V, D_CV_1040_V, D_OV_2010_V, D_S_2010_V, D_SA_2010_V, D_CV_2010_V, D_OV_3010_V, D_S_3010_V, D_SA_3010_V, D_CV_3010_V, D_OV_3020_V, D_AD_3020_V, D_DY_3020_V, D_S_3020_V, D_SA_3020_V, D_CV_3020_V, D_OV_3030_V, D_AD_3030_V, D_DY_3030_V, D_S_3030_V, D_SA_3030_V, D_CV_3030_V, D_OV_5010_V, D_S_5010_V, D_SA_5010_V, D_CV_5010_V, D_OV_7010_V, D_S_7010_V, D_SA_7010_V, D_CV_7010_V, D_OV_7020_V, D_AD_7020_V, D_DY_7020_V, D_S_7020_V, D_SA_7020_V, D_CV_7020_V, D_OV_8010_V, D_AD_8010_V, D_DY_8010_V, D_S_8010_V, D_SA_8010_V, D_CV_8010_V |
| Liabilities (State) | F_OV_1010_S, F_OV_1010_L, F_CV_1010_S, F_CV_1010_L, F_OV_1020_S, F_OV_1020_L, F_CV_1020_S, F_CV_1020_L, F_OV_1030_S, F_OV_1030_L, F_CV_1030_S, F_CV_1030_L, F_OV_2010_S, F_CV_2010_S, F_OV_3000_S, F_OV_3000_L, F_CV_3000_S, F_CV_3000_L, A_CL_130_C |
| Investments (Agromanagement decision) | D_IP_1040_V, D_IP_2010_V, D_IP_3010_V, D_IP_3020_V, D_IP_3030_V, D_IP_4010_V, D_IP_5010_V, D_IP_7010_V, D_IP_7020_V, D_IP_8010_V |
| Subsidies (Disturbance) | M_S_1150_FI_BU_N, M_S_1150_FI_BU_V, M_S_1400_FI_BU_V, M_S_2334_FI_BU_N, M_S_2334_FI_BU_V, M_S_3300_FI_BU_N, M_S_3300_FI_BU_V, M_S_3500_FI_BU_N, M_S_3500_FI_BU_V, M_S_3500_FI_BU_N, M_S_3500_FI_BU_V, M_S_9000_FI_BU_N, M_S_9000_FI_BU_V, M_AI_10000_FI_BU_T, M_AI_10100_FI_BU_N, M_AI_10100_FI_BU_T, M_AI_10200_FI_BU_N, M_AI_10200_FI_BU_T, M_AI_10210_FI_BU_N, M_AI_10210_FI_BU_T, M_AI_10220_FI_BU_N, M_AI_10220_FI_BU_T, M_AI_10300_FI_BU_N, M_AI_10300_FI_BU_T |
| Taxes (Disturbance) | E_TX_60_T, G_VA_1010_C, G_VA_1010_NI, G_VA_1010_I, G_VA_1020_C, G_VA_1020_NI, G_VA_1020_I |
| Input costs (Disturbance) | H_SL_2010_V, H_SL_2020_V, H_SL_2080_V, H_SL_2090_V, H_SC_3010_V, H_SC_3020_V, H_SC_3040_V, H_SC_3090_V, H_FO_5010_V, H_FO_5020_V, H_FO_5030_V, H_FO_5040_V, H_FO_5051_V, H_FO_5055_V, H_FO_5061_V, H_FO_5062_V, H_FO_5070_V, H_FO_5080_V, H_FO_5090_V |

3 Access procedure to non-public data sources employed to prepare the model for the UCs

3.1 UC1 - M11 Ecologic agriculture in Andalusia

3.1.1 Red Contable Agraria Nacional (RECAN) - Spanish branch of the FADN

The National Farm Accountancy Network for Spain (RECAN, by its Spanish acronym) is an instrument for assessing the income of agricultural holdings and the impact of agricultural policy (reforms) on them. It is governed by the European Regulation (RI/CC 1680 v4) based on Commission Implementing Regulation (EU) 2015/220 of 3 February 2015 laying down rules for the application of Council Regulation (EC) No 1217/2009 setting up a network for the collection of accountancy data on the incomes and business operation of agricultural holdings in the EU. Therefore, the RECAN applies the same accounting principles established for all the countries of the EU, resulting in the complete and consistent source of microdata on Spanish farms, harmonised with the rest of the EU countries.

The RECAN sample comprises an average of 8,500 farms (8,179 farms in 2004). A "quota sample" is used to improve the representativeness of the otherwise non-random sampling, since the selection procedure relies on recruiting agricultural entrepreneurs through the Accountancy Offices collaborating with the Ministry of Agriculture, Fisheries and Alimentation (MAPA). Each holding in the sample represents a group of farms in the population by means of its "weighting coefficient", calculated within a Sampling Plan that must be approved by the RECAN National Committee.

These weighting coefficients, also known as raising factors, allow extrapolating the data of the sample holdings to the whole population under investigation in the National Farm Accountancy Network. The holdings in the sample and in the population are stratified in accordance with the following classification variables:

1. Autonomous Communities (AC) - NUTS 2 level
2. Economic Size classes (ES)
3. Type of Farming (TF)

The calculation of the weighting coefficients is carried out according to the principle of simple expansion: the weight of each farm in the sample is assigned according to the number of farms that it represents within the sample. Thus, for each stratum in an AC, the weight of the holdings of a given ES interval and a given grouping of TFs, is calculated using the following expression:

$$\text{Weight} = \frac{\text{No. of holdings in the Agricultural Farm Structure Survey}}{\text{No. of holdings in the RECAN sample}}$$

This particular system of weights is considered optimal for the calculation of averages per holding, but not for absolute values (e.g., hectares or heads of livestock by crop or livestock species), which are obtained from other types of surveys such as the Farm Structure Survey (FSS).

Access to RECAN microdata was a key point for the development of UC 1, focusing on the conversion to and maintenance of organic olive cultivation practices in the region of Andalusia (NUTS Code ES61). These microdata would allow the extraction of probability distributions of some attributes of interest of the sample of farms mainly dedicated to olive groves, both organic and conventional. Among these attributes, to mention a few, there are: socio-demographic data of the owners and managers (e.g., age, level of studies), socio-labour data of the holdings (e.g., Agricultural Work Units per role and year), purely accounting data (e.g., net value, depreciation, taxes paid) and purely agronomic data (e.g., production by type of crop, use of fertilisers).

The anonymised microdata files of the RECAN are available upon request. The data for the accounting years 2015 and 2016 have been revised on April 29th, 2019. The data for the accounting year 2017 have been revised on December 21st, 2020. The data for the accounting year 2018 have been revised on June 18th, 2021.

The application process for RECAN microdata was initiated by IDENER (IDE) in April 2020 (M08). Specifically, on April 13th, 2020 the request was submitted through the Common Electronic Register (CER) of the Spanish Public Administration, addressed to the producer and curator unit of the data source, the Subdirectorate General for Analysis, Coordination and Statistics of the MAPA. The completed and signed electronic file 'Conditions of commitment on the use of the microdata files of the RECAN' was attached to the request application. In this initial request, it was not necessary to narrow down the necessary data, neither in terms of the number and code of the variables required, nor in terms of the years of data requested, nor in terms of the strata of interest.

On May 15th, 2020 (M09), confirmation of the start of the processing of the application was received by e-mail from the General Registry Office of the MAPA.

However, due to the lack of response, on June 24th, 2020 (M10), IDE sent an email to Ms Alicia Camacho, RECAN national contact, requesting information on the status of the application. On the same day, IDE received an electronic response from Mr Francisco de Asís Ortega Huedo, from the General Subdirectorate of Analysis, Coordination and Statistics. Therein, he apologised for the unusual delay in processing the request for data, due in part to the implementation of teleworking in the Ministry as a strategy for dealing with the restrictions to in-presence work following the outbreak of the COVID-19 pandemic, and in part to the necessity of completing the cleaning and quality control of the 2018 RECAN data in those months of total confinement in Spain. In the same email, IDE was asked to confirm that the scope of the data requested was the same as that requested for the ESYRCE, namely: National geographical scope (with priority given to Andalusia if it was not possible to obtain the data for the whole of Spain), years from 2014 onwards, and stratum corresponding to all those farms with TF14 = 37 (Specialist Olives). Such confirmation was given.

On July 15th, 2020 (M11) and again in the absence of a response, IDE contacted Mr Ortega again, who indicated that they would not be able to respond to requests for data until data cleaning was completed, which he estimated would take an additional month. Two further follow-up emails were sent by IDE in September 2020 (M13) and November 2020 (M15).

In December 2020 (M16), MAPA sent two general emails to those responsible for all outstanding RECAN data requests, indicating that finally, on December 21st, 2020 the publication of the final revised data for the 2017 and 2018 accounting years had taken place, such that the requests could be answered. Finally, in January 2021 (M17), MAPA sent the requested data. However, these files only included the standard results (known as SE variables) of the FADN. Therefore, on February 15th, 2021 (M18) IDE requested the information once again specifying that the microdata from tables A to M of the FADN should be included in the files provided. The complete microdata files were finally received the following day (February 16th, 2021), completing a 10-months long process. These data were received in Comma Separated Values (CSV) format protected by an access password exclusive to our application, which was subsequently provided in a telephone communication between MAPA and the Project coordinator.

3.1.2 Encuesta sobre Superficies y Rendimientos Cultivos (ESYRCE) - Spanish Survey on Crop Areas and Yields

The Survey on Crop Areas and Yields (ESYRCE, by its Spanish acronym) has been carried out annually since 1990 in collaboration with the Statistical Services of the Autonomous Communities. It is based on field research, in which information is taken directly at the plot level

in a georeferenced sample of the national territory, carried out in the months of May to August. The results obtained constitute an objective source of data that complements other statistical information from the Ministry in order to obtain official data, which is subsequently published in the corresponding Ministry's Statistical Yearbook.

The main objectives of this survey, which is carried out annually, are the following:

- Determining the area occupied by crops and other land covers
- Estimating the average yield of the main crops
- Collecting information on varieties and other characteristics of fruit trees

Additionally, information of economic and agro-environmental interest is collected with regard to irrigation systems used, the typification of greenhouses and the cultivation techniques related to the types of sowing and the maintenance of cover crops on agricultural soils, as well as the management of fallow land.

The sampling units are the cells into which the national territory is divided; the observation units are the segments. A cell is understood as the portion of territory constituted by each square of 1km*1km (100 hectares (ha)), delimited by the basic grid lines of the Universal Transverse Mercator (UTM) projection of the National Topographic Map in the official projection system (European Datum 1950) at the time the survey began in 1990. A segment is understood to be the cell fraction formed by the square 700m* 700m (49 ha) resting on the South-West angle of the corresponding cell. In areas with a large number of parcels (Galicia, Balearic Islands and the Canary Islands) the observation unit can be reduced to 500m.

The anonymised microdata files of the Spanish Survey on Crop Areas and Yields (ESYRCE) are available upon request.

The application process for ESYRCE microdata was initiated by IDE in April 2020 (M08). Specifically, on April 13th, 2020 the request was submitted through the CER of the Spanish Public Administration, addressed to the producer and curator unit of the data source, the Subdirector General for Analysis, Coordination and Statistics of the MAPA. The completed and signed electronic file 'Conditions of commitment on the use of the microdata files of the ESYRCE' was attached to the request application. In this initial request, it was not necessary to narrow down the necessary data, neither in terms of geographical scope nor in terms of the annuities requested.

On that same day (April 13th, 2020; M08), confirmation of the start of the processing of the application was received by e-mail from the General Registry Office of the MAPA. The following day (April 14th, 2020), IDE received an email from Mr. Sergio Mancheño Losas, from the General Sub-Directorate for Coordination, Analysis and Statistics of MAPA, indicating that the request had been received and asking IDE to specify the territorial and temporal scope and the format (database or graph) in which the requested information was required.

On April 17th, 2020, IDE replied indicating the information requested, namely: National geographical scope (if not possible, priority was to be given to the region of Andalusia), temporal extent from 2014 onwards, and database as the preferred format.

Finally, on April 22nd, 2020, IDE received a link to download the information requested through the Ministry of Finance and Public Administration ALMACÉN application, which is a secure platform. Along with the data, IDE also received a summary of the survey field methodology, explaining the categories of the variables. Thus, the process between the initial request and the final delivery of the data took 8 days.

3.1.3 List of organic olive producers - Sistema de Información de la producción ecológica en Andalucía (SIPEA)

The Information System for Organic Production in Andalusia (SIPEA, by its Spanish acronym) is a web tool where the certified organic producers in Andalusia (NUTS Code ES61) must be registered. Each producer is identified by a SIPEA code, and all information of his/her certified organic exploitation is associated with this code. This tool offers several search filters, such as the name or the SIPEA code of the producer, the type of operator, the kind of activity, the type of product and the location of the exploitation.

The information included in this database is provided and maintained by all the Control Bodies authorised in Andalusia for the certification of Organic Production, in compliance with Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and the Order of December 15th, 2009, for which the Information System on Organic Production in Andalusia is created. In 2020, SIPEA had 17,721 certified organic producers register in its system, which suppose a total area of almost 1.1. million ha. From this area, 8% (88,691.2 ha) belongs to organic olive farming, being the predominant type of crop in organic production in Andalusia.

The information stored in this system was essential to know the number of conversions to organic production in the olive farming sector for the ex-post analysis (between 2014 and 2017) and ex-ante analysis (from 2018 to 2020) periods. Thanks to these data, an image of the evolution and current situation of organic olive production in Andalusia could be created. Moreover, knowing the parcels that compose the organic olive exploitations, the profile of the exploitations (e.g., number of parcels, area, slope, irrigation regime) that tends to convert to organic olive farming could be deduced.

The application process for the list of organic olive producers registered in SIPEA was initiated by Cooperativas Agroalimentarias de Andalucía (CAAND) in August 2020 (M12), precisely on August 13th, 2020. This first attempt at obtaining the information of interest was possible thanks to the email address provided by one of the CAAND agrarian technicians who knew this email to request this type of information from SIPEA. However, the email with the data request was not answered, and Mrs Obdulia Parra started trying to contact SIPEA by telephone through the phone number present on its website but unsuccessfully. Finally, at the end of August 2020, Mr Jon Jáuregui answered one of the calls, and he assured her that these data could be provided to the Project. Thenceforward, a good relationship was established with Mr Jon Jáuregui who showed a great willingness to collaborate with the Project and agreed to join its Expert Advisory Board.

In the following weeks, Mr Jon Jáuregui and Mrs Obdulia Parrakept trying to contact SIPEA to obtain the necessary and relevant data. Nonetheless, no response was obtained from SIPEA. Finally, on October 30th, 2020 (M14), Mr Jon Jáuregui provided Mrs Obdulia Parra with the contact details of Mr Juan Manuel Arcos, a technician from the Granada office of the Asesoría para la Producción Ecológica en Andalucía (in English, Consultancy for Organic Production in Andalusia). This is a body created by the Ministry of Agriculture, Livestock, Fisheries and Sustainable Development of the Regional Government of Andalusia to offer advice to organic production operators and people interested in converting to organic production. Mr Juan Manuel Arcos was contacted by email, and he forwarded the enquiry to the Register of Organic Farming Operators (in Spanish, Registro de Operadores en Agricultura Ecológica).

The response to the enquiry was finally received on November 25th, 2020 (M15), and Mr Juan Manuel Arcos forwarded it to IDE and CAAND. The reply consisted of two Excel files. The first was the anonymised list of organic olive farming operators registered in SIPEA up to November 12th, 2020. This list contained the SIPEA codes of the operators and the olive orchard parcels associated with each code, together with their location and surface area. The second file was a breakdown by year and province of the number of organic olive grove operators registered from 2014 to 2019.

3.1.4 Olive production data in Andalusia

The data on olive production in Andalusia originate from the Regional Government of Andalusia and other agricultural organisations and associations. These production records are usually publicly available and distinguish between olive growing for marketing table olive and olive oil. For both types, the production of olives is recorded in kilograms, and, in the case of growing olives to make olive oil, the production of olive oil is also recorded. Furthermore, these data are differentiated by the type of production (conventional and organic).

These production data are necessary to classify the olive exploitation by the types of exploitation defined in the Master Plan for the Olive Grove. However, the publicly accessible production data mentioned above are usually grouped by province (NUTS 3), which are territorial units too large to establish a precise classification. For this reason, the olive production data in Andalusia classified by municipality or agrarian region were requested.

The data request was made by Mrs Obdulia Parra from CAAND in mid-January 2020 (M17). This was through an enquiry box, whose website was provided by a technician from CAAND. The response to the enquiry was finally received on January 22nd, 2021, and two Excel files with the conventional and organic production of olives for obtaining olive oil differentiated by Agrarian Region Office (OCA, by its Spanish acronym) were provided. These offices belong to the Ministry of Agriculture, Livestock, Fisheries and Sustainable Development of the Regional Government of Andalusia and they are distributed throughout Andalusia. They are in charge of the management related to agriculture and livestock in the municipalities close to their locations.

After receiving those data, a second data request was made regarding the production of table olives in Andalusia in the same way. On January 25th, 2021 this request was satisfied delivering an Excel file with the conventional table olives production by OCA. There are no data about the organic production of olives for the table because the entire organic olives production is of olives to be turned into olive oil.

3.2 UC2 - M10.1 Agri-environment-climate commitments in Poland

3.2.1 Polish branch of the FADN

The FADN is a European system for accountancy data collection from agricultural holdings which has been established in 1965 (Council Regulation EEC/79/65). The FADN expands as New Member States (NMS(s)) access the EU. The FADN is a necessary and irreplaceable tool used for carrying out IAs of the existing Common Agricultural Policy of the EU, and reforms thereof, such that evidence-based policymaking can be ensured. Data collected within this network is used first of all for:

- annual specification of the income of agricultural holdings operating on the territory of the EU,
- analysis of the business operation of agricultural holdings,
- evaluation of the effects of planned changes regarding agriculture in the EU.

Currently, the FADN system functions in 28 EU MSs. The responsibility for the FADN data collection rests with the Liaison Agencies in each MS.

The system is based on three fundamental rules, which were defined in the Commission Regulation which established it. They are the following:

- Rule 1: The farmer participates in the FADN on a voluntary basis,

- Rule 2: It is prohibited for any person participating or having participated in the data network to divulge any individual accountancy data,
- Rule 3: It is prohibited to use the FADN data for tax purposes.

Farms participating in the FADN are classified according to Community Typology for Agricultural Holdings. Until the end of 2014 classification rules were defined by the Commission Regulation (EC) No 1242/2008 of 8 December 2008 establishing a Community typology for agricultural holdings (Official Journal of the European Union, L 335 p. 3, 13.12.2008). Since 2015, the legal provisions on Community Typology for Agricultural Holdings have been integrated together with the FADN legislation. Commission Regulation (EC) No 1242/2008 has been repealed by Commission Delegated Regulation (EU) No 1198/2014 of 1 August 2014 supplementing Council Regulation (EC) No 1217/2009 of 30 November 2009 setting up a network for the collection of accountancy data on the incomes and business operation of agricultural holdings in the EU. A valid methodological manual on community typology is RI/CC 1500 rev. 4 TYPOLOGY HANDBOOK.

The classification of agricultural holdings is carried out according to two criteria:

- Economic size
- Type of farming

The economic size of a holding is expressed in a sum of all Standard Outputs (SO) for all agricultural activities existing in that farm. The type of farming of agricultural holding is based on a share of SO for each group of agricultural activities in the total SO of the farm. SO is the average monetary value of the agricultural output of an agricultural product (crop or livestock) over the reference period of 5 years, per 1 ha or 1 head of livestock a year, in average production conditions in particular geographical units (regions).

The EU FADN collects information for commercial farms that belong to the group of farms generating, in a given FADN region or a country, about 90% of the value of SO. Thresholds of economic size establishing the minimum size of agricultural holdings included in the FADN differs across MSs. It is the result of the existing diversity in the agricultural structure of particular MSs. Liaison Agencies from each MS are obliged to prepare a selection plan of agricultural holdings when the full FSS data are available. The selection plan accepted by National Committee is presented for approval to the Community Committee on the FADN.

After an accounting year, a Liaison Agency from each MS prepares a special questionnaire (i.e., the farm return) with the variables to be collected. The farm return is generated for each farm belonging to the representative sample of farms approved by the European Commission (EC). The farm return reports are transmitted to EC electronically via a specific internet application called RICA-1. The scope, format and method of entering the data necessary for the farm return creation are precisely described in the EC Regulation. This enables generating consistent sets of data in the EU-28. Regarding the farm return, an applied handbook comprising the methodology for data collection can be found under RI/CC 1256 EN rev. 7 FARM RETURN DATA DEFINITIONS.

The Polish FADN registration system represents some 734,950 farms surveying a sample of 12,315 of them. Standard results in the FADN are calculated as weighted averages. This means that they refer to the field of observation of the Polish FADN. Each farm in the sample represents a certain number of similar farms from its stratum (e. g., 590 farms of the farm type "specialised in dairy cows" represent 12,482 dairy farms in the Wielkopolska and Śląsk region). Therefore, these results are not representative of this type of farms in Poland or for one of the four FADN macroregions. The Polish FADN accounting data are sourced from individual holdings and from legal entities. Due to the specific character of accounting data from individual holdings and from legal entities, they are collected in separate forms. The key issue is to ensure good quality of

accounting data. For this purpose, the data is tested, first at the level of the software for data entry, and then in the Agricultural Accountancy Department, where the clarifications of the advisors are analysed and where additional tests are performed, for example for excluding the outliers from the group. The test results are forwarded to the Accountancy Offices to make adjustments in the data or explain the situations identified by the test.

The accountancy data which are considered error-free are included in the Polish FADN database. On the basis of these data, the farm return is produced and is sent to the EC. In this way, Poland fulfils the obligations arising from its membership in the EU. The data provided to the EC are subject to additional testing, independent of the tests carried out to produce the Polish FADN, after tests, comments and objections are directed to the Agricultural Accountancy Department. After accepting the explanations for the test results and all the necessary amendments in the data, the EC declares the data as definitive. Thus, it is possible to produce the standard results.

Many times in November and December 2020 the Plenipotentiary Director for the FADN and Head of the Department of Accounting and Agricultural Farms Dr Eng. Joanna Pawłowska-Tyszko were contacted by e-mail and by phone to try to obtain non-standardised data sets useful for reaching the goals of the AGRICORE Project, especially to implement the Polish UC effectively. The Director of the Polish FADN asked for a special letter requiring to make the data of the Polish branch of the FADN available for scientific research in the realm of the Horizon 2020 AGRICORE project. This letter was sent to Dr Eng. Joanna Pawłowska-Tyszko by email on November 17th, 2020. The Director of Polish FADN suggested also getting in touch with Dr Eng. Dariusz Osuch, Polish FADN Deputy Head of the Department of Accounting and Agricultural Farms Manager, responsible for the Laboratory of Power Supply and Database Management to help UTP in preparing a special application for a specific order for the data. On November 18th, 2020 such a request was sent to Dr Eng. Dariusz Osuch, who replied that he could help in preparing this application but UTP had to provide information on which years, farms, grouping variables and variables it wanted to obtain. In a non-standard situation, grouping and/or calculations beyond those implemented for the report or the preparation of the FADN standard results are very labour-intensive activities that may need to be paid for with the fee covering the cost of processing the data and not the data themselves, which remain always free.

3.2.2 Agency for Restructuring and Modernisation of Agriculture (ARMA)

The Agency for Restructuring and Modernisation of Agriculture (ARMA) was established in 1994 with the aim to support agriculture and rural development in Poland. Following Poland's decision to join the EU, ARMA has been designated by the Government of the Republic of Poland to perform the role of an accredited paying agency. The Agency is headed by a President appointed by the Prime Minister of the Republic of Poland upon a joint request by the Minister of Agriculture and Rural Development and the Minister of Finance. The structure of ARMA comprises three levels: the Headquarters, 16 Regional Offices in each region (voivodship) and 314 Local Offices. The Agency, as the performer of agricultural policy, cooperates with its supervising body, the Ministry of Agriculture and Rural Development. At the same time, as a spender of public funds, ARMA falls under the supervision of the Ministry of Finance. The scope of ARMA's operation involves both the implementation of instruments co-financed from the EU budget as well as providing aid from national funds. The main beneficiaries of measures implemented by ARMA are farmers, inhabitants of rural areas, entrepreneurs from the agri-food sector, local governments. The Agency also provides aid to entities operating in the fisheries sector.

The information included in this database are the indicators for assessment of agri-environmental-climate policy effects:

- state of biodiversity,

- FBI agricultural landscape bird index (C35)
- High Nature Value Agriculture indicator (C37).
- share [%] of the area where the Program of direct payments area was implemented
- water intake for agriculture needs (C39),
- pollution of groundwater and surface waters with nitrates (C40)
- gross balance of N and P nutrients (C40).
- use of intercrops whose biomass is ploughed
- investments to protect waters against nitrate pollution coming from agricultural sources
- soil organic matter content
- reducing the share of agriculturally used soils exposed to water erosion
- reducing losses of soils exposed to erosion
- soil water erosion index (C42)
- index of organic matter content on arable land (C41), which allows for assessing soil retention
- soil loss indicator for agricultural, forestry and semi-natural areas in Poland
- variety of crop rotation by including crops such as grasses, small bean, coarse seed and mixtures thereof.
- afforestation and long-term maintenance of wooded area indicator
- reduction of greenhouse gas emissions and ammonia from agriculture:
- extensive soil cultivation by limiting or abandoning ploughing (counteracts the increase in the amount of oxygen reaching the deeper layers of soil, which intensifies the process of decomposing organic matter, thereby increasing the amount of CO₂ released)
- reducing the use of nitrogen fertilizers limited the formation of another greenhouse gas - N₂O
- gas emission factor from agriculture (C45)
- per capita of CO₂ absorption of carbon dioxide (in 2014-2020 it reaches nearly 4 tons/ha).

In October and November 2020, telephone calls were made and emails were sent to the Director of ARMA Beata Nawrocka. Their aim was to explain the assumptions and goals of the AGRICORE Project, to invite representatives of the Agency to take part in the participatory research activities foreseen by the Project, and ask for help in accessing the relevant data. Unfortunately, the restrictions implemented to contrast the COVID-19 pandemic and the changes taking place in the Agency's authorities at that time made it impossible to carry out preliminary interviews or obtain the data. Based on the information provided by the Chief Specialist of the Section of Water Management and Climate in the Department of Climate and Environment, Małgorzata Ślusarczyk, on May 17th, 2021, an amendment to the act on direct payments was announced (<https://dziennikustaw.gov.pl/DU/2021/904>). Article 2 of this Act provides for the possibility that ARMA shares spatial data for free. On the basis of this article, it is possible to apply to ARMA for data to conduct analyses foreseen in the Project. UTP is preparing the associated letter to acquire the data.

3.2.3 National Chemical-Agricultural Station - Database on mineral nitrogen content in Poland

National Chemical-Agricultural Station has several regional branches, which offer a range of agrochemical services for interested farms producing. The following tests can be performed at OSChR:

- soils, lands and gardening substrates,
- plants,
- natural fertilizers, fertilizers and plant conditioners approved for use in organic farming.

Agrochemical research is carried out for:

- arable land and grassland,
- horticultural crops and vegetables in the field and under covers.

The research includes:

- soil reaction (pH) and the content of available phosphorus, potassium and magnesium,
- the content of assimilable forms of microelements (B, Cu, Zn, Fe, Mn),
- mineral nitrogen and sulfur content,
- heavy metal content.

The information included in the database on mineral nitrogen content in Poland covers the information about:

- Soil Characteristics (pH, C_{org}, granulometric composition)
- Nutrients (N, P, K, Mg, S)
- Fertilisation (type, rate, date of fertilisation)
- Plant information (forecrop, crop, yield)
- Farm information (LSU, location)

for 4925 farms (varying with 42 used systems) located on the whole territory of Poland (data is not gridded, but spans nearly uniformly the whole country). It has continuous annual data from 2008 to 2020 (for N content in the soil the data is bi-annual). These soil characteristics are necessary for agricultural modelling.

In December 2020, an official letter with a request to obtain access to the data of the National Chemical-Agricultural Station on physical-chemical properties gathered in the period 2014-2020 for the territory of Poland was prepared and sent. The letter indicated that the information provided by the National Chemical-Agricultural Station in Warsaw would be used in research carried out in the realm of the H2020 AGRICORE project to develop and validate an agent-based model designed to assess the impact of agricultural policies for the area of Poland. The same month, the National Chemical-Agricultural Station replied that it does not participate in the AGRICORE project and hence there are no formal grounds for sharing the data and that the data employed to assess the agricultural policy are submitted to the Institute of Soil Science and Plant Cultivation (IUNG). Currently, a second letter with the request to obtain access to the data of the National Chemical-Agricultural Station is being prepared. It was not sent because a meeting with the Representatives of the Ministry of Agriculture and Rural Development was scheduled and would have focused on the possibility that the Ministry supported the application for the data. The meeting took place on July 6th, 2021. Unfortunately, regarding obtaining help in gaining access to the data that is at the disposal of agencies subordinate to the Ministry, the Ministry communicated that it cannot be involved directly in providing the data, signing a letter of support or in mediating contacts with these institutions. This is due to the fact that the Ministry is not a member of the Consortium of partners involved in the implementation of the AGRICORE Project.

3.2.4 Institute of Soil Science and Plant Cultivation (IUNG) - Soil maps for Poland

IUNG is engaged in creating cartographic and soil-agricultural maps on a scale of 1:25000 and 1:100000, with additional text and numerical data describing agricultural suitability. They are dealing with:

- Development of soil maps in analogue and digital form
- Soil quality classification, evaluation of agricultural acreage
- Creation and management of digital soil databases for Poland
- Separation of areas of degraded soils requiring reclamation

After failing to get access to the data from the National Chemical-Agricultural Station on physical-chemical properties gathered in the period 2014-2020 for the territory of Poland, to secure soil data for Poland, in January 2021 the Director of IUNG, Prof. dr hab. Wiesław Oleszek was contacted by phone. He forwarded the request for data to Dr hab. Grzegorz Siebielec, who is responsible for soil data management at IUNG and promised to reply to the request. After several weeks without establishing any contact, additional attempts to contact Dr hab. Grzegorz Siebielec by phone and email were made. Dr hab. Grzegorz Siebielec responded to one of the emails that the issue of the availability of the data needed to be discussed with IAPAS on a telephone call the next day. IAPAS has not received any response from Dr hab. Grzegorz Siebielec yet. Nonetheless, IAPAS plans to organise a face-to-face meeting with IUNG about the possibility of obtaining their soil maps data in September.

3.3 UC3 - M6.1 Start-up aid for young farmers in Greece

3.3.1 Greek branch of the FADN

Based on Regulation (EC) 1217/2009 and all subsequent amendments thereto, the FADN is a contractual obligation of the MSs of the EU. It is an integrated system for collecting accounting information on the activities of agricultural and livestock farms and covers the whole range of agricultural and livestock activities taking place on a holding as well as certain non-agricultural activities such as agro-tourism and forestry. Information is collected on an annual basis, from a representative sample of farmers. It concerns the physical and structural characteristics of the holding, such as the area under cultivation, the number of livestock, the workforce of the holding, as well as financial and accounting data such as subsidies received by a holding, its income and expense. The participation of farmers and stock farmers in the sample is voluntary. The information collected is confidential and is only available to the EU's Directorate-General for Agriculture. The FADN is regulated, at the EU level, by the COMMISSION IMPLEMENTING REGULATION (EU) 2015/220 of 3 February 2015 laying down implementing rules for Regulation (EC) No. Council Regulation (EC) No 1217/2009 establishing a network for the collection of accounting records relating to income and the economic operation of agricultural holdings in the European Union (OJ L 046, 19.2.2015, p. 1) and the COMMISSION REGULATION (EC) No. COUNCIL REGULATION (EC) No 1217/2009 of 30 November 2009 establishing a network for the collection of accounting records relating to the income and financial performance of agricultural holdings in the European Union (codified version) (OJ L 328, 15.12.2009, p. 27). At the national level, the Greek FADN is established in Law 4384/2016, paragraph 42 laying down regulations of other issues within the competence of the Ministry of Rural Development and Food published in the Government Gazette A78/26.04.2016 and all subsequent amendments.

The EU network "Farm Accountancy Data Network", known by the acronyms FADN (English) and RICA (French), has been operating since 1981 in Greece on behalf of the EC under Regulation 1217/2009 of the Council. In Greek, it is named "Δίκτυο Γεωργικής Λογιστικής Πληροφόρησης – ΔΙΓΕΛΠ". It concerns the annual sampling of input-output accounting data from 4,675 agricultural holdings from all over Greece, for the purpose of estimating technical-economic variables by the EC. To establish the characteristics of the annual sample, a specific methodology is followed in collaboration with the Hellenic Statistical Authority (ELSTAT). The FADN Department of the Ministry of Agricultural Development and Food and of the Greek government coordinates support and controls the programme at the national level. Its implementation is carried out by almost 150 specifically trained personnel that consist of employees of the Divisions of Agriculture from each Regional Unit in Greece.

Under Law 4384/2016 of the Greek Government, the FADN is operated under the responsibility of the Ministry of Agricultural Development and Food. Specifically, the network lies to the duties of the Department of Agricultural Accounting Information of the Unit of Agricultural Policy, Documentation and International Relations of the Ministry. For the operation, the Ministry is setting up a special committee called "National Committee for Agricultural Accounting Information Network" whose task is to approve the selection plan of the holdings of the FADN based on Article 5a of Council Regulation (EC) No 1217/2009 (OJ L 328, 15.12.2009, p. 27) and the approval of its implementation report.

The application process for the Greek FADN data was initiated by AUTH in 2020. Prof. Konstadinos Mattas, the coordinator of the AUTH team of the AGRICORE Project, initiated the procedure through personal contact with the Unit of Agricultural Policy, Documentation and International Relations of the Ministry of Agricultural Development and Food. Dr Apostolos Polymeros, Policy Officer and Head of the Unit, was extensively briefed on the AGRICORE Project and its subsequent research activities. The AUTH team was granted access to the Greek FADN dataset early in 2021 for the years 2015, 2016, 2017 and 2018.

The timespan of the available FADN dataset for Greece is 2015, 2016, 2017, 2018.

The dataset includes 13 tables that constitute the Farm Returns Tables of the FADN data for Greece. These tables are:

- TABLE A. GENERAL INFORMATION ON THE HOLDING
- TABLE B. TYPE OF OCCUPATION
- TABLE C. LABOUR
- TABLE D. ASSETS
- TABLE E. QUOTAS AND OTHER RIGHTS
- TABLE F. DEBTS
- TABLE G. VALUE ADDED TAX (VAT)
- TABLE H. INPUTS
- TABLE I. CROPS
- TABLE J. LIVESTOCK PRODUCTION
- TABLE K. ANIMAL PRODUCTS AND SERVICES
- TABLE L. OTHER GAINFUL ACTIVITIES DIRECTLY RELATED TO THE FARM
- TABLE M. SUBSIDIES

The dataset was accompanied by the respective manual (RI/CC 1680 v5) that describes in detail the relevant tables, variables, and complete data of the Greek FADN dataset.

3.3.2 Young Farmers Data

As responsible for the Greek UC (Start-up aid for young farmers in Greece), AUTH team tried to gather all the available data for the Young Farmers in Greece through the Ministry of Agricultural Development and Food and all the subsequent institutions of the Greek public sector and regional authorities.

Since the initiation of the application of Young Farmers Scheme in Greece, back in the 1990s, for the first time, during the evolution of the Greek Rural Development Programme (RDP) 2014-2020, all the procedure of applications from the potential beneficiaries of Measure 6.1 Start-up aid for young farmers was organized through a common web portal.

Therefore, for the period 2014-2020, all prospective beneficiaries for the Measure 6.1 - Start-up aid for young farmers in Greece applied for participation to the scheme through the web portal of the State Aid Information System - SAIS (in Greek: ΠΣΚΕ - Πληροφοριακό Σύστημα Κρατικών Ενισχύσεων, <https://www.ependyseis.gr/mis/>) maintained by the Ministry of Development and Investments in Greece and organised for the Measure 6.1 from the Ministry of Agricultural Development and Food.

Since the initiation of the Greek RDP 2014-2020, two periods of applications for participation in Measure 6.1 have been applied. One in the last semester of 2016 and one in the first semester of 2018. All 13,905 beneficiaries have been applied successfully for participation in the Young Farmers Scheme.

Therefore, AUTH team tried to gather all the available non-public data provided by the 13,905 prospective beneficiaries of Measure 6.1 in Greece through their applications for participation in Measure 6.1.

The data from the applications for inclusion to Measure 6.1 by the 13,905 Young Farmers are gathered and maintained by two public units: The Development Programs Management Organization Unit SA and the Special Management Service of the RDP 2014-2020.

The Development Programs Management Organization Unit SA is a non-profit company of the wider Public Sector in Greece. It is supervised by the Minister of Economy and Finance and is based in Athens. The purpose and objectives of this public company is the management and implementation of programs and schemes co-financed by the EU, the European Economic Area and/or national resources, the organization and meeting of the demand for specialised human skills and resources for the advance of the aforementioned programmes as well as the transfer of relevant know-how.

The Special Management Service of the RDP 2014-2020 is a special management body of the Ministry of Agricultural Development and Food in Greece and especially its RDP 2014-2020 Investment Unit in Agricultural Holdings is responsible among others for the issuance of the institutional framework, the coordination and the monitoring of the implementation of Measure 4.1 - Investments in agricultural holdings, Measure 6.1 - Start-up aid for young farmers and Measure 6.3 - Start-up aid for the development of small agricultural holdings. Moreover, the unit is responsible for the monitoring of Measure 5 - Restoration of the agricultural productive capacity affected by natural disasters. The Head of the Unit is Mr Tsiatouras Euthymios.

The Special Management Service of the RDP 2014-2020 (EYD PAA), keeps an electronic, online contact file, in which recipients have been registered, with all the necessary contact details. These data are used exclusively for communication and information actions in the context of the actions of the National Rural Network and the Publicity of the RDP 2014-2020. EYD PAA manages your personal data in accordance with the General Regulation for the Protection of Personal Data

2016/679 / EU ("GDPR") and the current national and European legal and regulatory framework for the protection of personal data.

The procedure for accessing the Young Farmers applications data was initiated by AUTH team at the end of 2020. Specifically, on November 10th, 2020 an email was sent to Mr. Tsiatouras, Head of the Investment Unit in Agricultural Holdings of the Special Management Service of the RDP 2014-2020. The email briefly described the AGRICORE Project, its objectives and the expected final outcome. It concluded with a kind request for access to the non-public data provided by the beneficiaries of Measure 6.1 on their applications. Mr Tsiatouras responded positively to the request and a follow-up email from the AUTH team requested specific variables highlighting the fact that no sensitive personal information is requested. Finally, at the beginning of 2021, Mr Tsiatouras responded by email to the AUTH team providing us access to specific variables of the requested data compiled in a way that it would not have been possible to identify any specific applicant.

The data provided by the Investment Unit in Agricultural Holdings of the Special Management Service of the RDP 2014-2020 was divided into five distinctive tables. Below each table is presented with the available variables.

Table 2 Personal Data of Young Farmers

| | Variable | N |
|----|---|----------|
| 1 | Identification number for each application | 13905 |
| 2 | Identification for the relevant tax authority | 13905 |
| 3 | Municipality of residence | 13905 |
| 4 | Type of employment | 1450 |
| 5 | Type of Area of residence | 13868 |
| 6 | Education level | 13905 |
| 7 | Date of birth | 13905 |
| 8 | Citizenship | 13905 |
| 9 | Community or residence | 13905 |
| 10 | Type of Current Social Security | 13905 |
| 11 | Name of Prefecture of residence | 13905 |
| 12 | Marital status | 13905 |
| 13 | Name of Region NUTS2 of Residence | 13905 |
| 14 | Percentage of disability (if any) | 655 |
| 15 | Current Year in Higher Education Institution (if any) | 2693 |
| 16 | Maximum Years in Higher Education Institution (if any) | 1736 |
| 17 | Post-Code of residence | 13905 |
| 18 | Current type of employment (sector) | 1450 |
| 19 | Obligation to submit tax return statement | 13905 |
| 20 | Gender | 13905 |
| 21 | Individual income | 13905 |
| 22 | Duration of unemployment (in months) | 4311 |
| 23 | Family income | 13905 |
| 24 | Type of beneficiary | 13905 |
| 25 | Type of accounting books | 13905 |
| 26 | Level of subsidy- Total | 13905 |
| 27 | Subsidy due to orientation to the future productive direction | 13905 |
| 28 | Additional aid according to the type of residence | 13905 |

Table 3 Farm Holding Data for the Young Farmers (for each piece of cultivated land)

| | Variable | N |
|----|--|-------|
| 1 | Identification number for each application | 79626 |
| 2 | Cultivation durable in climate change (YES/NO) | 79626 |
| 3 | Crop for livestock feed (YES/NO) | 79626 |
| 4 | Name of Municipality of farm location (location of agricultural holding) | 79626 |
| 5 | Ownership by the beneficiary (YES/NO) | 79626 |
| 6 | Category of cultivation or animal | 79626 |
| 7 | Name of Community of farm location | 79626 |
| 8 | Name of Prefecture of farm location | 79626 |
| 9 | Category: Fruits and vegetables (YES/NO) | 79626 |
| 10 | Category: PDO/PGI (YES/NO) | 79626 |
| 11 | Name of Region (NUTS2 level) of farm location | 79626 |
| 12 | Variety of cultivation | 79626 |
| 13 | Type of production (CONVENTIONAL/ORGANIC) | 79626 |
| 14 | Size of agricultural area (in Ha) | 79626 |
| 15 | Percentage of cultivated area | 79626 |
| 16 | Young crop (YES/NO) | 79626 |
| 17 | Percentage of ownership | 79626 |
| 18 | Total standard output | 79626 |
| 19 | Nominal standard output of crop | 79626 |

Table 4 Farm Holding Data for the Young Farmers (for each category of animal husbandry)

| | Variable | N |
|----|---|-------|
| 1 | Identification number for each application | 14946 |
| 2 | Category: Sheep and goats (YES/NO) | 14946 |
| 3 | Name of Municipality (location of livestock farm holding) | 14946 |
| 4 | Type of livestock | 14946 |
| 5 | Ownership of livestock farm holding (YES/NO) | 14946 |
| 6 | Category of livestock | 14946 |
| 7 | Name of Community (location of farm holding) | 14946 |
| 8 | Name of Prefecture (location of farm holding) | 14946 |
| 9 | Category: PDO/PGI products (YES/NO) | 14946 |
| 10 | Name of Region (NUTS2 level) (location of farm holding) | 14946 |
| 11 | Type of production (CONVENTIONAL/ORGANIC) | 14946 |
| 12 | Total livestock units | 14946 |
| 13 | Total standard output | 14946 |
| 14 | Standard output of livestock category | 14946 |

Table 5 Specific Commitments undertaken by the beneficiaries of Measure 6.1

| | Variable | N |
|---|--|-------|
| 1 | Identification number for each application | 55620 |
| 2 | Type of commitment | 55620 |
| 3 | Achievement Period (year of business plan) | 55620 |

Table 6 Specific Objectives set for the beneficiaries of Measure 6.1

| | Variable | N |
|---|--|----------|
| 1 | Identification number for each application | 21391 |
| 2 | Specific Objective | 21391 |
| 3 | Estimated Achievement Period (year of business plan) | 21391 |
| 4 | Target Price of Specific Objective (% increasing of standard output) | 21391 |

4 Conclusions

Deliverable 1.2 presented evidence of the need for relying on non-publicly available data for the modelling and the IA of (changes in the) agricultural policy, especially if undertaken at the EU or (whole) national level. Because of the scope and objectives of the AGRICORE Project, which foresees the implementation and demonstration of the AGRICORE suite in two national (UC2 and UC3) and one regional (UC1) UCs, the data required exceed those provided in the national or EU version of the FADN. The latter are frequently employed by agricultural economists in their modelling and IA of (changes in the) agricultural policy. The AOIs for the construction of the AGRICORE agent include also soil and climatic characteristics which, for instance, in Poland are not publicly available and obtaining access to them is demonstrably taking a long time and requiring significant effort.

Deliverable 1.2 has documented the extent to which the strong personal and professional relationships developed over time by reputable researchers, often involved in collaborative projects like the H2020 Project AGRICORE, facilitates gaining access to otherwise non-publicly available datasets. Despite the personal contact details of the people who were crucial in giving access to the data could not be shared in this Deliverable for obvious confidentiality and privacy reasons, the partners of the AGRICORE Consortium involved in retrieving the datasets described above remain available to reputable members of the scientific community to facilitate the successful completion of similar requests.

For preparing this report, the following deliverables have been taken into consideration:

| Deliverable Number | Deliverable Title | Lead beneficiary | Type | Dissemination Level | Due date |
|---------------------------|---|-------------------------|-------------|----------------------------|-----------------|
| D1.1 | Standardised Methodology and Set of Ontologies for the Characterisation of Data Sources | UNIPR | Report | PU | July 2020 |