AGRIDEMO

Methodological guide for data gathering and analysis: D3.1 structural characteristics D4.1 functional characteristics D5.2 impact assessment

WP Leader: D3.1 AUA – D4.1 CCRI – D5.2 EV ILVO
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Document Summary

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1. Introduction

This methodological guide to data gathering and analysis explains the research tasks required for the in depth understanding of the farmer-to-farmer learning approaches and the case study approach based on this understanding. The case studies are at the core of the AgriDemo-F2F project. They will be selected based on a combination of quantitative and qualitative criteria. The criteria stem on the one hand from a typology constructed with data from a geo-referenced inventory of demonstration farms throughout Europe and on the other hand from expert and practitioner consultation and discussions through the multi-actor approach of the Agridemo-F2F consortium.

The analytical framework of the Agridemo-F2F project (Koutsouris et al., 2017) describes the relationship between the WPs and underpins the data collection themes and methods. A wide range of interrelated structural and functional characteristics enable farmer learning. Based on this understanding a framework was proposed which embeds the analysis of peer to peer learning (WP5) within the context of interacting structural (WP3) and functional components (WP4). This provides a framework to study the relationship between farmer to farmer learning at the farm demonstration and event level and the wider enabling environment. This approach allows us to understand how the organisations, programmes goals and objectives (and strategies) that underpin their demonstration activities (approach, audience, programme approach and management) are operationalised at network and individual farm and event levels, and how they influence learning at this level.

Although WP3, 4 and 5 are defined as different work packages to investigate in the case studies within Agridemo-F2F, in practice there is a lot of overlap in the variables we want to investigate, for this reason joint methods (across the WPs) are used in the methodology. In 2.2, an overview of the methods is given, they are structured on programme, farm and event level. First, we introduce the three work packages. Second, we present the joint methodology and the accompanying methods. Third, we explain the contribution of each work package to the development of the methods.

1.1 WP3: Structural analysis

WP3 aims to provide an in-depth analysis on the structural characteristics of farmer-to-farmer learning approaches and on-farm demonstrations, in particular. The approach on the identification of structural characteristics is described in the Analytical Framework (Koutsouris et al., 2017). The structural characteristics differ according to:

- Actors involved and their roles (e.g.: organisers, participant,…)
- Networks
- Resources, finances and incentives
- Multi-level governance
- Structural characteristics at Farm level (e.g.: location, layout,…)

1.2 WP4: Functional analysis

Demonstration programmes and activities have functions, i.e. they are performing or achieving something. Functional characteristics were identified from a review of theoretical and empirical

evidence relating to demonstration farms (see Koutsouris et al., 2017), these are related to demonstration activities, functions and processes which determine the practices developed to support learning, and include:

- Coordinating effective recruitment of host farmers and participants
- Developing and coordinating appropriate interaction approaches
- Planning, designing and conducting appropriate demonstration processes
- Enabling learning appropriate to purpose, audience, context
- Designing and implementing appropriate learning, mediation techniques and communication tools
- Providing effective follow up activities

These functional characteristics frame the methodology for WP4 and have been used to identify themes and topics for data collection.

1.3 WP5: Effectiveness

Focusing on the learning aspect, 'effectiveness' seems to have different interpretations in education. For a more elaborated report on effectiveness of learning approaches, we refer to deliverable 5.1: State-of-the-art report on effectiveness.

Much of the work in the search for measurable links between educational practices and outcomes, becomes highly reductionist both of the range of practices and of the learning outcomes that should define contemporary education (OECD, 2013). Effectiveness can be interpreted in many different ways. It can interpreted as the level of engagement (e.g.: extent of learning understood as attendance numbers, efforts participants make to take part,…), as 'value-added' assessments and measurements (e.g. the extent of learning understood as number of participants stating having learned because of the on-farm demonstration, and indicators on 'how much' they've learned) and as adoption rates (putting in to practice what was learned).

This means each specific research context is obligated to make decisions in which variables to take into account and which not to include when investigating effectiveness, because it's practically impossible to include every influencing variable and possible outcome. The measurements used to determine effectiveness should be first of all relevant to the context and the particular questions that need to be addressed. Therefore, the AgriDemo-F2F project defines learning effectiveness through factors representing the extent and nature of learning linked to structural and functional characteristics. Structural and functional characteristics and learning processes suggested as effective by literature (Deliverable 5.1) and observed and indicated by different actors will be linked with the extent and nature of learning through data analysis of the case studies.

1.3.1 The extent of learning

The extent can be addressed by numbers of for example participants stating they have learned after an on-farm demonstration activity (DA) took place. Additionally, the amount of participants expressing change in behaviour or practices on their own farm and the extent of the change(s), (partially) due to the DA, will count as effectiveness variables and are addressed with the term 'adoption'. To complete the picture, we are also interested in how knowledge is spread and skills

in relation to attendance at a DA, by for example how many participants acknowledge, after some time, having learned because of the DA, and the people who didn't attend the DA the participants have talked to about it. The latter refers to the term 'diffusion'. Participants stating for example not having made any changes on their farm as the result of a careful examination process, including the knowledge gained at the DA, should be seen as an outcome related to adoption and thus effectiveness. In other words, we will investigate the level of adoption and diffusion of knowledge and skills by participants, supported by the attendance at a DA, not the mere adoption or diffusion of farming practices as such.

1.3.2 The nature of learning

Secondly, the nature of learning will focus on the appearance of different levels of learning as defined by Argyris and Schön (1996). They described different 'levels' of learning as single and double loop learning, which in practice are often intertwined. Single loop learning (SLL) refers to generating factual knowledge and developing skills (a.o. knowing how to apply an irrigation scheme/technology or pesticide). Building on SLL, double loop learning (DLL) explores the underlying values and assumptions, and requires critical reflection on the processes by which learning takes place (a.o. getting insights in the question: "Why is my farming system the way it is and should I change my farming system?").

1.4 Joint methodology development process

The three teams (AUA, EV ILVO and CCRI) have worked jointly to develop both the common methodology and the methods concerning the collection of data on on-farm demonstrations (case studies) in the partner countries. To this end, each team took the initiative a) to make initial proposals concerning the methodology, combining quantitative and qualitative methods and tools; and, b) to draft the critical items (questions), based on the analytical framework and according each team's focus, to be included in the various methods to be utilized for the case studies' exploration. These first proposals were supplemented by inputs from the practitioner partners gathered in a special session in the second project meeting in Aberdeen (June 2017). Taking these together, the data to be collected, and the most appropriate methods for collecting this data, were identified (Figure 1). As stated in the GA, and in agreement with WP3 and 5, a multi-method approach combining quantitative and qualitative data gathering was proposed.

All data collection methods were developed iteratively with WP3, 4, 5 input, and then piloted in UK (programme and farm level tools) and in Vienna (event level tools). Pilot surveys were conducted from December 2017 until the end of February 2018. All methods were evaluated with partners in the 3rd project meeting in Vienna (Jan 2018), where the event level tools were piloted by the partners themselves on a local farm, as part of the methodology training (T.3.2, T4.2 and T5.2) (Annex A). This gave partners the opportunity to familiarise themselves with these tools and provide constructive feedback to the leading teams. All the evaluation suggestions were used to revise and rework all the methods by the end of month 13, in time for a second piloting stage in three country case studies in February 2018. This ensures a practical and achievable approach to data collection.

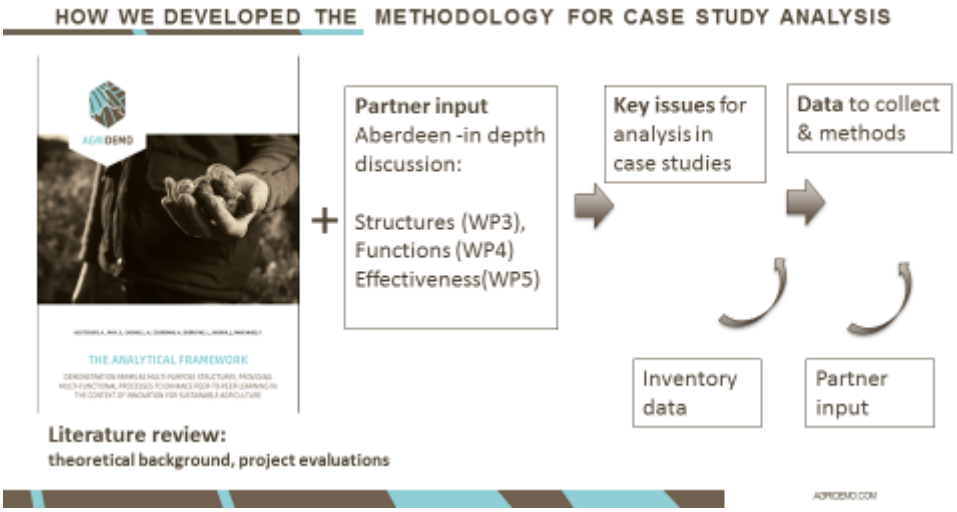

Figure 1: Developing the methodology from the analytical framework

2. Methodology and tool development

2.1. Overview: levels and schedule

The AgriDemo-F2F case study approach is a mixed methods approach (a combination of qualitative and quantitative methods) for data collection and analysis. Questionnaire surveys, in depth semi-structured interviews and workshops with key actors and documents on the initiatives and networks will serve as data collection methods.

Although WP3, 4 and 5 are defined as different domains to investigate in the case studies, the case study approach will use the same data gathering methods across the domains. This choice was made since there was a lot of overlap in variables relevant to one of the three work packages. To avoid asking the same questions to the same actors multiple times, we decided to combine the methods. Throughout the development of the analytical framework ant the discussions with the multi-actor practitioner partners, we detected three relevant actor-levels: programme, farm and event level (Figure 2) which could serve as a better structure for the data gathering methods.

The following diagram shows the (1) programme/network level interviews, (2) farm level interviews and the (3) event level tools and surveys. Distinguishing between these levels facilitates a holistic and in-depth view of demonstrations. In part, different levels of the methodology reflect the interacting structural and functional components of farm demonstration. Critically, the strategic approach allows for the identification of the different actors (including individuals, networks/programmes) and elements of demonstrations and events, and allows for an assessment of their effectiveness (including the extent and nature of learning) across the different levels.

The interviews are concerned with levels 1 & 2: the programme/network organisers (Level 1) are representatives from the programme or network that overarches/organises the demonstrations and sits above the farm level (Level 2). Farm level interviews can be conducted with, coordinators and/or demonstrators of farm level activities - this might be the host farmer/facilitator/adviser. Below this, on

level 3, are the event level tools and surveys which will gather data related to a specific demonstration event. A more detailed overview is given in Table 1.

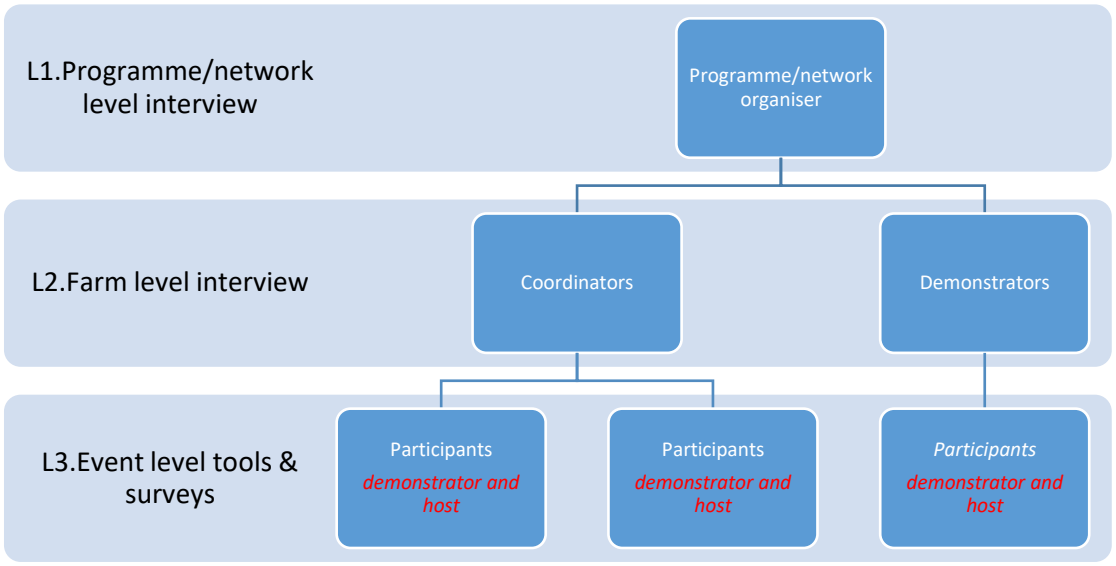

Figure 2: Levels of data collection

Table 1: Methods and levels of exploration

Aim	*Level*	*Methods/tools*	*Who to consult*
To understand the enabling environment (both structure and function)	**Programme/network level** (L1)	Organiser level interview Workshop/Focus group	**Organisers** = representatives from the programme or network that overarches/organises the demonstrations
	Farm level (L2) • Single farm that is part of a network • Single farm that is not part of a network (standalone)	Farm level interview Workshop/Focus group	**Coordinators** of farm level activities – this might be the host farmer or a facilitator/adviser or a programme employee (different from the organiser on programme/network level) **Demonstrators** on farm level activities - this might be the host farmer/facilitator/adviser
To understand *P2P learning processes* (+ some enabling environment questions)	**Event level** (L3)	1. Observation tool 2. Pre and post survey 3. Post host farm interview 4. Telephone surveys Workshop/Focus group	1: Researchers on event 2+4: Participants & Demonstrator 3: (host) Farmer

The data gathering consists of a staged data collection schedule (Section 2.3.1). At the level of the programme/network, interviews are scheduled with organisers of demonstration activities, while at farm level, similar interviews are scheduled with coordinators and/or demonstrators of demo activities. Interviews include both closed and open questions and concern all activities (not individual events) in order to be able to capture motivations and reasons as well as processes (esp. the decision-making processes that take place from the initiation through to the implementation of the on-farm demonstration and the dissemination of results). These stakeholder interviews will be followed up with stakeholder workshops/focus groups to explore further and validate the interview findings.

At the event level, we will also utilise other data gathering tools. The semi-structured interviews at programme and farm level will be complemented with questionnaires, an observation tool and a telephone survey. Participants, demonstrator and host at the event level will be questioned through a pre and post demonstration questionnaire survey to be completed right before and after an on-farm demonstration event. In addition to this, an observation tool needs to be completed by project partners during and right after the demonstration. The observation tool is designed as a general rubric with an analytical scoring approach. All criteria consist of four levels (Likert scale) and each level contains a quality definition to ensure the validity of the observation tool. The various sections in the observation tool refer to items related to both WP3, WP4 and WP5. Finally, the event level tools also includes a telephone survey targeting participants, and to be conducted approximately 6 months after an on-farm demonstration event.

2.2 Planning and timetabling the data collection and analysis

In the early stages of the CS data collection (March 2018), we will ask practitioner partners to complete and submit a CS Plan, documenting the cases selected based on the criteria for selection, the proposed interviewees and numbers to be interviewed and a timetable (see below). Following this there will be a Skype training (April/May 2018) and continued support from the WP3, 4 & 5 team. There will be also be the possibility for follow-up questions and discussion with this team at the July 2018 project meeting together with workshop/focus group training. This approach recognises that each CS will be different but will ensure some standardised approaches across the CS.

The Case study (CS) data collection and analysis period is summarised in Table 2:

Table 2: Schedule

Month	*Task*
15	**Individual CS Plans agreed and completed**
16	**Skype training**
16-17	**Interviews at level 1 & 2 completed, transcribed, translated**
16-17-18-19	**Level 3 surveys and tools**
19	**July project meeting: guidance and training on completing activities and running workshops/focus groups**

20-21	*Interview and tool analysis by WP3,4 & 5 partners*
21-22	**Workshop data collection and validation, workshop reports completed, transcribed, translated**
23-24	*Final analysis and synthesis by WP3, 4 & 5 partners; Country reports completed*

2.3. Planning the interviews

The semi structured interviews with organisers and demonstrators/hosts should be undertaken in M16-17 as these will need to be translated and submitted for analysis before the workshop/focus group phase can begin.

2.3.1 Selecting interview respondents

At the programme/network level interviews will be conducted with organisers. These are only relevant to demos connected to a programme/network. Select representatives from the Programme or Network that overarches/organises the demonstrations. The number of interviews in each CS will vary and will be discussed and agreed with the WP3, 4 & 5 team.

At the farm level, interviews will be conducted with Coordinators who coordinate farm level activities – this might be the host farmer or a facilitator/adviser or a programme employee (i.e. not an organiser) and/or Demonstrators who deliverer farm level activities – this might be the host farmer/facilitator/adviser. The number of interviews will be determined/scheduled in the individual partners' CS Plan and will be relative and appropriate for the particular context.

2.4 Data gathering process protocol

Generally and if necessary, we ask the partners to translate the questions or statements within all methods when necessary, and subsequently translate the answers back to English. All results will be analysed in English by the Wp3, 4 & 5 team. All participants providing data on any level for this project will be asked to sign an informed consent, developed by ILVO and reviewed by TEAGASC. Submission of the data for analysis will happen according to the guidelines in the data management plan. This will include entering the translated data in the format files and uploading them in the correct folder in Bitrix.

Partners will need to transcribe and subsequently send their data. For this purpose, we ask partners to follow the 'Capturing the interview data' guide. For each partner individually, the process of translating the tools will be questioned and discussed, to ensure the quality of the translated data.

2.4.1 Organiser and farm level interviews

The interviews are intended as face-to-face interviews and the schedule comprises both closed and open questions. These questions concern all activities (not individual events). The interviews are intended as face-to-face interviews. Some closed questions, for example ranking questions, will be made available as a show card for participants to complete individually. Following two rounds of piloting, the interview process is anticipated to take 45-60 minutes.

The interviews will be recorded using a Dictaphone, phone or software (e.g. Audacity). This reflects a 2-stage process: (1) conducting and recording the interview and (2) later transcribing the recording.

The participants will be reminded that the recording will only be used for research purposes and should be handled according to the specifications in the Data Management Plan.

The responses to open questions will be transcribed using the 'Clean Verbatim', i.e. word for word what was said but without the hesitations or filler phrases that do not add any meaning, such as 'like', 'you know' or repetitions unless they add meaning/give emphasis to a particular point.

The following questions and answers (from a pilot interview in the UK) are provided to indicate the level of detail required.

Interviewer	***What are the overall goals or objectives of the demo farm? How are these decided?***
Farmer 1	At the minute, it's mainly students and pupils I'm dealing with at the minute. Agricultural students at Harper Adams [University] so they come here as part of their various courses, Integrated Farm Management which is the bigger picture and also on the Wildlife and Conservation course come here to look at how wildlife measures are integrated into the farm.
Interviewer	***In terms of how that's decided then, is that largely coming from Harper in terms of what they want on their courses … or is that more sort of directed by you?***
Farmer 1	It's from the courses; I tailor them, if they're looking at Integrated Crop Management then we look at the crop rotation and the decisions I make. I do refer to the wildlife part in that, because … I skew the demonstrations and the walks and that to the particular courses. You know, if it's a school course, they may want geography, so you look at land use and alternative land uses and talk about that. It is governed by whatever group comes here. I've had a few farmer groups and, from Harper they brought the International Symposium of Farming Methods Conference, who came. So it is, I try and tailor it to what they want, rather than what they get. Hopefully they get what they want and … but I try and broaden it out because I think it's important to look at all aspects of the farm … but I give the emphasis on whatever topic they want.

2.4.2 Follow up workshops

Workshops or focus groups will be used to validate the data collected in interviews and the event level tools. Activities will be conducted in the workshops/focus groups such as the actor matrix linkage exercises to capture actor interactions with each other and AKIS actors. Guidance and training for these activities will be provided at the project meeting in July. WP leaders will also attend some workshops to support partners. For timing, see Table 2.

2.4.3 Observation tool

The Observation tool consists of rubrics and open questions. More than one attending researcher should fill it in right after the demonstration activity, preferably. The observing researchers should read the observation tool very carefully before the demonstration event takes place, so they know what they should focus on while observing. When asked for in the tool, the

illustrations/examples are required. Pictures about the techniques and tools used during the demo event should be added.

The different researchers observing the demonstration are asked to discuss their answers and fill in one copy of the observation tool together afterwards. For timing, see Table 2.

2.4.4 Pre and post survey

2.4.4.1 Participants

As many participants as possible are asked to fill in the pre survey right before the demo event and to hand it in right after they filled it in. This also counts for the post survey.

If a participant forgot this and left, the observing researcher is asked to contact them with a request to send it back. This can be by email, or post mail. Depending on the number of participants, we aim at a rate of at the following rates.

Number of participants	Response rates
<20	75%
20-40	60%
40-60	50%
60-80	40%
>80	30%
>200	20%
>500	10%

2.4.4.2 Demonstrator

If there is more than one demonstrator, they each fill in a copy of the pre and post survey, respectively right before and after the demo event.

2.4.5 Post host farm interview

The interview schedule comprises both closed and open questions. These questions concern the individual investigated event. The interviews are intended as face-to-face interviews.

The interview contains two parts: the first part should be asked if the host farmer is not the same person as the demonstrator. The second part should be asked to the host farmer even if it is the same person as the demonstrator.

For interview recording and transcription we will use the same approach as described for the farm and programme/network level interviews. Telephone surveys

Approximately 6 months after the observed demonstration activity. The partners will be asked to conduct a telephone interview with the demonstrator(s) and as many participants as possible, depending on their availability and how many agreed in the pre-survey to be contacted.

3 Uploading the data for analysis

The data (translated into English where necessary) from every case study will be uploaded by partners in Bitrix in a map structure. Templates and guidelines will be provided. The leading partners of WP3, 4 & 5 can access this data to analyse using methods relevant to their work

package research questions. Each work package will have its own case study report, focussing on their own tasks. Statistical programmes used will include SPSS for quantitative data analysis and QSR NVivo for qualitative data analysis.

Numerical responses will be analysed in SPSS. Analysis will include descriptive statistics and correlational tests (response rates permitting). The analysis of open responses will be largely inductive; involving the research team deriving meaningful themes from the data but with the respective work package objectives and anything notable emerging from the quantitative analysis in mind. In this sense, the approach views deductive and inductive strategies as 'tendencies' rather than distinct or opposing strategies. The emergent coding framework and their populations (i.e. the number of references to that specific node) will be examined; individual nodes identified will be reviewed in context of the research objectives, and where relevant, grouped together, refined, combined or discarded. As well as organising the thematic analysis of open responses, NVivo will be used to explore patterns in the responses according to socio-demographic attributes, such as age, gender, role and so on.

4 References

Bailey, A. P., Garforth, C. J., Angell, B., Scott, T., Beedell, J., Beechener, S., & Rana, R. B. (2006). Helping Farmers Adjust To Policy Reforms Through Demonstration Farms: Lessons From a Project in England 1. Journal of Farm Management, 12(10), 613–625.

Knowles, M. S. (1980). The Modern Practice Of Adult Education, From Pedagogy to Andragogy: What Is Andragogy ? Business, 400. https://doi.org/10.4324/9780203802670

Moschitz, H., Tisenkopfs, T., Brunori, G., Home, R., Kunda, I., & Sumane, S. (2014). Final report of the SOLINSA project. Solinsa.

OECD. (2013). Innovative Learning Environments. Educational Research and Innovation. https://doi.org/10.1787/9789264203488-en

Tilbury, D. (2011). Education for sustainable development: An expert review of processes and learning. Paris, UNESCO, Retrieved. Retrieved from http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Education+for+sustainable+development+An+expert+review+of+processes+and+learning#0

Topping, K., Buchs, C., Duran, D., & Van Keer, H. (2017). Effective peer learning: From principles to practical implementation. Taylor & Francis.

Topping, K. J., & Ehly, S. W. (2001). Peer Assisted Learning : A Framework for Consultation Peer Assisted Learning : A Framework for Consultation. Journal of Educational and Psychological Consultation, 12(2), 113–132. https://doi.org/10.1207/S1532768XJEPC1202