AKIS and advisory services in *Cyprus*

Report for the AKIS inventory (Task 1.2) of the i2connect project

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Authors:
Alex, Koutsouris
Eleni Zarokosta
Vassiliki Kanaki

Contact: koutsouris@aua.gr

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Executive summary

The main aim of the report is to provide a comprehensive description of the Agricultural Knowledge and Information System (AKIS) in Cyprus, with a particular focus on agricultural advisory services. This report is one of the AUA outputs[1] in the framework of Task 1.2 of the i2connect project (Connecting advisers to boost interactive innovation in agriculture and forestry) aiming "*... to update the existing AKIS descriptions for the 27 EU member states (cf. http://proakis.webarchive.hutton.ac.uk/) and to expand the inventory through elaboration of reports for Croatia, Switzerland, Montenegro and Serbia.*" (i2connect Grant Agreement). Thus, it is one of the country reports that were produced in 2020 by project partners and subcontractors for compiling an inventory of Agricultural Knowledge and Information Systems. In this report, AKIS description is based on the infrastructural concept. The report at hand thus includes AKIS characteristics (actors, policy, governance and coordination), a short history of the advisory system, and an overview of the current advice providers and their key characteristics (such as funding, human resources, advisory methods, clients and topics, etc.).

The agricultural sector in Cyprus is characterised[2] by the second smallest average farm size (3.2 ha. vs. 15.2 ha. in EU-27), the second highest proportion of small scale family farms (75.7% less than 2 ha.) and a rather small percentage of employment in agriculture (2.1% vs. 4% in EU-27). The average age of farmers is higher than in most European countries (44.6% over 65 years old vs. 32.8% in EU-27); the number of young managers less than 40 years old by 100 elderly managers (65 years old and over) is the lowest in the EU-27 (7.3 vs. 32.5 in EU-27) while, at the same time, 72.5% of the farm managers have practical experience only (vs. 68.3% in EU-27).

Labour productivity in agriculture (EUR/AWU[3]) is below (82.6%) the EU-27 average. Animal production is .more important than livestock production (61:39 in terms of gross output, 2018). Farms with livestock account for 29% of all farms.

[1] The second one concerns the Greek AKIS report.

[2] The data cited here were drawn for the CAP context indicators.

[3] Euro per Annual Work Unit.

Almost two thirds of the agricultural output value come from milk, pigs, poultry, fruits and fresh vegetables.

Main crops[4] are fodder crops, cereals, olive plantations, vineyards, potatoes, citrus, nuts and fruit trees and vegetables. Out of the total agricultural land almost 19% is irrigated (2010). The breeding of pigs is important in Cyprus (almost 39% of all LSU[5]) followed by small ruminants (27%) and dairy cows (14%).

Cyprus has a substantial component of its AKIS within a single organisation (MANRE, the Ministry of Agriculture, Natural Resources and Environment). The Agriculture Division of MANRE undertakes activities in research through ARI (the Agricultural Research Institute) as well as in extension and farmers' education/training (Agricultural Extension Section of the Department of Agriculture). The Agricultural Extension Section comprises the headquarters (in Nicosia) and six District Agricultural Offices further divided into smaller target-areas called "agricultural beats". The Agricultural Extension Service aims at informing MANRE and ARI on farmers' problems, and to plan, promote and evaluate extension programs (information and training activities on innovations) as well as to carry out a wide variety of agricultural projects. Its activities are complemented by private (input) shops (run by agronomists) and private consultants as well as farmers' unions and producers groups. LAGs and other stakeholders play an important role in terms of rural development projects.

Cyprus has retained a strong, largely publicly funded advisory service, free of charge for farmers. There is recognition that given the very small farm size of holdings in the country the government should support farmers through a public advisory service.

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[4] In terms of cultivated area.

[5] LSU = Livestock Units

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Abbreviations

ARI: Agricultural Research Institute
CAP: Common Agricultural Policy
DA: Development Agency
DoA: Depertment of Agriculture, MANRE
KEGE: Agricultural training center
MANRE: Ministry of Agriculture, Natural Resources and Environment
NRN: National Rural Network
OGs: Operational Groups of European Innovation Partnership – Agriculture

1. Main structural characteristics of the agricultural and forestry sector

General country information[6]

Following some key-data about Cyprus are provided. The total area of land covered by the Cypriot state is 9,213 km2 (AFF) with the share of farmland being 12.1 % (2016, AFF). The country's population is 0.9 million (2018, AFF). The GDP[7] is 21.1 billion EUR and the GDP per capita 24,017 EUR (2018, ASF). Unemployment is as high as 8.2% of the labour force (2018, ASF). The exports of agricultural products are 382million EUR while the imports are 1,113 million EUR (2018, ASF).

Information on the agricultural sector

Following an overview of the agricultural sector is given, using topical data that underline the agricultural features of the country. Agriculture contributes to employment by 2.1% (2017, ASF) while it contributes 1.6% to the GDP (2018, AFF).

The farmland (Utilised Agricultural Area - UAA) is estimated to 112 thousand hectares (2016, AFF) with 34,940 (2016, AFF) farms (agricultural holdings). The average farm size (UAA per holding) is 32 ha. (2016, ASF) with the majority of the farms being characterized as very small, either in terms of either standard output (81.2% with standard output less than 8,000 EUR; 2016, AFF[8]) or size (89.6% have UAA below 5 ha.; 2016, ASF). The great majority (97.6%) of all farms are family farms, i.e. more than 50 % of regular labour comes from family members (2016, AFF).

With regard to organic farming, the area under organic farming is as high as 4.55% of UAA (2018, Eurostat)[9] with the organic crop area (fully converted area) being 3,768 ha (2018, Eurostat)[10].

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[6] Sources: AFF: Agriculture, Forestry and Fishery Statistics 2019 and ASF: Agristatistical Factsheet 2019
https://ec.europa.eu/eurostat/documents/3217494/10317767/KS-FK-19-001-EN-N.pdf/742d3fd2-961e-68c1-47d0-11cf30b11489

[7] Gross Domestic Product

[8] Economic size < 4,000 € (2016): 70.4% (ASF)

[9] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&pcode=sdg_02_40&language=en

[10] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&pcode=tag00098&language=en

Furthermore, according to ASF (2016) the farm holders less than 35 years old account for the 1.3% of all holders while the ones over 64 for 44.6%. The total labour force input in agriculture is 21 thousand annual work units[11] (2018, AFF). Young farmers (under 40 years old) (2016) account for 3.3 % of all farm managers with female farmers being 22.6% of all farm managers (2016, AFF). Farmers with full agricultural training account for only 0.6 % of all farm managers (2016, AFF).

Table 1.1: Structure of farm labour force (2016, ASF)

Family labour force	68,370 persons 13,250 AWUs	**Non family labour force**	Persons (not available) 3,950 AWUs
Holders	**Family members**	**Regular non-family labour force**	**Non regular non-family labour force**
34,370 persons 7,440 AWUs	34,000 persons 5,810 AWUs	3,950 AWUs	1,530 AWUs
Total farm labour force: 18,730 AWUs			

The value of agricultural output (production value at basic prices) (2018) is 732 million EUR with the Gross value added (at basic prices) being 341 million EUR[12]. The value of crop output is 279 millions EUR while the value of animal output is 430 millions EUR (2018, AFF). The main branches of agricultural production are illustrated in Table 1.2.

Table 1.2: Crop and Animal Production (in thousand tones)[13]

Cereals	2018	25
Root crops	2018	102
Fresh vegetables	2018	84
Permanent crops	2018	146
Raw milk	2018	295
Bovine meat	2018	5
Pig meat	2018	42
Poultry meat	2018	25

[11] AWUs = Annual work units. An AWU is equivalent to a worker employed on a full time basis for one year.

[12] Gross value added from Agriculture, forestry and fishing (2018): 2.0% of total GVA (ASF)

[13] Source: Agriculture, Forestry and Fishery Statistics 2019 (AFF); for sheep and goat meat: https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=1&pcode=tag00045&language=en

Sheep and goat meat	2018	5.58

Specifically as far as animal production is concerned, all livestock categories account for 172,080 LSU [14], with the livestock density index (2016) being 1.54 LSU/ha UAA[15]. A more detailed account of Heads and LSUs is provided in Table 1.3.

Table 1.3: Livestock in Cyprus

Livestock[16]	Year	Heads	Livestock Units (LSU)
Bovine	2016	53,710	39,900
Pigs	2016	265,042	60,770
Sheep	2016	264,803	26,480
Goats	2016	169,980	17,000
Poultry	2016	2,600 thousand heads	24,240

Information on the forestry sector.

The forest and other wooded land is 386 thousand hectares (2015, AFF) while the farms with wooded area Greece are 1,080 holdings[17]. An overview on the forestry sector is provided in Table 1.4.

Table 1.4: Forestry in Cyprus

Forestry	Year		
Forest and other wooded land	2015	386	thousand hectares (AFF)
Persons employed in forestry and logging	2016	390	Working units
Gross value added (at basic prices)	2016	2	EUR million
Roundwood (in the rough)	2017	16	Thousand cubic metres

Source: Agriculture, Forestry and Fishery Statistics, 2019

The output of forestry and connected secondary activities is 3.90 millions EUR (2015, Eurostat)[18] and the Gross Value Added (at basic prices) is 2 millions EUR (2016, AFF).

[14] The livestock species aggregated in the LSU total, for the purpose of this indicator, are: equidae, bovine, sheep, goats, swine, poultry and rabbits.

[15] Source: https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tai09&plugin=1

[16] Source: Cypriot Statistical Authority (2018); for poultry and LSU see Eurostat (Main livestock indicators by NUTS2 regions)

[17] Source: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ef_lus_main&lang=en

[18] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_eoutput&lang=en

Finally, while the persons employed in forestry and logging amount to 390 working units (2016, AFF), a more recent account is illustrated in Table 1.5.

Table 1.5: Employment in forestry related activities (2019)[19]

Type of employment		**Number of employed persons** (in *thousands*)
Forestry and logging	2017	0.6 (u)
Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	2017	2.5
Manufacture of paper and paper products	2017	0.5 (u)
Manufacture of furniture	2017	1.2 (u)
Total (for manufacture)	2017	4.2

(u) = low reliability

[19] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=for_emp_lfs&lang=en

2. Characteristics of AKIS

2.1. AKIS description

In Cyprus the main AKIS actors can be depicted as follows:

In the first place, the Ministry of Agriculture, Rural Development and Environment in Cyprus consists of ten Departments within three divisions, namely the Agriculture and Rural Development Division, the Natural Resources and Environment Division and the Strategic Planning and Human Resources Division. The Department of Agriculture as well as ARI (the Agricultural Research Institute) are included in the Agricultural and Rural Development Division of the Ministry. The Dept. of Agriculture comprises 14 Sections, one of which is the Agricultural Extension Section.

Extension work is coordinated by the Extension Section at the headquarters in Nicosia in association with the six Agricultural District Offices of the Dept. (together making up the Agricultural Extension Service). The Extension Section comprises of the following sectors: Extension Program Planning and Implementation, Program Evaluation, Publicity, and National Rural Network (including the Cyprus European Innovation Partnership). Therefore, the Extension Section coordinates all extension activities in close cooperation with the District offices (including three local agricultural (farmers') training centres – KEGE) and the other specialist sections of the Dept. of Agriculture. Furthermore, wherever and whenever needed, the Extension service communicates with other Depts. within the Ministry to provide a comprehensive solution, i.e. to resolve a certain farming problem.

In terms of Higher Education Institutes (HEIs), the Cyprus University of Technology is a rather newly established institution (2004; operational since 2007), including the Faculty of Geotechnical Sciences & Environmental Management.

Furthermore, around 40 private advisory/consultants' companies, and quite a number of private (input) shops/companies (run by agronomists), cooperatives[20]

[20] In Cyprus there are 5 Farmer Unions affiliated to the main political parties. Nevertheless, they cooperate to promote the Cypriot farmers' interests in the EU through COPA-COGECA and CEJA (European Council of Young Farmers)

(dealing with the processing and marketing of produces) and producers groups are active in agriculture. The role of Development Agencies (LEADER/CDLL Local Action Groups) has to be underlined in terms of rural development.

In Cyprus the main actor generating Agricultural knowledge is ARI. Due to its recent establishment, it is only nowadays that the University becomes an important player in this respect. New Agricultural knowledge and technology is also imported or generated (experimental plots) by private agronomists' companies (input shops).

The major linking actor between research and farmers is the Extension Section of the Dept. of Agriculture. The fact that ARI is an integral part of the Ministry of Agriculture makes two-way communication between research (ARI) and extension easier; however, in general, researchers are mostly concerned with publishing their research results in scientific journals (as is elsewhere too) rather than with solving farmers' problems. Links between the University and the Dept. of Agriculture are developing, although mostly informally.

Therefore, ARI and, lately, the Cyprus University of Technology, along with private (input) companies are the major generators of agricultural knowledge or transfer knowledge and innovations from abroad.

Furthermore, it is, more or less, commonly accepted among all actors that the Extension Section plays an all important role, esp. in the dissemination of knowledge and technology. Private companies' and input shops' agronomists[21] as well as producer groups' and cooperatives' agronomists (esp. of the ones applying quality systems) also contribute to the transfer of knowledge and technology to farmers. Finally, farmer-to-farmer dissemination plays an important role in a small country such as Cyprus.

In a sense, there is not any specific policy framework or formal agreements between the AKIS actors[22]. However, the functioning of the Extension Service covers as a coordination mechanism, one way or another, the Cypriot agriculture needs. More or less, beyond dealing with strictly legal matters (re: the EU Regulations), there is contact with the farming/rural population, esp. producer

[21] For some, private agronomists (working for input companies or input shops' owners) are the main actors providing advice to farmers; advice accompanies the purchase of inputs by the farmer and is not charged (is "free") as such.

[22] The Cypriot Agricultural Research Council, est. 2015, is thus far inactive.

groups and farmers' unions (as for example meetings with the Boards of such groups) as well, indirectly, through the Development Agencies and other rural development actors with whom extension is closely cooperating. District Offices and beats extension officers are in contact with farmers and act as two-way communication mechanisms between the Extension Section and farmers. The Extension Section with some input from ARI puts together the annual extension programmes which the Section monitors and evaluates (although not always formally – in the strict sense). On the other hand, ARI staff participates in several of the service's educational activities and tries (although without a relevant section/staff or funds) grasp with farmers' problems.

Missing links may be identified between private (input) companies and the extension service as well as between consultancy/advisory companies and the service (i.e. beyond legal matters or trainings). Such companies however may cooperate with District Offices in case production problems arise.

Nevertheless, some points of criticism or concern are also put forward mainly concerning the increasingly bureaucratic tasks undertaken by the Extension Service as a result of both the country's accession into the EU (2004) and the obligations imposed by the Troika (2013) due to the economic crisis (resulting in decreasing contacts with farmers - a fact acknowledged by all actors in Cyprus). Concerns are also expressed about the adequate staffing of the Section, and more generally of the Dept., which along with the pressure for the restructuring (downsizing) of the public sector by the Troika, may result in the downgrading of extension/advisory work. The updating of extension officers knowledge (including extension methodology) has also been put forward (although not as forcefully).

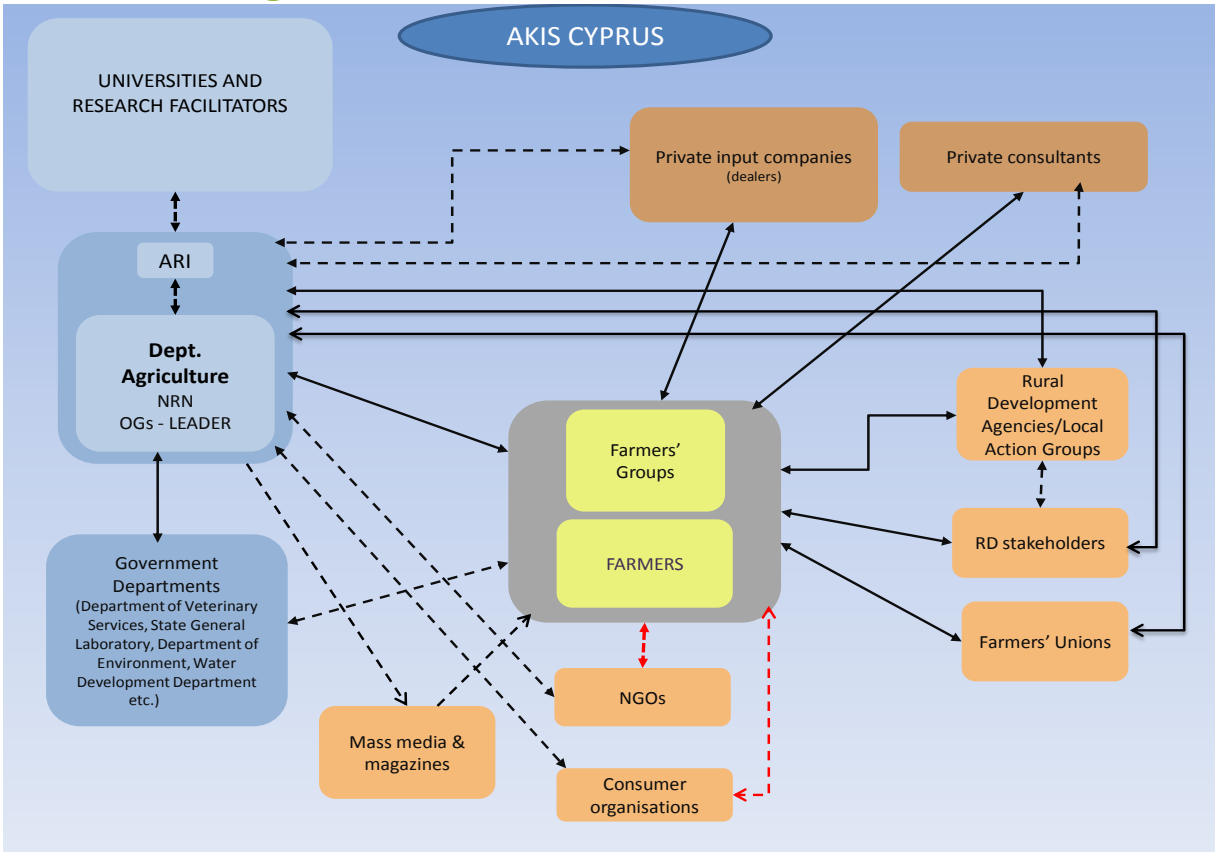
To this, the decreasing interaction of ARI, in the last years, with farmers has to be added. Under the current circumstances both ARI and the Cyprus University of Technology are largely dependent on participation in EU-funded projects which nevertheless do not, more or less, correspond to the needs of the Cypriot agriculture. The two institutions do not have own mechanisms to disseminate the knowledge they generate; furthermore, they are largely oriented towards publications in scientific journals and less in publications in popular magazines or the (farming) press. An important fact (confirmed by both ARI and the University)

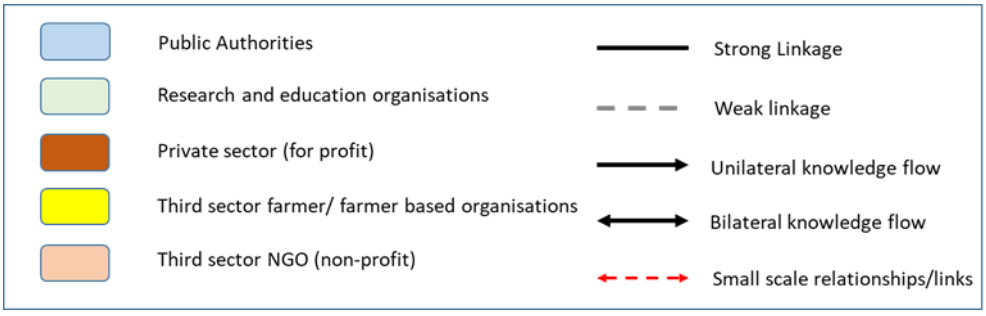
is that (very few) farmers have started to ask for specific information related to small-scale projects (mainly analyses) which they fund[23].

As a result, quite a few of the actors in Cypriot agriculture suggest a more intensive cooperation between all the actors concerned (with the lead of the Dept. of Agriculture/ Extension Section). The employment of a network of experimental plots (collaborative experiments) for the generation-testing-adaptation-introduction of innovations is also put forward. For such a collaborative network, the need to focus more on farmers' needs as well as on (the enhancement of) farmers' occupational training and experiential learning is underlined. Farmers, on their part, have to become more open and willing to share their know-how with their colleagues and thus allow for/facilitate farmer-to-farmer transfer of innovations. A further obstacle stems from farmers' unwillingness to pay for advice (since currently they do not, in general, have to pay) as far as private services are concerned. Additionally, farmers are presented as unwilling to undertake risks while, on the other hand, introduce new cultivations without waiting for the results of experimental plots run by ARI and/or the Extension Section.

[23] The lack of courses on extension in the university should be also underlined. The university cooperates with other relevant actors (progressive farmers, companies, private advisors, development agencies, etc.) largely due to funding opportunities such as projects, thus, usually, without establishing permanent links with them.

2.2. AKIS diagram





MEMO:
Research facilitators: National Research Council
ARI: Agricultural Research Institute
NRN: National Rural Network
OGs: Operational Groups of the European Innovation Partnership (EIP-AGRI)
RD stakeholders: various groups involved in rural development[24]

[24] Mainly emigrants' associations involved with LEADER LAGs.

3. History of the advisory system

It is worth mentioning that the Extension Section of the Dept. of Agriculture has changed little since its establishment in the 1960s.

As aforementioned, the Sections' headquarters are located in Nicosia. The Extension section coordinates all of the Extension activities with the close cooperation of the District offices and the other specialist sections of the Dept. of Agriculture and/or other Depts. within the Ministry.

Furthermore, for practical purposes and for facilitation of extension activities, the District offices are subdivided further into smaller target-areas called "agricultural beats"[25]. The number of villages within each beat differs depending on population density and production intensity. Each beat is served by an extension agricultural officer, who is a university graduate (agronomist). Agricultural officers are assisted by agricultural or animal husbandry technicians. Currently, the extension service employs 50 people of whom 70% university graduates.

In general, the objectives of the Agricultural Extension Service is to inform the Ministry of Agriculture, Rural Development and Environment as well as the Agricultural Research Institute (ARI) on problems farmers encounter, to train farmers on innovations regarding agriculture, and to plan, promote and evaluate extension programs as well as a wide variety of agricultural projects. Extension employees use a variety of extension communication methods (individual, group and mass) to attain such objectives.

Currently, the Extension Section is responsible for the dissemination of cross-compliance rules/prerequisites to farmers and coordinates the National Rural Network (including the Cyprus European Innovation Partnership) , FAS (see below) and farmers' training through seminars in the three District training centres (KEGE) as well as at the Head offices in Nicosia, with emphasis on the Young Farmers programme (seminars in which trainers are mostly Depts' employees with no additional fee, apprenticeship schemes and short courses).

[25] District Offices: Larnaca (4 Beats); Limassol (6 Beats); Nicosia (8 Beats); Paphos (8 Beats); Famagusta (1 Beat); and, Pistilia (4 Beats).

The District Offices (esp. 'beats') comprise the first-line extension workers (officers). Officers operate on the basis of 'traditional agricultural extension' in the sense that they are in, more or less, close contact with farmers. Therefore,

farmers make requests and the extension staff either responds to the query - provides a solution to the problem, or addresses the Dept's (or Ministry's) specialists and laboratories (if, for example, further analyses are required); following, the results are fed back to farmers along with certain recommendations (relating, for example, to the results of an soil and/or leaf analysis

extension officers make all kinds of public announcements (posters at office, SMS to farmers and telephone calls to producer groups, distribution of print materials produced by the Section, etc.) and organize meetings (individual or group, using various audiovisual aids) in the framework of their extension programmes (if necessary in the evenings as well, i.e. beyond official working times) which relate to local needs and the National Rural Development Plan. They also monitor the implementation of various measures/projects relating to the NRDP/CAP and make relevant controls, run the KEGE as well as experimental/demonstration plots, assist in the establishment of farmer groups, are responsible for the certification of seed production and so on.

The most important knowledge sources for the Section are the university, public research, public authorities and the internet. The service cooperates with all kinds of actors.

Records of advisory work are kept in District Office and they are uploaded to a computer software programme which is monitored by the Extension section at Head Offices; no rewards are foreseen beyond the officers' salaries (even their engagement in the training courses held in KEGE does not result in any kind of extra remuneration).

The Section prepares a strategic plan, known as "Annual Extension Programme", including objectives to be pursued and targets to be accomplished based on the identification of local needs and the solutions identified. The programme/plan is designed by representatives of the Sections of the Dept. of Agriculture, District Offices. The progress achieved is checked and evaluated at local and district levels, as well as at the Section's headquarters through personnel follow-up, regular

district meetings and detailed reports. Revision/adaptation of the programme is undertaken whenever needed.

The service employs all known 'traditional extension' methods, i.e. individual (personal and telephone contacts, including SMS), group (demonstrations, public talks, educational excursions, short training courses) and mass (radio programmes, press articles/releases, leaflets and bulletins, posters, circular letters, etc.; a quarterly agricultural magazine of the Ministry known as Countryman is also published and circulated). Additionally, training courses for farmers are offered at the local training centres (KEGE).

The service's needs focus on the enhancement of cooperation and networking with knowledge and innovation sources (such as Universities and research centres) with the establishment of frequent exchanges of information between such organisations. In this respect, the safeguarding of funding in order for advisors to continuously update their knowledge and skills is a further major concern. Recently, the Department of Agriculture, acknowledging the need for further developing the skills and techniques of its Extension workforce, has encouraged their participation in the competence development programme CECRA.

Finally, digitization (along with a functional AKIS) is seen as an opportunity in terms of enhancing the impact of Extension on the Cypriot farming.

4. The agricultural and forestry advisory service(s)

Introduction:

The survey was based on the instrument (questionnaire) developed by the University of Hohenheim in consultation with project partners; the questionnaire was then translated into Greek by the AUA team. Following, based on the country's AKIS diagram 'representatives' of the main providers of advice to farmers (private advisory/consultancy companies; freelance advisors/consultants; input shops; cooperatives[26]; Development Agencies; and, Extension Section of the Dept of Agriculture (DoA), Ministry of Agriculture, Rural Development & Environment) were conducted (through the Extension Section, DoA) and asked to contribute to the survey (i.e. to visit the questionnaire at https://ec.europa.eu/eusurvey/runner/i2connectAKISsurvey?surveylanguage=EN#page0 and respond to the questions). Both the Extension Section, DoA and the AUA team provided assistance whenever needed. Overall 17 questionnaires were completed covering, more or less, all areas of the country[27].

4.1. Overview of all service suppliers

As seen in the previous sections, the Cypriot AFKIS is rather strong and integrated. Therefore one can find the Extension Section, DoA playing a dominant role with other entities providing farmers with all kinds of advice as well.

In this respect for the present study representatives from all kinds of providers were sought. The providers who participated in the survey are depicted in Figure 1[28].

[26] In Cyprus farmers Unions are affiliated to the political parties.

[27] To secure that at least 3 providers from each category would respond to the on-line questionnaire we got in contact with 19 providers across the country.

[28] The numbers of different categories of providers in the Figure are not representative of the presence of these categories across the country.

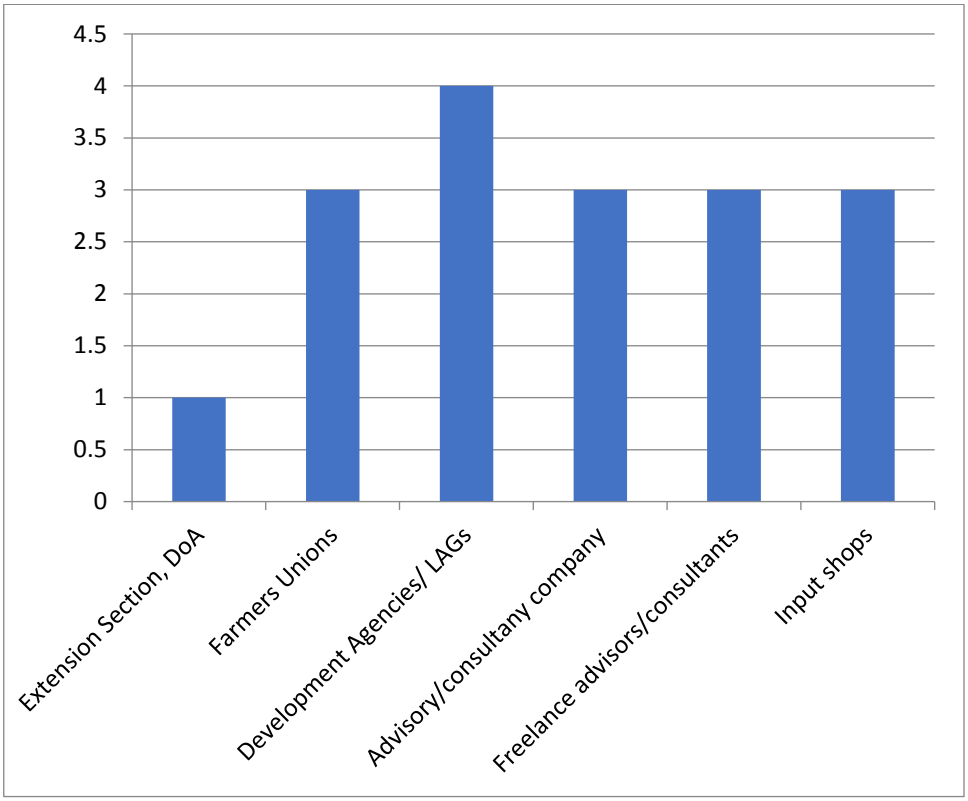


Figure 1: No of participants in the survey per category of advice provider

All providers work at national level with the exception of Development Agencies/LAGs, one of the freelances and one of the input shops

4.2. Public policy, funding schemes, financing mechanisms, advisory service providers

In Cyprus, the Extension Section of the Dept of Agriculture is a long-lasting, strong mechanism supporting farmers and farming. The support provided to farmers is free.

Cost-recovery from farmers (fee for service financing) is the common source of funding for advisory/consultancy companies and freelance advisors/consultants. Development Agencies/LAGs are funded mainly through EU and national/regional projects while in the case of Farmers Unions (cooperatives) the cost is mainly covered by membership fee/levy. Some among the providers may also be involved in (and funded by) EU and national projects. Finally, farmers have access/buy 'free' advice through/along with the purchase of inputs one buys from input shops which play an important role in the Cypriot agriculture.

Among advisory providers, half of the Development Agencies, the majority (2 out of 3) of the farmers unions and advisory/consultancy companies and one (out of 3) of the freelance advisors claim that their budget has increased or decreased more than 10% in the last 3 years. Increase is mentioned by the Development Agencies and Farmers Unions due to the increased demands for their services[29]. On the contrary, both the abovementioned companies and freelances providing advisory/consultancy services notice decreases in their budgets due to the economic crisis (in the beginning of the 2010s) and the steadily decreasing employment in agriculture.

4.3. Human resources and methods of service provision

Human resources

The number of employees in advisory/consultancy companies range between 2 and 5 (average: ca. 4) out of whom around 3 are advisors (ranging between 2 and 4); on average 1 woman work as advisor. Farmers Unions[30] employ on average 7 persons (ranging between 5 and 8 persons) out of whom 4 are advisors (ranging between 2 and 10); on average 1 woman works as advisor. Development Agencies employ on average 6 persons (ranging between 5 and 7 persons) out of whom around 5 work (range: from 4 to 7) as advisors; on average almost 2 women work as advisors. The DoA is by far the largest provided employing 420 persons out of whom 24 are advisors; 10 advisors are women.

Among the 3 interviewed freelancers there is no woman.

Half of the Development Agencies along with one input shop/company declare increases in their personnel in the past 5 years owing to the increase of their clients; one Farmers Union also stated increase but this owes to the bureaucracy of the CAP. On the contrary, the Extension Section, DoA, personnel decreased since the retired personnel was not replaced (a consequence of the recent economic crisis in Cyprus).

[29] The covid-19 pandemic is mentioned by 1 Farmers Union as a trigger to the increase of farmers' demand for services.

[30] In the categories of organizations that follow advisors may well be confused with agronomists working in the organization.

As far as back-offices are concerned the DoA (32 persons), the Development Agencies (average 2 persons each), two of the Farmers Unions (average 5 persons each) as well as 1 of the advisory/consultancy companies (2 persons) and 1 input shop/company (1 person) claim to occupy personnel in such a task.

Education level of advisors

In all cases advisors have a bachelor (3-4 years of studies) or an agronomist/engineer degree (5 years of studies). Some (i.e. 1 advisory/consultancy company and 1 input shop/company) also employ 'Vocational school/Practice-oriented technical training' graduates.

Higher qualifications are mainly found in the extension Section, DoA, (1 PhD and 23 MSc) and input shops/companies (average: 5 MSc[31]), followed by Development Agencies (average: 2 MSc[32]) and advisory companies and Farmers Unions (average: 1.5 MSc in their personnel).

The 3 freelancers interviewed hold the agronomist/engineer degree.

In only 2 cases (1 advisory/consultancy company and 1 Farmers Union) in was said that in order to hire someone organizations relevant experience is required while 1 input shop/company said that candidates are trained by the company.

Professional experience in years

In all the input shops/companies most advisors have experience ranging between 3 and 10 years (on average: 12, which is double the numbers of the more experienced advisors (average 6) who, in turn, are double the numbers of inexperienced – experience up to 3years – advisors who are, on average, 3 in each company). The same holds true, more or less, also for Development Agencies (2.5 vs. 2 vs. 1.75, respectively) and Farmers Unions (3 vs. 1.5 vs. 0.5 respectively).

On the contrary, all advisors in the Extension Section and all but one in advisory/consultancy companies are experienced (i.e. more than 10 years work as advisors). This is especially problematic for the Extension Section, DoA, due to the abovementioned restriction in hiring new personnel.

[31] Data from 2 out of 3 input shops/companies.

[32] Data from 3 out of 4 Das.

Finally, all freelancers are experienced (> 10 years).

Advisory certification

None of the providers claimed to have (as an organization or its employees/advisors) any Advisory Certification. The mentioned companies/organizations' certifications mainly imply the entitlement for running/participating in Measures of the National Rural Development Programme.

The only other staff certifications mentioned concern cross-compliance (3 cases).

4.4. Clients and topics

Clients

All advisory providers serve quite a number, each, of client groups; only in the case of two of the Development Agencies the clientele is up to three categories, i.e. somewhat clearly defined. Almost all (15 out of 17) providers support 'farmers with small/medium-scaled farms'; 'young farmers' and/or 'new entrants' (14 and 13, respectively); and, 'farmers with large commercial farms' (12). More than half of the providers support 'producer groups', 'SMEs', 'part-time farmers' (12 each), women farmers (11) as well as 'semi-subsistence farms' and 'advisors/consultants' (10 each). On the other hand, very few providers support 'farm workers' and 'forest owners/mangers' (4 and 2, respectively).

All Development Agencies support both 'advisors/consultants' and 'SMEs'. There is no obvious relationship between client group and advisory activities/topic since, as abovementioned, client groups do not differ radically between advisory providers.

Topics

As seen in Figure 2 (below) the advisory topics are most demanded by clients are: 'rural development support and diversification' (14); 'support with grant application and compliance with regulation and standards' (12); 'entrepreneurship and farm management' (10); 'agri-environmental stewardship measures and nature conservation' (12); and, 'production technologies' (6).

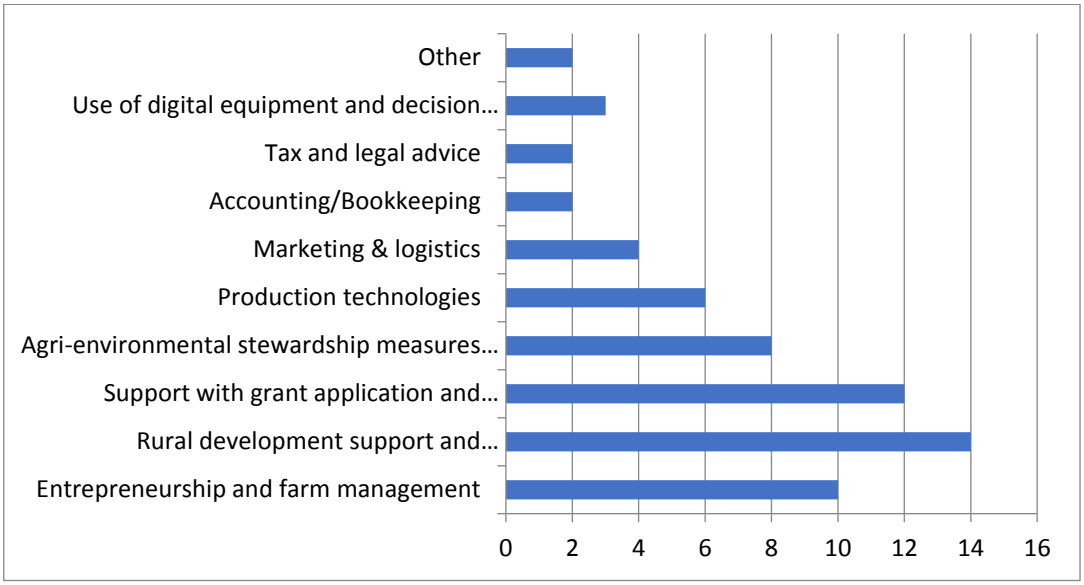


Figure 2: Most demanded, by clients, advisory topics

It is clear that 'production technologies' is not a topic for which farmers would ask Development Agencies which are mainly consulted for 'rural development support and diversification' (all DAs) and to a lesser degree for 'entrepreneurship and farm management' (3 out of 4). 'Rural development support and diversification', 'support with grant application and compliance with regulation and standards' and 'agri-environmental stewardship measures and nature conservation' is the common topics for which farmers ask all Farmers Unions. 'Rural development support and diversification', 'support with grant application and compliance with regulation and standards' is an important topic for which all but one advisors/consultants (either companies or freelancers) are asked followed by 'entrepreneurship and farm management' (4 out of 6). 'Production technologies[33]' is thus a topic largely addressed to input shops/companies and the Extension Section, DoA, followed by Farmers Unions (2 out of 3).

The number of clients ranges between 20 and 4,300 farmers. The Extension Section, DoA, claims 4,300 farmers/clients followed by freelancers who claim 100 clients each and advisory/consultancy companies with an average of around 50 clients (ranging from 40 to 60[34]). The data for Development Agencies are not consistent as they address different clienteles (municipalities, etc.)[35].

[33] Including guidelines on the use of inputs farmers buy from input shops.

[34] Data are available only for 2 out of 3 providers.

[35] Farmers Unions (claiming that they serve all those who ask for advice) and input shops/companies have not provided relevant data.

Advisory activities revolve mainly around 'enhancing access to resources (inputs, financing)' (13 out of 17 providers) and 'consultancy and backstopping' (12 providers), followed by 'training and capacity building' (11 providers), 'creating awareness and facilitating exchange of knowledge', 'networking/facilitation/brokerage' and 'providing support for the design and enforcement of laws and regulations for agricultural innovation' (10 providers each).

'Creating awareness and facilitating exchange of knowledge' and 'enhancing access to resources' are common activities for all Development Agencies, followed by 'networking/facilitation/brokerage' and 'providing support for the design and enforcement of laws and regulations for agricultural innovation' (3 out of 4 each).

'Creating awareness and facilitating exchange of knowledge', 'networking/facilitation/brokerage', 'enhancing access to resources', 'training and capacity building; and 'providing support for the design and enforcement of laws and regulations for agricultural innovation' are common activities for all Farmers Unions.

'Creating awareness and facilitating exchange of knowledge', 'consultancy and backstopping', 'networking/facilitation/brokerage' and 'enhancing access to resources' are common activities for all advisory/consultancy companies while 'consultancy and backstopping' is the main activity of all freelance advisors/consultants.

Outsourcing is mentioned in seven cases. Three of the Development Agencies and an input shop/company use external experts for spatial and building plans, while in another three cases (a private advisory company, a Farmers Union and the Extension Section, DoA) use external experts for business plans and feasibility studies.

Advisory methods

Face-to-face advice on the farm was mentioned by all the interviewees (17 out of 17) followed by face-to-face advice outside the farm and advice via telephone (13 and 12 providers, respectively). When Individual advice via digital apps is added (5 cases), all individual methods account for almost half of the methods mentioned by all providers. Group methods and mass media account for 41% and 12%, respectively, of the advisory methods mentioned. The use of digital tools is rather

restricted (less than 25% of the methods mentioned by providers). It is characteristic that traditional mass media (printed, RTV and the like) were more often mentioned than digital ones; digital tools also account for less than 1/3 of the group methods mentioned by providers. All freelancers along with the majority of input shops/companies and advisory/consultancy companies do not use any digital tools. The Extension Section, DoA, uses the widest range of advisory methods.

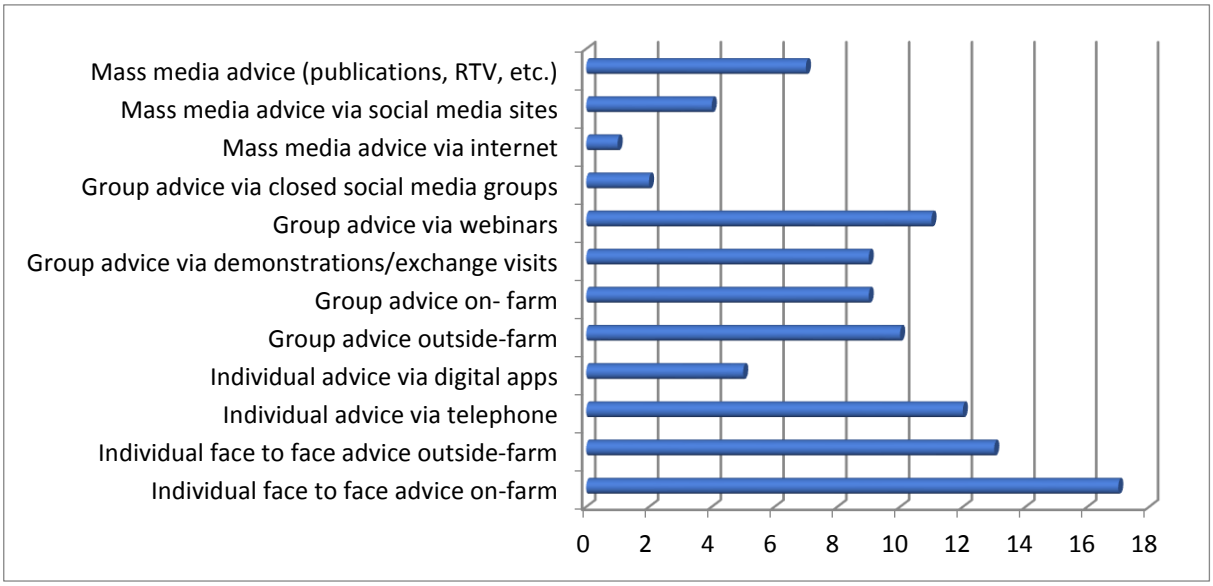


Figure 3: Most frequently used advisory methods

Individual methods, while are the most used ones among all providers (>55%), predominate among freelancers and input shops/companies (>80%). Group methods are used by advisory/consultancy companies much more than by freelancers (33% vs. 12%, respectively); Farmers unions also use group methods quite extensively (22%) as compared to other providers (>11%). Mass media are mostly used by the Development Agencies and the Extension Section, DoA (>20%) and Farmers Unions (18%) use mass media the most while other providers make minimal use (<10%) of them.

Almost one in three, i.e. 6 advisory providers (2 advisory/consultancy companies, 2 Farmers Unions, 1 Development Agency, and the Extension Section, DoA) state that the way to provide advice has changed due to the covid-19 pandemic. In most cases (4 out of 6) increased telephone contacts and digital technologies are reported as the means to provide advice replacing face-to-face contacts. In the

rest of the cases the suspension of face-to-face meetings (either individual or group) is mentioned.

4.5. Linkages with other AKIS actors/knowledge flows

As seen in Figure 4 (below) advisory/consultancy companies have very strong links with public administration (3[36]) and medium links with other similar companies (2.0); furthermore, they have weak-to-medium links with research and FBOs – professional organizations (1.67).

Freelancers, have rather strong links with public administration (2.67), medium-to-strong links with FBOs – professional organizations (2.33) and weak-to-medium links with advisory/consultancy companies (1.67).

Farmers Unions have strong links with public administration and other FBOs – professional organizations (3), medium links with advisory/consultancy companies (2) and weak-to-medium links with research (1.67).

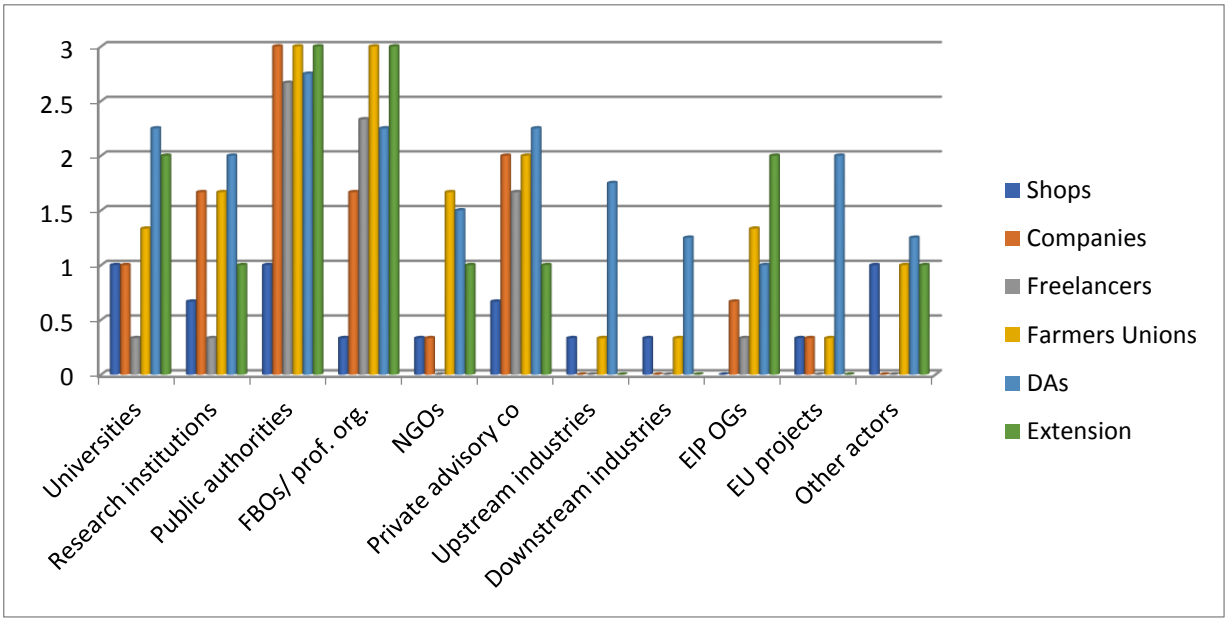


Figure 4: Degree of cooperation of advice providers with other AKIS actors

Memo: 0= no cooperation; 1= weak cooperation; 2= medium cooperation; 3= strong cooperation.

[36] For these calculations it is assumed that: no cooperation = 0; weak cooperation = 1; medium cooperation = 2; and, strong cooperation = 3.

Development Agencies have rather strong links with public administration (2.75) and medium-to-strong links with universities, FBOs – professional organizations and advisory/consultancy companies (2.25). they also have weak-to-medium links with upstream companies and NGOs (1.75 and 1.5, respectively).

Finally the Extension Section, DoA, has strong links with public administration and FBOs – professional organizations (3.00) and medium links with universities and EIP-OGs (2).

4.6. Programming and planning of advisory work

Two of the advisory/consultancy companies along with 1 Farmers Union, 1 input shop/company and the Extension Section, DoA, declared that they have staff development strategy. In most cases it concerns training/seminars on agricultural production along with quality and safety of produces; the Extension Section, DoA, said they focus on the CAP and relevant issues.

Only three organizations (1 advisory company, 1 DA and the Extension Section, DoA) said that they have a trainer/training unit with their staff mainly attending courses provided by the Human Resources Development Authority of Cyprus (AnAD). In another two cases it was mentioned that employees can proceed to further training/education on their own initiative.

In all cases training is said to last between one and two weeks. No incentives promoting attendance were mentioned.

Time allocation for advisory work

While advisory/consultancy companies and Farmers Unions mostly provide targeted services (55% and 50%, respectively; see Figure 5), the Extension Section, DoA, focuses on 'information dissemination - face to face, via digital tools' (70%). Teaching and training activities are mainly embraced by the Extension Section, DoA, and the DAs (15%, and 17%, respectively) with these two organizations also being involved to quite some degree in other tasks, that is, administrative/ bureaucratic tasks.

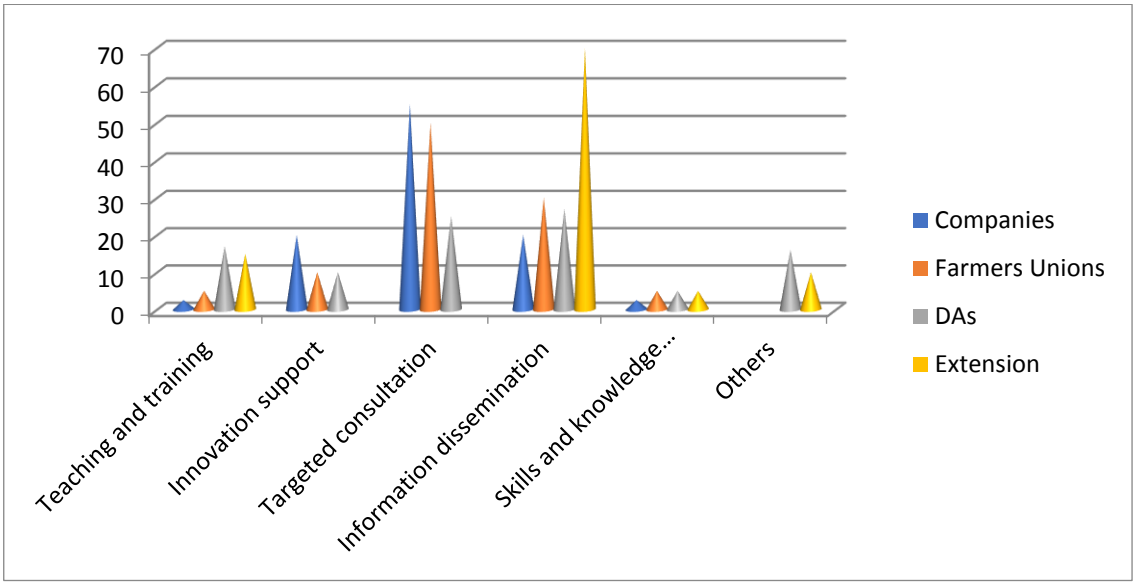


Figure 5: Allocation of advisors' time (%) in various activities

Finally, 'skills and knowledge development' are equally low for all providers (5%).

4.7. Advisory organisations forming the FAS and evaluation of their FAS implementation

Overall, 9 among the 17 interviewed organizations (the Extension Section, DoA, all the Farmers Unions, 2 out of 2 companies, 2 out of 4 DAs and 1 input shop/company) state that advice concerning the cross-compliance requirements (re: EU-FAS) is embedded in their other advisory activities[37].

[37] See: Koutsouris, A. (2014) 'Failing' to implement FAS under diverse extension contexts: a comparative account of Greece and Cyprus. In: *Farming systems facing global challenges: Capacities and strategies - 11th European Farming Systems Symposium*, Berlin (1-4 April 2014); http://ifsa.boku.ac.at/cms/fileadmin/Proceeding2014/WS_1_8_Koutsouris.pdf

5. Summary and conclusions

In Cyprus, the AKIS comprises the Dept of Agriculture, the Ministry of Agriculture, Natural Resources & Environment (mainly its Extension Section), and ARI (the Agricultural Research Institute), the newly established Cyprus University of Technology, private consultants and private (input) shops/companies, Farmers Unions, Development Agencies (LEADER LAGs) and, of course, producers groups and individual farmers.

In terms of knowledge generation ARI, through its applied research, predominates given that the university has only recently started to play some role; neither institute has mechanisms to disseminate knowledge to farmers. An important fact (confirmed by both ARI and the University) is that (very few) farmers have recently started to ask for specialized information and fund small-scale projects (mainly product analyses).

New knowledge and technology is also imported or generated (experimental plots) by private input companies (input shops). In terms of knowledge dissemination the Extension service (comprising the Extension Section, the District Offices and beat extension workers) predominates. Private companies' agronomists as well as Producer Groups' (esp. of the ones applying quality systems) and Farmers Unions' agronomists also contribute to the transfer of knowledge and technology to farmers. Finally, farmer-to-farmer dissemination plays an important role in a small country such as Cyprus.

Despite the fact that there is not any specific policy framework or formal agreements between the AKIS actors, the Extension Service covers, as a coordination mechanism, more or less, actors' bonding needs. The service is, for example, in contact with Producer Groups and Famers Unions as well as with individual farmers through District Offices and beats extension officers; therefore, a two-way communication mechanism between the Extension Section and farmers is, despite shortcomings, long ago established and still working. Important in this respect is the knowledge produced by innovative farmers who produce adapted knowledge (esp. on new crops or varieties) since they inform or ask for advice from the District Offices which, in turn inform (or ask for help from) the Extension Section and, generally, the Division of Agriculture.

Furthermore, the Extension Section cooperates with ARI in putting together its annual extension programmes (which the Section monitors) as well as in defining research needs. On the other hand, ARI staff actively participates in the service's educational activities and tries (although without a relevant section/staff or funds) to grasp farmers' problems.

Missing links may be identified between private (input) companies and the extension service as well as between private advisors/consultants and the service (i.e. beyond legal matters). Nevertheless, informal links (occasionally) exist at district and local level.

Given the fact that: a) the Extension Service as a result of the country's accession into the EU (2004) has increasingly undertaken bureaucratic tasks thus retreating from its educational role – a situation further aggravated by restrictions imposed by the Troika due to the economic crisis; b) the decreasing interaction of ARI with farmers; and c) both ARI and the Cyprus University of Technology are largely dependent on participation in EU-funded projects which nevertheless do not, more or less, correspond to the needs of the Cypriot agriculture, while, at the same time, d) are both largely oriented towards publications in scientific journals, the need for more intensive cooperation between all the actors concerned (with the lead of the Dept. of Agriculture/ Extension Section) underlined by all the actors in Cyprus is not surprising.

Concerns are also expressed about the adequate staffing of the Extension Section, and more generally of the Dept. of Agriculture, which along with the pressure for the restructuring (downsizing) of the public sector by the Troika, resulted in the downgrading of extension/advisory work in Cyprus; privatisation does not seem to be a viable option for Cyprus due to the extremely small scale farming (and other structural characteristics of the sector) in the country. The updating of extensionists' knowledge (including extension methodology) has been put forward.

Most of the published papers refer, albeit rather indirectly, to the positive role of the Extension Service in Cyprus. Examples include papers addressing agricultural marketing cooperatives (Andrew 1975, 1976a and b) in which the positive role of extension in relation to the improvements of quality of produces for the market as well papers addressing the issue of irrigation (a major problem in the country) and land consolidation (Van Tuijl, 1993; Cornish, 1998; Phocaides, 2002; Markou

and Stavri, 2005; Socratous, 2011), ruminant production (Morphakis, 1999 and, focusing on artificial insemination, Papachristoforou and Tzamaloukas, 2012) and the Young Framers programme (Aristides, 1995). Descriptions of the structure and functions of the Extension Section of the Department of Agriculture are found in World Bank (1985), Neocleous (1995), Morphakis (1999), Charalambous-Snow (2010) and Charalambous-Snow and Ingram (2011). Identification of constraints is included in World Bank (1985), Neocleous (1995), Morfakis (1999), Markou and Stavri (2005), Charalambous-Snow (2010) and Charalambous-Snow and Ingram (2011) as well as in Phocaides (2002) in relation to irrigation and CerOrganic (undated) in relation to organic farming. The constraints identified, are more or less, the abovementioned ones, i.e. the increasing time allocated by the service to regulatory work; the inadequate numbers of extensionists; the targeting of the increasing numbers of part-time farmers and women; the need to bridge the gap of trust and confidence on the part of the farmers; the training (knowledge and skills, including communication methods, ICTs, marketing, producer groups) and motivation of the extension staff; the marketing of the section's own activities (including communication activities) and the general awareness of the service on new developments (including cooperation with various services and private actors, the Agricultural Research Institute and the newly established University of Technology; and, updating knowledge on extension systems per se with emphasis on participatory and demand-driven extension and interactive innovation).

Despite interesting proposals such as: a) the establishment of a network of experimental plots (collaborative experiments) all over the countryside in order, on the one hand, to generate, adapt and disseminate (through farmer-to-farmer extension processes as well) innovations and, on the other hand, to focus more on farmers' needs and b) the enhancement of farmers' occupational training (with emphasis on experiential learning), farmers have, on their part, to become more entrepreneurial as well as more open and willing to share their know-how with their colleagues; farmers' unwillingness to pay for advice (since currently they do not) may be a further obstacle insofar as private services will become an important source of advice.

6. Acknowledgement of partners, information sources and gaps

The AUA team wishes to acknowledge the cooperation, on the one hand, of the Extension Section, Dept of Agriculture, Ministry of Agriculture, Rural Development and Environment, esp. of *Dr Efi Charalambous-Snow* (Head of Agricultural Extension) and *Mr Periklis Athanansiou* in assisting with the AKIS interviews and survey[38] and reviewing parts of the report and, on the other hand, of the interviewed key-persons concerning the Cypriot AKIS as well as of the advice providers who responded to our call to answer the on-line questionnaire.

List of key-interviewees

1	Dr Efi Charalambous-Snow - Head of Agricultural Extension, DoA
2	Dr Dimitris Tsaltas – Professor at the Cyprus University of Technology
3	Dr Dora Chimonidou – Director of ARI

[38] The Cypriot colleagues not only provided all necessary information and documentation but, additionally, immediately responded to queries and were in continuous contact (via skype, emails and telephone calls) with the research team.

List of survey participants

	Advisory/ consultancy companies
1	QUALITYCERT LTD, QUALITYCERT@CYTANET.COM.CY
2	AGROCERT LTD, https://cyprusregistry.com/companies/HE/169572
3	does not wish to disclose his/her data*
	Freelancers – advisors/consultants
4	ANTONIS NIKOLAOU, anikolaou1@yahoo.com
5	K.EL.N. Agrofood Ltd
6	AGROPLUS CONSULTANTS LTD, agroplus@cytanet.com.cy
	Input shops/companies
7	L. Lambrou Agro Ltd, www.lambrouagro.com.cy
8	Technomichaniki S.A., www.technochimiki.com.cy
9	does not wish to disclose his/her data*
	Farmers Unions
10	PANAGROTIKOS Association of Cyprus, https://www.panagrotikos.org.cy/
11	EKA (Union of Cypriot Farmers), eka.agroton@cytanet.com.cy
12	PEK (Pancyprian Farmers Union), http://www.polignosi.com/cgibin/hweb?-A=8450&-V=limmata
	Development Agencies/ LAGs
13	Development Agency of Troodos, www.anetroodos.org
14	Larnaca and Famagusta District Development Agency, www.anetel.com
15	Development Agency of Pafos 'Aphrodite', https://anetpa.com.cy/
16	Development Agency of Limassol, https://www.anelem.com/anelem-home/
17	**Extension Section, Dept of Agricilture,** http://www.moa.gov.cy/moa/da/da.nsf/index_gr/index_gr?opendocument

* Data known at the AUA team

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