

SZENT ISTVÁN UNIVERSITY
ENVIRONMENTAL SCIENCE DOCTORAL SCHOOL

THE VALUATION OF BIODIVERSITY FROM AN INSTITUTIONAL
ECONOMICS PERSPECTIVES

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Goals

Agrobiodiversity is being lost at an alarming rate. Regarding commercial plants, global food supply is based on a small number of varieties, which results in a vulnerable state of security from nutrition and income perspectives for the coming generations. The integration of international agricultural markets and a pressure from the agro-economic sector lead to a uniformed agriculture where the agro landscape loses its mosaic-like pattern and becomes very much simplified. However, agrobiodiversity is one of the most important sources of adaptation to global climate change and it helps to improve our products in the future. Small farmers play a vital role in the conservation of local seeds and plant varieties.

The research goals of this dissertation are:

1. Since no international or national analysis of critical institutionalism have been prepared so far, I intended to introduce the theoretical fundamentals and the conceptual framework in detail and make a summary of the theoretical studies which had been conducted before.
2. My principal objective was to explore the causes of the loss of biodiversity of cultivated plants and to do so, it was essential to understand what role institutions played. I considered it very important to conceptualize the aspects of methodological framework used for the examination of the complex problems of resources and to demonstrate the applicability of the framework for the analysis of the use and conservation of cultivated plant biodiversity through case studies.
3. The professional literature of agro- and environmental economics relating to cultivated plant biodiversity did not examine at all or examined in very few studies the institutional factors which influenced individual and collective decisions. Thus, I aimed to elaborate the methodology for the framework and the analysis of the framework of the exploration of institutional factors. In the course of the individual field study I intended to surpass the framework of neoclassical economics and regard decision-makers from the perspective of a complex institutionalised individual. Besides offering explanations of the processes and institutional factors causing the loss of agrobiodiversity, I also aimed to find and evaluate institutional solutions to stop or slow down genetic erosion.
4. My further intension was to introduce in detail the global, European and national institutions which influenced the use of cultivated plant biodiversity (regulations of the seed market and actors in the seed supply system) and the regimes of protection of this system. For the introduction of

the institutions I reviewed the historical implications, critically observed the solutions and attempted to reach a stage when proposals for changes could be made.

5. I also aimed to establish contact with as many people involved as possible in the research process and listen to their opinions while doing the analysis. For this reason, I attempted to generate deliberative discourses to start the procedure of joint learning and hopefully contributed to the conservation of cultivated plant biodiversity.

Data and methods

The methodological framework of this study was developed on the basis of the IAD (Institutional Analysis and Development) which I adapted to my objectives (Figure 1.). The central element of the analysis framework is the action arena. The action arena is determined by the participants and the action situations. In this study three types of participants were examined: individual farmers, collective actors and other actors involved. The analysis was performed on two action situations: individual variety choice and collective actions which influenced the cultivated plant biodiversity.

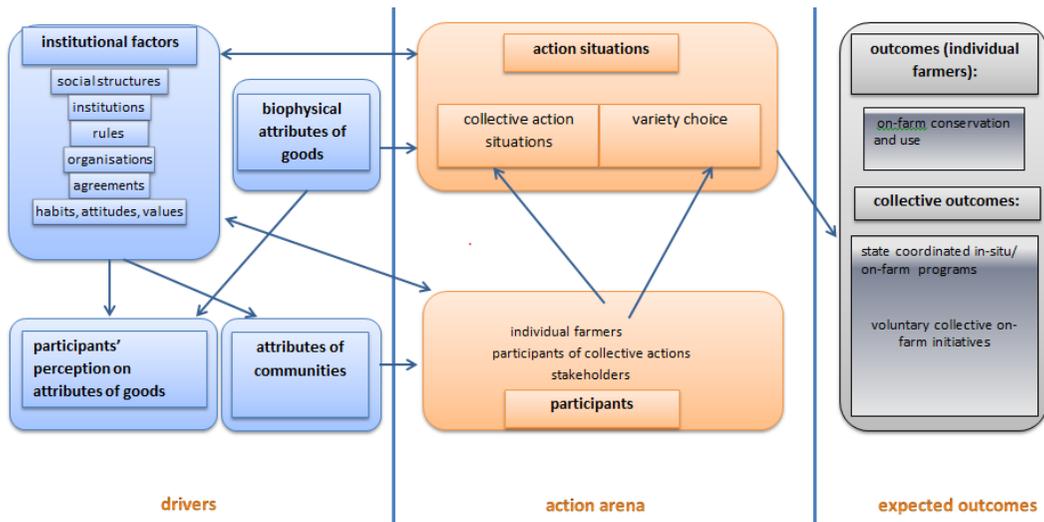


Figure 1: Methodological framework

Participants and action situations cannot be separated from the institutional environment in which they are embedded. Several types of institutions are influencing the action arena at the same time, thus, it is very important to analyse all the institutions together. The current institutional context affects the participants

in several ways as it influences their perceptions about a particular product (about landraces in this case) and it also affects their attitudes.

The most favourable outcome of actions could be when the cultural plant biodiversity did not decrease. To achieve the most favourable outcome, however, social structures, rules and organizations at different levels of institutions should be changed, which could properly influence the interactions between participants and action situations.

The research process can be divided into five phases (Figure 2.). Each phase is a separate unit which examines the very same phenomenon but delivers a deeper analysis of the institutional context. A special feature of the process is that data is elaborated and analysed at the stage of data collection and the cycle of data collection-elaboration-analysis repeats itself again and again.

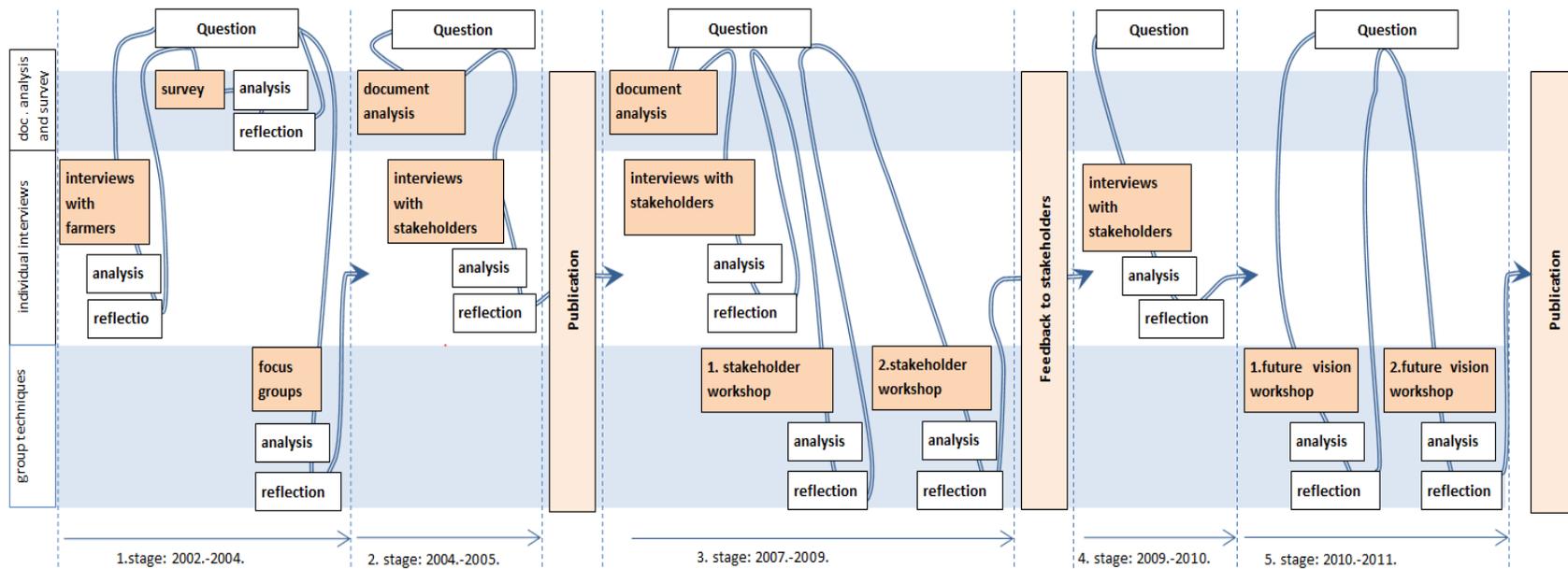


Figure 2: Phases of the research process

Findings

1. *The basic concepts relating to the conservation and use of agro-biodiversity and the plant genetic resources were reviewed in this study. Concepts in the international and national literature were compared and I made some clarifications about the concepts. I also checked what terms national farmers and other participants involved in the conservation of cultivated plant biodiversity used in their practices.*

Several various terms in relation with the falling biodiversity of cultivated plants can be found in public policy documents, regulations, scientific publications or public discourses. I believe such concepts should be clarified and harmonized since the concept of landraces keeps reappearing with a shift of meaning in the national and international literature. While the international professional terms focus on the origin of landraces, the term used in Hungary rather refers to the biological bases. I found that farmers did not use the term 'landrace' but I could identify eight other concepts which they used for their produced varieties. It is clear that participants attribute a different meaning to landraces compared to that used by farmers. The approach which says landraces are varieties that have been improved by simple underscoring and propagating variety elements at the original stage of breeding is very well emphasized in participants' discourses.

I found that the term 'landrace' was used with a different meaning in the European legal language as it referred to the fact that conservation varieties were registered. This means that the national and the European legal language attributed different meanings to the same term. Blurring landraces with conservation varieties in national literature might involve the danger of simply narrowing the term 'landraces' with a high attributed value to conservation varieties. I pointed out the term was many times used with a different shade of meaning depending on who used it and what purpose it was used for.

2. *Methodological principles of institution analysis were determined on the basis of critical institutional economics and ecological-institutional economics. Considering both national and international literature, this study was the first to examine an environmental resource problem (the issue of cultivated plant biodiversity) through the prism of critical institutionalism, on the basis of the principles mentioned before.*

I concluded that any examination of the sustainable use and conservation of cultivated plant biodiversity required an institutional analysis framework. Critical institutionalism delivers a more convenient theoretical framework to understand the issues in this study, compared to the frameworks of new institutional economics or agro-economics. I pointed out that institution examinations on a critical and ecological base did not have a uniform methodological framework. I determined the methodological principles by which processes behind the reduction of cultivated plant biodiversity and institutional factors could be explained and I also reviewed the potential institutional solutions. Then relevant institutional factors influencing individual decisions and institutional solutions emerging in the participants' dialogues were examined in a structural research process of five stages that involved several data collection and analysis methodologies. With this analysis I contributed to the clarification and improvement of methodological frameworks within critical and ecological institutional economics.

3. *I demonstrated that agro-economics-based national and international literature on variety selection did not explore or consider several factors that would help to understand the context of decision-making. Reviewing institutional factors that influence individual and collective decisions could help to understand the process and reveal so far unknown coherences.*

In my work I demonstrated by the individual and collective data collection methods that the evaluation of a particular seed might not be independent of the way of planned use, the purpose of end use and the customs, myths or knowledge related to the given variety. Decisions of individual farmers are often influenced by customs, agreements, regulations, institutional and social structures. I also concluded that women played an inestimable role in the production and conservation of garden plant varieties.

4. *I drew the attention to the fact that we could have a more detailed view on a particular resource problem by widening both the boundaries of economic analysis and the toolbar of the examination.*

I demonstrated that using a combination of qualitative, quantitative and deliberative data collection techniques in public policy oriented research could ensure that specific (legitimate) public policy proposals were made by the end of the research process. Individual and collective actions were jointly analysed in my study to reveal the institutional context. I also reviewed the historical implications of the formations of and changes to institutions concerned about the use and conservation of cultivated plant biodiversity.

5. *I elaborated the process of mapping and involving the parties concerned. I pointed out that joint learning processes could be started by generating deliberative discourses. These learning processes could contribute to acquire deeper knowledge in the research process and help the participants understand the problems and each other's aspects.*

To demonstrate and reduce complexity in connection to the use and conservation of cultivated plant biodiversity, I simulated situations on the basis of dialogues. Participants had a joint dialogue about the issues of the use, distribution and conservation of landraces/local varieties, the national position and the demand for development of ex-situ conservation at the round table talks and workshops. Participants exchanged arguments, formed a joint language of interpretation and issued jointly drafted reports. As a result of the dialogue, they managed to share joint visions of the future which could hopefully lead to joint action of the participants.

Conclusions and proposals

1. A shift of meaning can be seen in the use of the term 'landrace' in national policy, legal and scientific discourses. The legal language adopts a narrow scope of the term. As a consequence, any studies, research, surveys or legislation in relation to landrace issues should clarify what is meant under the term 'landrace' and the exact meaning should be communicated to the participants.
2. Participants in Hungary have different opinions about which cultivated plants or varieties should be deemed as irreparable heritage of plant genetic resources or which plants are threatened by genetic erosion. A broader social discourse would be needed to clarify such critical issues in genetic conservation.
3. It is necessary to modify the existing institutions and establish new institutions to stop the decrease in cultivated plant biodiversity.
4. Varieties should only be used in complex programmes when farmers would not only be encouraged to participate but could get access to skills related to the production and use of landraces or when farmers would have the means to conserve and select varieties and when they would actively participate in the establishment and operation of an informal seed system.

5. Although there exists an informal seed system in Hungary, few people produce landraces in local communities in spite of the fact that we can still find farmers who possess the necessary skills to conserve or produce varieties. Typically, the old age farmers with a lower income participate in the conservation of varieties. It is good news for agrobiodiversity that we have found some younger farmers who see the potential in the production of a particular landrace.
6. In the current context of institutions/regulations/markets farmers as individuals are not interested in the conservation of landraces from an economic perspective and in such activities they encounter several obstacles of legal seed regulation issues. Hungary is also affected by the problems of 'conservation dilemma' and 'contribution dilemma'.
7. Landraces are regarded as community assets and they are currently not affected by the tragedy of anticommons, which is supported by the fact that in our research no one expressed claims for the possible exclusion of a particular farmer from the use and benefits of a given landrace.
8. The Hungarian government is responsible for the realization of rights of agricultural producers in connection to the plant genetic resources for food and agriculture (ITPGRFA 9.c.). Farmers should be granted the right to exchange and sell their seeds and reuse them to adapt to the local conditions and preserve their knowledge of production.
9. Farmers should be given access to the public collections of plant genetic resources. The capacity of ex situ gene banks should be increased so that they could meet the farmers' demands.
10. It would be favourable if international regulations under the UPOV Convention did not apply to plants with less commercial values considering the fact that such plants often involve a higher level of diversity.
11. It is important to ensure transparency of variety protection. Farmers and gardeners should know whether the purchased seed is reproducible or not and consumers should know whether the purchased product was produced by traditional breeding methods or from elements produced in a biotechnological process.
12. New types of rights (agricultural producers' rights, collective proprietary rights, benefit sharing rights) should be elaborated and applied to lift the barriers of the asymmetric ownership situation which is based on the

- intellectual property rights (e.g. rights of breeding) of breeders who helped commercial breeding with their scientific innovation.
13. The variety valuation system should be reformed so that it could ensure the consideration of diversity within a particular variety and which would be flexible enough to handle the criteria of stability and where no 'economic value analysis' would take place during the registration.
 14. Although measures under UMVP 214c involve genetic conservation duties, they are rather focused on ex-situ conservation and do not enhance in-situ and on-farm programmes.
 15. It is important to build up and preserve the local seed systems from the perspective of the use and conservation of landraces. Further initiatives and model projects would be needed.
 16. The operation rules of the output of landrace products should be formed the way that they would encourage farmers to have an interest in the provision and preservation of resources. An adequate regulation of product quality should be adopted which would keep the costs of accession to a market and the transaction costs at a reasonable level.

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