Studies in Agricultural Economics
Volume 118, Number 3

Contents

FOREWORD
WORKSHOP REPORT
DANUBIONET open innovation workshop

ARTICLES

FLINT – Farm-level Indicators for New Topics in policy evaluation: an introduction 116
Krijn POPPE, Hans VROLIJK, Mark DOLMAN and Huib SILVIS

Measurement of sustainability in agriculture: a review of indicators 123
Laure LATRUFFE, Ambre DIAZABAKANA, Christian BOCKSTALLER, Yann DESJEUX, John FINN, Edel KELLY, Mary RYAN and Sandra UTHES

Stakeholders’ perceptions of sustainability measurement at farm level 131
Beatriz HERRERA, Maria GERSTER-BENTAYA and Andrea KNIERIM

Collecting sustainability data in different organisational settings of the European Farm Accountancy Data Network 138
Hans VROLIJK, Krijn POPPE and KESZTHELYI Szilard

Going beyond FADN: The use of additional data to gain insights into extension service use across European Union Member States 145
Noreen BRENNAN, Mary RYAN, Thia HENNESSY, Paula CULLEN, and Emma DILLON

Adoption of risk management strategies in European agriculture 154
Marcel VAN ASSELDONK, Irini TZOURAMANI, Lan GE and Hans VROLIJK

Farm economic sustainability in the European Union: A pilot study 163
Cathal O’DONOGHUE, Simon DEVISME, Mary RYAN, Ricky CONNEELY, Patrick GILLESPIE and Hans VROLIJK

The state of innovation in European agriculture: Innovators are few and far between 172
Harold VAN DER MEULEN, Marcel VAN ASSELDONK and Lan GE

INFORMATION FOR AUTHORS

Manuscripts should be prepared in English and sent via e-mail to the Editor-in-Chief at studies@aki.gov.hu.

The cost of printing this issue is supported by the Hungarian Academy of Sciences.

© Agrárgazdasági Kutató Intézet, 2016
1463 Budapest, POB 944, Hungary
https://www.aki.gov.hu/studies
ISSN 1418 2106 (printed)
ISSN 2063 0476 (electronic)
Established 1962
Foreword

*Studies in Agricultural Economics* is a peer-reviewed Web of Science™ journal and is ‘platinum’ open access, i.e. there are no publication or access fees of any kind. Coupled with the fact that it is published in print and online, this means that it is well placed to support the European Union’s (EU) aspirations to increase accessibility to the results of the research it funds.

This fact is clearly recognised by Wageningen Economic Research, the coordinators of the EU Framework 7 project FLINT (Farm-level Indicators for New Topics in policy evaluation), and they have opted to publish a thematic issue of *Studies in Agricultural Economics*. FLINT (www.flint-fp7.eu) brings together 11 partners from nine EU Member States (the Netherlands, Finland, France, Germany, Greece, Hungary, Ireland, Poland and Spain) in a consortium that combines universities with a track record on sustainability issues with research organisations with a long tradition in data collection and policy analysis. With this profile of expertise behind them, the results of the research are likely to be of real interest to this journal’s target audience of researchers, academics, policy makers and practitioners.

Poppe, Vrolijk, Dolman and Silvis set out the rationale behind FLINT. For policy evaluation, there is an increasing need for a broader set of farm-level data in the EU, especially on sustainability issues. FLINT was designed to test the feasibility and added value of collecting such data via the Farm Accountancy Data Network (FADN), the EU-wide system for collecting representative farm-level data.

The availability of sustainability indicators and the criteria for defining and choosing them are reviewed by Latruffe, Diazabakana, Bockstaller, Desjeux, Finn, Kelly, Ryan and Uthes. Economic indicators have a long tradition and target a relatively small number of well-defined themes but there has recently been an ‘explosion’ of environment-related indicators. Social indicators tend to be difficult to measure as they are more qualitative and subjective.

Data collection is more feasible if stakeholders consider the data to be important. Herrera, Gerster-Bentaya and Knierim demonstrated differences in the stakeholders’ perceived feasibility and usefulness of collecting farm-level sustainability indicators, especially for those indicators which are not useful for farm-level decision making. These results were used in the selection of indicators in the FLINT project.

There is a wide variety of FADN systems. Drawing on a theoretical evaluation and the practical experiences of collecting sustainability data on more than 1,000 farms, Vrolijk, Poppe and Keszthelyi concluded that data collection could be extended to a wider set of sustainability issues across a range of organisational settings. The trust between the data collector and the farmer is an important success factor.

Several empirical analyses were conducted to show the added value of FLINT sustainability data. Brennan, Ryan, Hennessy, Cullen and Dillon examined the use of extension services by farm households and observed stark differences between eight Member States that are attributable primarily to national policies. Furthermore, they found that the extent to which households engage with extension services has implications for farm-level sustainability.

The FLINT data have made it feasible to assess the adoption of risk management strategies by farmers and the determinants of farmers’ choice for complementary or substitute instruments. Van Asseldonk, Tzouramani, Ge and Vrolijk show that adoption rates of instruments such as insurance contracts, price contracts, off-farm income, other risk reduction measures and other gainful activities vary significantly across Member States and farming types.

Analysis of farm economic sustainability using FADN data traditionally focuses solely on income from farming activities. The FLINT dataset facilitates the assessment of a group of farms categorised as ‘sustainable’, i.e. which are economically vulnerable but are deemed sustainable via off-farm labour. O’Donoghue, Devisme, Ryan, Conneely, Gillespie and Vrolijk identified differences in farm viability and sustainability across the eight Member States surveyed.

Finally, Van Der Meulen, Van Asseldonk and Ge used the FLINT data to analyse the different adoption rates of innovations in European agriculture. They described the impact on innovation rates of farm structure, financial characteristics, farmer characteristics, and the impact of subsidies and use of advisory services on the adoption rates.

As Editor-in-Chief, I would like to record my sincere thanks to Dr. Hans Vrolijk, the co-Coordinator of FLINT, for his outstanding support in bringing this thematic issue to fruition. Coordinators of other international research projects are invited to contact me with a view to producing similar thematic issues in the future.

Andrew Fieldsend
Budapest, November 2016

---

**Reviewers**

Dr. Sabine BAUM  ●  Prof. Richard CRUSE  ●  Dr. Thomas DAX  ●  Dr. FELFÖLDI János  ●  Prof. Win HEIJMAN

Dr. JÁMBOR Attila  ●  Dr. JUHASZ Anikó  ●  Dr. KEREKES Kinga  ●  Dr. KISS Judit  ●  Dr. MAGDA Róbert  ●  Dr. Piotr SULEWSKI

Prof. Dr. SZEKELY Csaba  ●  Prof. Dr. TAKACS István  ●  Dr. TÓTH József  ●  Dr. VASÁRY Viktória

---

**Editorial Advisory Panel**

CSÁKI Csaba, Budapesti Corvinus Egyetem, Budapest, Hungary  ●  KEREKES Sándor, Kaposvári Egyetem, Kaposvár, Hungary

KISS Judit, MTA Világgazdasági KutatóIntézet, Budapest, Hungary  ●  LEHOTA József, Szent István Egyetem, Gödöllő, Hungary

POTORI Norbert, Agrárgazdasági Kutató Intézet, Budapest, Hungary  ●  SCHMIDT Rezső, Nyugat-Magyarországi Egyetem, Sopron, Hungary

SZAKALY Zoltán, Debreceni Egyetem, Debrecen, Hungary  ●  TAKACS István, Óbudai Egyetem, Budapest, Hungary
Workshop report

DANUBIONET open innovation workshop

Budapest, 6 October 2016

Danube-INCO.NET (Advancing Research and Innovation in the Danube Region, https://danube-inco.net/) is a coordination and support action funded under the European Union’s (EU) 7th Framework Programme for Research and Technological Development. It seeks to overcome obstacles hindering social and economic development in the Danube Region by advancing research and innovation.

DANUBIONET (Building a Bioeconomy Research and Advocacy Network in the Danube Region, https://danube-inco.net/object/project/16564) is a ‘pilot action’ within Danube-INCO.NET. It intends to foster the development of a sustainable bio-based economy, with a particular focus on the Middle Danube area and on biomass feedstock from agricultural and forestry activities and organic industrial by-products.

DANUBIONET held its first ‘Open Innovation Event’ in Budapest on 6 October 2016, in association with the 2016 European Rural Development Network conference. The workshop, jointly organised by PANNON Pro Innovations Ltd, Budapest and the Central European Initiative, Trieste, brought together 13 experts from six countries of the Danube Region, with the aim to develop approaches to promote the use of sewage sludge based products in agriculture, in the spirit of sustainable farming and the circular economy.

In her introductory presentation, Juhász Anikó, General Director of the Research Institute of Agricultural Economics, which hosted the workshop, endorsed the need for a specific regional approach in the Danube Region. She noted that the workshop fits well with the BioEast strategic research agenda which aims to catalyse bioeconomy development in the Danube Region by showing that a regional approach in the Danube Region by advancing research and innovation.

In her introductory presentation, Juhász Anikó, General Director of the Research Institute of Agricultural Economics, which hosted the workshop, endorsed the need for a specific regional approach in the Danube Region. She noted that the workshop fits well with the BioEast strategic research agenda which aims to catalyse bioeconomy development in the Danube Region by showing that a regional approach in the Danube Region by advancing research and innovation.

While there is significant knowledge in the region, it is still necessary to learn how to sell it and manage innovation. She concluded that now is the right time to launch BioEast as the scoping paper for the final three years programming for the EU’s Horizon 2020 programme for research and innovation has been published, and she encouraged participants to use the workshop to develop new ideas and cooperation possibilities.

The topic of the workshop had been put forward by DOW Agrosciences, a multinational company that has been active in agriculture since 1952. The company’s innovation performance has been awarded several times with the Green Chemistry Awards in the USA. The ‘challenge owner’, as the entity seeking solutions is called in these workshops, asked participants to contribute original ideas for improving the public perception and end-user acceptance of sewage sludge based compost in agriculture. This type of material, which is rich in nutrients, especially nitrogen, has multiple benefits with respect to soil preservation, cost reduction and productivity, but it is burdened with preconceptions, doubts and concerns among various groups of actors. The workshop therefore facilitated the elaboration of possible solutions to overcome end-users’ reluctance and apprehension by focusing on the economic and environmental benefits of nutrient recycling.

Building on the results of the DANUBIONET capacity building survey, completed earlier by 95 stakeholders, the experts developed their ideas relating to the specific factors of societal perception and awareness, available standards and labelling, as well as sound business models. This interactive process was facilitated by Be-novative Hungary and Demola Budapest. As a first step, participants took part in a virtual brainstorming to generate ideas on how to overcome the challenge. A cloud-based platform was used through which users could anonymously share their thoughts and ideas on the question ‘How can the communication and marketing tools be used to convince buyers about the safety and compliance of sewage sludge based products?’ In only 20 minutes this session yielded 81 automatically evaluated ideas for overcoming this challenge, including a variety of solutions from communication to test fields and education.

Using these first ideas, the participants continued their work in teams, mixing the ideas and finding synergies and possible collaborations in order to create proposals convincing enough for the ‘challenge owner’ and mature enough to form the basis of future projects. The tool used here was building a 3D prototype based on the method of Demola Budapest. These prototypes – built of everyday materials such as paper, straws and plasticine – acted as a visualisation of the project concepts and hence as tangible representations of abstract or complex thoughts. This creative and playful approach makes it easy to reveal connections and schemes. Finally, a proposal was drawn up as a result of the creative work that contributed to find the complementary activities of the participants.

Sándorfy András of DOW Agrosciences concluded that the workshop was an excellent platform for learning new, valuable and interesting approaches. Under the leadership of PANNON Pro Innovations Ltd and Central European Initiative the proposal from the workshop will be further developed with a view to implementing the idea, thereby creating a circular economy of nutrient recycling.

More information about DANUBIONET, the series of Open Innovation Events and their outputs is available by email from Gyalai-Korpos Miklós PhD, Project Development Manager at PANNON Pro Innovations Ltd, at miklos.gyalai@ppis.hu.
Studies in Agricultural Economics

Information for authors

Studies in Agricultural Economics publishes original research papers, review papers, policy analyses and book reviews on agricultural economics, rural development and related topics including: agricultural production and competitiveness, environmental resource management, agri-food supply chain management, markets and marketing, international trade, econometrics, rural economic geography, rural economy and sociology, and development of information and knowledge based society in rural areas. Studies in Agricultural Economics is included in the Thomson Reuters™ Web of Science™ Core Collection.

Audience

Researchers, academics, policy makers and practitioners in agricultural economics and rural development, especially in eastern central and south eastern Europe.

Submission of manuscripts

Submission of an article implies that the work described has not been published in English in any other peer-reviewed journal, is not under consideration for publication elsewhere, and that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out. The author will retain the copyright of the article but agrees to identify AKI as the original publisher. Papers will not normally exceed 6000 words including the reference list and figure and table captions. Authors intending to prepare a book review should first consult the Editor-in-Chief and such a review should not exceed 2000 words.

Shorter papers and comments, of up to 1500 words, will also be considered for publication. Such notes might deal with the economic aspects of policy, with the results of small research projects that do not justify a full-length article, or comment on articles previously published.

Manuscripts should be submitted in .doc or compatible format. They should be prepared using A4 format, TNR 12 pt text and 1.5 line spacing and be in single-column format with wide margins. Do not hyphenate words and use bold face and italics only sparingly, but use subscripts and superscripts where appropriate. Avoid the use of single-sentence paragraphs. Tables should be placed at the end of the manuscript and figures should be submitted as separate files, numbered accordingly. Page and line numbering (restart each page) must be used but no reference should be made to page numbers in the text. You should use the ‘spell-check’ and ‘grammar-check’ functions of your wordprocessor, which should be set to English English, to avoid unnecessary errors.

Manuscripts will be double-blind reviewed by at least two reviewers and may be returned to the author(s) for revision before acceptance for publication. The Editor-in-Chief will normally consider only one re-submission.

Article structure

Divide your article into clearly defined sections but do not use section or subsection numbers. Each heading should appear on its own separate line. For research papers you are urged to consider using the following structure:

• Introduction. State the objectives of the work and provide an adequate background with reference to the international literature, but avoiding a detailed literature survey or a summary of the results.
• Methodology. Provide sufficient detail to allow the work to be reproduced. Methods already published should be indicated by a reference: only relevant modifications should be described.
• Results. Results should be clear and concise.
• Discussion. This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section should normally be avoided. You should show how your results add to existing knowledge but avoid extensive citations and discussion of published literature.

Where it is not appropriate to use the above framework, you should finish the paper with conclusions.

Essential title page information

• Title. Concise and informative. Avoid abbreviations and formulae where possible.
• Running title. Please provide an abbreviated title of no more than 60 characters (including spaces) that can be used as a running title on the page header.
• Author names and affiliations. Present the authors’ affiliation addresses (where the actual work was done) below their names.
• Corresponding author. Clearly indicate the corresponding author who will handle correspondence at all stages of refereeing and publication, also post-publication. Please provide a telephone and fax number in addition to the e-mail address and the complete postal address.
• Present/permanent address. If an author has moved since the work described in the article was done, or was visiting at the time, a ‘Present address’ (or ‘Permanent address’) may be indicated. The address at which the author actually did the work must be retained as the main, affiliation address.

Additional information

• Abstract. A single paragraph of 100-250 words should state the purpose of the research, the principal results and major conclusions.
• Keywords. Please provide a maximum of six keywords.
• Abbreviations. If necessary, define abbreviations that are not standard in this field on the first page of the article.
• **Acknowledgements.** If applicable, collate acknowledgements in a separate section at the end of the article before the references. List here those individuals and/or organisations that provided help, including financial support, during the research.

• **Nomenclature and units.** Follow internationally accepted rules and conventions: use the international system of units (SI) i.e. metre, second, kilogramme etc. or accepted alternatives e.g. day, litre, tonne.

• **Math formulae.** Present simple formulae in the line of normal text where possible. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text). For simple fractions use the solidus (⁄) instead of a horizontal line. Powers of e are often more conveniently denoted by exp. Give the meaning of all symbols immediately after the equation in which they are first used. Levels of statistical significance which can be mentioned without further explanation are: *P <0.05, **P <0.01 and ***P <0.001.

• **Footnotes.** Footnotes should be used sparingly. Number them consecutively throughout the article, using superscript Arabic numbers. Indicate each footnote in a table with a superscript lowercase letter.

**Tables and figures**

• **Tables.** Number tables consecutively in accordance with their appearance in the text. Each table should be accompanied by a title and fully descriptive caption. Column headings should be brief but sufficiently explanatory and standard abbreviations of units of measurement should be included between parentheses. Do not use vertical rules to separate columns. Large tables should be avoided. If many data are to be presented, you should consider dividing them over two or more tables. Reversing columns and rows will often reduce the dimensions of a table.

• **Figures.** Graphs, drawings or photographs should be supplied in digital format in monochrome and be of sufficient contrast. Figures prepared with Excel® software (or compatible format) are preferred. Captions should be included in the main manuscript, not attached to the figure, and should explain all symbols and abbreviations used. The text should include references to all figures. The use of figures from other publications is discouraged but, if used, permission of the author(s) or the copyright owner is necessary.

**References**

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Citations may be made directly (or parenthetically). Groups of references should be listed first alphabetically, then chronologically. For example: ‘as demonstrated (Allan, 1996a, 1996b, 1999; Allan and Jones, 1995). Kramer et al. (2000) have recently shown ...’ Citation of a reference as ‘in press’ implies that the item has been accepted for publication.

In the reference list, references should be arranged first alphabetically and then further sorted chronologically if necessary. They should not be numbered. More than one reference from the same author(s) in the same year must be identified by the letters ‘a’, ‘b’, etc. placed after the year of publication. The title of a non-English publication should be followed by the English translation in square brackets. Journals titles should not be abbreviated. Examples:


For Web references, as a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates etc.), should also be given. Web sources should be included in the reference list alphabetically according to the author’s surname or organisation’s name.

**Publication ethics**

*Studies in Agricultural Economics* aims to comply with the standards outlined in the COPE Codes of Conduct for Journal Editors and Publishers. These can be accessed at www.publicationethics.org/resources/code-conduct.

**After acceptance**

The corresponding author will be provided, at no cost, with a PDF file of the article via e-mail. The PDF file includes a cover sheet with the journal cover image and a disclaimer outlining the terms and conditions of use. *Studies in Agricultural Economics* has no page charges or submission fees.

Complete full-text articles may be published on the AKI website in advance of their publication in a printed issue. These do not yet have volume, issue or page numbers, so cannot be cited in the traditional way. They are therefore given a Digital Object Identifier (DOI), which allows the article to be cited before it appears in printed form.

*Studies in Agricultural Economics* is accessible online at www.aki.gov.hu/studies and at http://ageconsearch.umn.edu/handle/44317. It is listed in EconLit, the Index Copernicus Journals Master List and the Directory of Open Access Journals (www.doaj.org), as a Commendable Journal in the Cabell’s Directory of Publishing Opportunities in Economics and Finance, and is included in the Citations in Economics database (http://ideas.repec.org/s/ags/stagec.html). Papers are abstracted in the CABI Agricultural Economics Database (www.cabi.org) and indexed by Google Scholar.

The printed version of *Studies in Agricultural Economics* is designated by the publisher as the original version of the journal.