

**RURAL - ECOLOGICAL COMMONS: CASE OF
PASTURES IN İZMİR**

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ABSTRACT

RURAL - ECOLOGICAL COMMONS: CASE OF PASTURES IN İZMİR

The main research interest of this study is to determine the conflicts on the pastures, which are defined as the rural-ecological commons that are important for biodiversity and ecological sustainability. The study focuses on the transformative impacts of enclosure and commodification processes on the pastures. Pastures are crucial entities especially within the four dimensions, rich biodiversity of flora and fauna, rural development, erosion prevention, and rural traditions. Case study areas are located at three districts of İzmir are examined within the context of the conflicts on the pastures in relation with the recent legal regulations, determination, delimitation and allocation processes, malpractices, climate change and the civil responses. The data gathered from the snowball interviews, in-depth interviews with professionals and village headmen, personal observations, commission reports and media analysis are evaluated by the content analysis to determine the main conflicts to generate the pasture dimensions for the eDPSIR causal network model. DPSIR is a facilitative organization tool, which aims to understand the cause and effect relationships in the environmental and social issues to eliminate the socio-environmental conflicts and to simplify the data transmission for better communication with the decision-makers, which also has a potential to be used during the EIA and SIA report processes.

In this study, a pasture dimension set within an eDPSIR causal analysis model is constituted for re-positioning and re-evaluating pastures in the planning and design literatures, and the verification of the data enhanced by the methodological triangulation. The exploratory case study method is the research design strategy of the study. Outcomes of the study reveals the main land use conflicts on the pastures and the triggering drivers, pressures, states, impacts and the recommended responses. The study confirms that the ecological-sensitive planning can be a crucial tool in terms of protecting and improving the pastures.

Keywords: Pastures, Commons, Enclosure Movements, DPSIR, Planning

ÖZET

KIRSAL-EKOLOJİK MÜŞTEREKLER: İZMİR MERA ALANLARI VAKASI

Biyçeşitlilik ve ekolojik sürdürülebilirlik açısından önemli olan kırsal-ekolojik müşterekler olarak tariflenen mera alanları üzerindeki temel çatışmaları belirlemek bu çalışmanın başlıca araştırma alanıdır. Çalışma, mera alanları üzerindeki çitleme (çevreleme) hareketlerinin dönüştürücü etkilerine ve metalaştırma süreçlerine odaklanmaktadır. Mera alanları özellikle dört açıdan önemli varlıklardır, flora ve faunada zengin biyoçeşitlilik, kırsal kalkınma, erozyonu önleme ve kırsal gelenekler. Yasal düzenlemeler, tespit, tahdit ve tahsis süreçleri, yanlış uygulamalar, iklim değişikliği ve kullanıcı tepkileriyle ilişkili olarak mera alanlarında meydana gelen çatışmalar, İzmir'in üç ilçesinde bulunan vaka alanları üzerinden incelenmiştir. Kartopu mülakatlarından, profesyonellerle ve muhtarlarla yapılan derinlemesine mülakatlardan, kişisel gözlemler, ilgili komisyon raporları ve medya analizinden edinilen veriler, bu alanlar üzerindeki başlıca çatışmaları tespit etmek amacıyla eDPSIR nedensel süreç modeline eklenen mera boyutlarını üretmek için içerik analiziyle değerlendirilmiştir. DPSIR çevresel ve sosyal konulardaki neden sonuç ilişkilerini anlamayı, veri analizini basitleştirmeyi, karar vericilerle daha iyi iletişim kurmayı ve sosyo-mekansal sorunları önlemeyi amaçlayan, aynı zamanda ÇED ve SED raporlama süreçlerinde kullanılma potansiyeline sahip basitleştirici bir düzenleme aracıdır.

Çalışmada, mera alanlarının planlama ve tasarım literatüründe yeniden konumlandırılması ve değerlendirilmesi amacıyla, model içerisinde bir mera boyut seti oluşturulmuş ve bulguların geçerliliği yöntem üçgenlemesi ile iyileştirilmiştir. Çalışmanın araştırma tasarımı yöntemi keşifçi saha çalışmasıdır. Çalışma sonucunda, mera alanlarının karşılaştıkları başlıca arazi kullanım çatışmaları ve bu çatışmalara sebep olan faktörler, baskılar, durum ve etkiler belirlenmiş ve yanıtlar önerilmiştir. Çalışma sonucunda, ekolojik duyarlı planlamanın, mera alanlarının korunması ve iyileştirilmesi açılarından önemli bir araç olabileceği tespit edilmiştir.

Anahtar Kelimeler: Mera Alanları, Müşterekler, Çitleme (Çevreleme) Hareketleri, DPSIR, Planlama

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ABBREVIATIONS

| | |
|-----------------|---|
| ATAE | : Anatolian Agricultural Research Institute |
| BAP | : Scientific Research Project |
| BBHB | : Animal Unit |
| BIOMA | : Biophysical Model Application |
| BUGEM | : Directorate General of Plant Production |
| CAP | : EU Common Agricultural Policy |
| CO ₂ | : Carbon Dioxide |
| CPR | : Common Pool Resources |
| DPSIR | : Driving Forces-Pressure-State-Impact Causal Chain Model |
| eDPSIR | : Enhanced DPSIR Causal Network Model |
| EEA | : European Environment Agency |
| EIA | : Environmental Indicators Assessment |
| ETMA | : Evapotranspiration Mapping Algorithm |
| GIS | : Geographic Information Systems |
| HES | : Hydroelectric Power Plants |
| IASC | : International Association for the Study of the Commons |
| İZSU | : İzmir Water and Sewerage Administration |
| MESA | : Municipality Enabled and Supported Agriculture |
| MERBIS | : Pasture Information System |
| MTM | : Media Analysis Organization |
| OM | : Organic Matter |
| OSB | : Organized Industrial Site |
| P2P | : Peer-To-Peer |
| RES | : Windpower Plant |
| TBMM | : Grand National Assembly of Turkey |
| TEMA | : Erosion Prevention and Nature Protection Foundation of Turkey |
| TKGM | : General Directorate of Land Registry and Cadastre |
| TOKİ | : Turkish Governmental Housing Development Administration |
| TURKSTAT | : Turkish Statistical Institute (TÜİK) |
| 3T | : Determination, Delimitation, Allocation Processes |

CHAPTER 1

INTRODUCTION

Lefebvre¹ adverts the rural-urban dichotomy and the urbanization of the society as a whole in his book *La Revolution Urbaine*. Agricultural production falls from the power of being a worldwide primary economic sector and being a part of the industry, although local and regional originalities and differences remain. Eventually, the traditional lifestyle of the villagers and rural communities transforms while the village and the production processes integrate to the city, the industry and the consumption processes. The urban fabric starts to emerge on the rural lands as a summerhouse, a highway or a supermarket. Eventually, the village transforms into a village-town, a part of the urban life. Critics from the left aim to create a potential utopia, rather than the current scope occupied by the economic, social and political powers. The reversal of the *heterotopia* and the collapse of the rural-urban synergy at a specific time in European west, result in the urban become a horizon of the rural while their borders became ambiguous. The urban reality transforms the production relations, while impresses the social relations. The agricultural producers become consumers and the cheap industrial labor force in the industrial community. Eventually, the rural area subjected to be a part of the urban area.

Especially the rural-urban fringe faces the pressures of urbanization and rural transformation. Today, while borders between rural and urban are becoming more ambiguous, there is a need for a re-definition of the “rural-urban fringe” which locates in between the rural and urban areas as a transition zone that includes mixture and sometimes conflicting rural and urban land uses. The fringe land uses may require larger plots, such as small family farms, wastewater purification plants, university campuses, airports, all of which are similar land uses in the urban fringe belts. The rural-urban fringe, peri-urban or urban periphery are the several terms that are used to explain the similar phenomenon; and can be confused with the urban fringe belt concept. Partly because, the urban fringe belts are the former urban peripheries, which are embedded within the city

¹ Henri Lefebvre, *Kentsel Devrim* (İstanbul: Sel Press, 2011 [1970]), 16-19.

while the city grows. Conzen² defines fringe belts as “A belt like zone originating from the temporarily stationary or very slowly advancing fringe of a town and composed of a characteristic mixture of land-use units initially seeking peripheral locations”.

In contrast to densely built up areas, the fringe belts offer alternative activities for leisure time and for integration with the nature, and thus, requires protection. Several sprawl management policies such as green belt planning can be developed for these areas; however, because of the rapid population increase, fringe belts are usually be regarded as the potential development areas. The urban pressure on the agricultural lands and orchards are the examples of this situation.³

Globalization as a new socio-spatial process includes interwoven economic activities and new geographical transnational borders, which may trigger the rural-urban migration in developing countries and results in the disappearance of the dichotomy between rural and urban within the vague borders.⁴ Disappearance of the borders holds both potentials and threats. To reduce these threats, it is crucial to have ecocentric and ecological perspective for nature protection, and the joint of ecological, social and economic sustainability within the planning approaches and legislative regulations.

The 6360 numbered Metropolitan Law (2012) is one of the recent legislations strongly links to the disappearance of the dichotomy between rural and urban areas in Turkey. By this law, legal entity of the Special Provincial Directorate of Administration disappeared and the village common lands transferred to Municipalities and Public Treasury. This centralization in local administration resulted in weaker local governments, especially in old villages and several other conflicts. Urban and rural areas have different needs due to their constitutions and should be evaluated separately as “urban neighborhoods” and “rural neighborhoods”.

Today, enclosure movements continue especially on the agricultural and natural lands. Enclosure means “an area that is surrounded by a barrier”⁵. Enclosure movements, explained in Chapter 2, are the internal dynamics of the capitalism. Accordingly, food security concerns of the import-dependent countries is the reason of

² Michael Conzen, “How Cities Internalize Their Former Urban Fringes: A Cross-Cultural Comparison,” *Urban Morphology* 13.1 (2009): 29-51.

³ Dalya Hazar and Ayşe Sema Kubat, “Fringe Belts in the Process of Urban Planning and Design: Comparative Analyses of Istanbul and Barcelona,” *ITU A/Z* Vol. 12 No.1 (2015): 53-65.

⁴ İlhan Tekeli, “Türkiye’de Kent Bölgeleri Üzerine Düşünmek,” in *Değişen-Dönüşen Kent ve Bölge*, ed. Aynur Yasemin Çakır and Güliz Korkmaz Tirkeş (Ankara: BRC Press, 2004), 74-75.

⁵ Oxford Dictionaries, “Definition of enclosure,” accessed April 29, 2018. <https://en.oxforddictionaries.com/definition/enclosure>.

the contemporary land grabs.⁶ Thus, “impoverishment without dispossession” is dominant in agriculture sector. Especially between 1997-2008 lands of tobacco and cotton and vineyards shrank down to 65-75% in İzmir. Fruitful lands close to water resources are now under the contamination threat of mining, e.g. Efemçukuru and Aliğa. Expropriation acts on behalf of the private companies are the recent leading dispossessions. Hydroelectric water plants, wind power plants and geothermal energy projects, urban renewal, highway, railway and airport constructions and other public investments are some of the expropriation acts, which frequently occur on common lands and result in the legal struggles and civil acts.⁷

There is a serious lack of sustainability in agriculture sector, which results in the rural-urban migration and the overpopulation of the cities in Turkey. Eventually, older generations remain in the villages, who use conventional techniques in farming and have serious financial losses due to income and expense inequalities. Thus, the agriculture sector continuously shrinks apart from the top producers. Urbanization is one of the leading threats on these agricultural lands and the pastures at the rural-urban fringe, with the help of the recent legislations.

Since the last decades, the leading economic sectors in Turkey tended towards to construction, extractive industry and real estate property. Contrarily to agriculture and manufacturing sectors, construction sector builds on consumption, not production, which is impossible for a long-range economical development. Nature-protection areas, ecological commons, agriculture lands, forests and pastures are seen as the resources to be consumed irreversibly for the construction, mining and energy sectors. Especially pastures, which are under the protection of 4342 numbered Pasture Law and controlled by Provincial Pasture Commissions are continuously degraded due to the malpractices and the lack of adequate rehabilitation practices, constantly appropriated for other uses.

Pastures are the rural and ecological common lands, which are usually taken as the potential vacant areas for construction, especially if there are not economically effective grazing activities. However, pastures are not only important for husbandry and rural development; but also, in terms of ecological sustainability as they host many endangered species within a wide-open biodiversity, resilient to the climate change by

⁶ Onur Ulaş İnce, “Primitive accumulation, new enclosures, and global land grabs: a theoretical intervention,” *Rural Sociology*, 79(1), (2014): 104-131.

⁷ Alp Yücel Kaya, “2000’ler Türkiye’inde Tarım Politikaları ve Toprak Mülkiyeti: Efemçukuru’nda “Mülkiyet Nedir?” *Melmelek Siyaset Yönetim*, 5(12), (2010): 53-69.

absorbing vast amount of CO₂ emissions and erosion prevention. Pastures are crucial for food security (e.g. grassfed animals) and crucial for biodiversity, flora, especially insect fauna and apiculture. In addition, pastures occupy a great place for the identity and rural tradition. Because, pastures are the village common lands where the villagers can gather, not only for husbandry, but also for other activities such as picnic, weddings and playgrounds. Although there are many unsustainable rehabilitation attempts by several institutions, there are quite successful and worldwide-recommended rehabilitation techniques such as “Holistic Management” developed by Savory Institute and practiced by “Anadolu Meraları” in Turkey.⁸

1.1. Problem Statement

In this study, I discuss the pastures as the rural-ecological commons for their significance in the biodiversity and rural development. The scope of the study is grounded by the concepts of the commons, Marx’s primitive accumulation, Harvey’s accumulation by dispossession, the rural-urban fringe, commodification of nature, Malthus’s principle of the population, Hardin’s tragedy of the commons, Ostrom’s common-pool resources and the self-organization against the property owners, private enterprises and the government control (Figure 1.1).

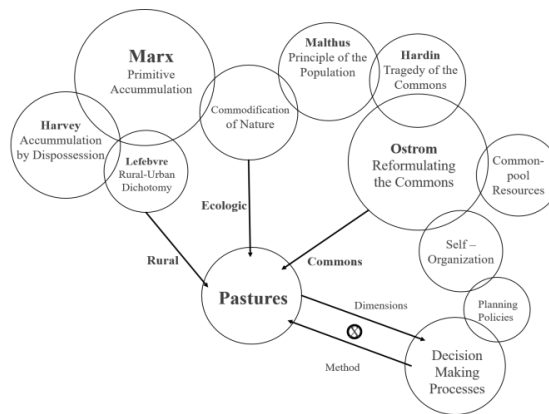


Figure 1.1. Scope of the study

⁸ “Holistic Grazing Management,” Anadolu Meraları, Bütüncül Yönetim Eğitimleri, accessed: December 17, 2016, <http://anadolumeram.com/yeni-egitimler/>.

Especially, pastures at the rural-urban fringe have several multifaceted conflicts such as urbanization pressure, land allocation demands to other uses, malpractices, occupation, false mapping and erosion. Therefore, protecting the pasture characteristics against the urbanization pressure is primarily important to prevent the land grabs, occupations and several other conflicts. There is a lack of investigation about pastures in the planning and design literatures as formerly being prohibited lands by the legislations.

Thus, this study aims to understand and categorize pastures by developing a multi-level causal process model (DPSIR: Driving Force - Pressure - State - Impact - Response) to determine the major conflicts, current and future periods of change to define the pasture dimensions as the rural and ecological commons.

The case study areas are chosen due to the recent conflicts, pressures and the recent occupations on the pastures to understand the various rural-urban functions, unique and precious local assets, and potentials at the rural-urban fringe. To eliminate the threats on the rural-urban fringe, there is a need to review the perspective of nature by internalized biocentrism approaches and comprehensive planning policies. Geographically and technically well-informed local governments may take better decisions about the rural-ecological commons, which reserve a greater potential to be an economical, ecological and socio-cultural integration area for the rural and urban neighborhoods. Unless, the rural and urban spaces embody a common progress without losing their unique identities, there cannot be healthy “living environments” in the future.

1.2. Research Methodology

In this study, the techniques of document analysis, media search, snowball and in-depth interviews, personal observations and case studies are used for data collection and evaluation. The combination of these techniques provides data triangulation, which aims to increase the validity of the data. I used the content analysis to understand the main conflicts on the pastures and to specify the pasture dimensions for eDPSIR causal network analysis model, while questions the potentials of these spaces for ecological sustainability. Subsequent to the data gathered from the interviews, eDPSIR model is

generated to understand the environmental cause and effect relationships and to specify pasture dimensions.

The research questions aim to make an exploration to fill the gaps about the pastures in the planning literature, particularly in Turkey. This study asks the main explanatory question of “How to reduce the conflicts on the pastures?” by focusing on several sub-questions such as:

- What are the main conflicts and their triggering driving forces on the pastures? (*descriptive*)
- What are the dimensions of the pastures as the rural-ecological commons to achieve the ecological sustainability? (*descriptive*)
- Which pasture management strategies reduce the conflicts on the pastures? (*exploratory*)

The research design process is qualitative in the following steps:

1st step – Preliminary Data Collection: Databases, laws, dissertations, papers, commission reports, relevant seminars and panels, media search analysis and web-based sources are investigated to review the general concepts about the thesis subject. For media search analysis, a media scanner company called MTM searched annual web-based archives by the keyword of “pasture land” in Turkey. Media scan is limited to 2012-2016 due to the budget constraint of the study.

2nd step – Literature Review: Review of the literature of sustainability, commons and pastures to draw a theoretical framework of pastures as the rural-ecological commons.

3rd step – Case Study Research: Three districts in İzmir (Bornova, Torbalı and Aliğa) are selected for the case study for being located at the rural-urban fringe and have several conflicts on pastures due to the urbanization pressure. Number of the case study districts is limited to three due to the time constraint of the study. Research is qualitative and designed including research techniques and sources of data and information for the case study (Table 1.1). Data from the relevant Laws, Research Institutes, Universities, NGOs, TURKSTAT and reports from public institutions are collected for the document analysis. Plans from İzmir Metropolitan Municipality, press releases and court decisions, photographs from pastures, and other documents from local institutions are collected.

Table 1.1. Research design for the case study

| Frame of the Research | Research Techniques | Data and Information Sources |
|---|--|--|
| Main conflicts on pastures in general | Document analysis, interviews and media search | Literature review, action reports of Municipality, Ministry of Food, Agriculture and Livestock and public institutions, reports of chambers, press releases, newspapers |
| Characteristics and statistics of pastures in İzmir | Document analysis, statistical data | Web-pages of public institutions, TURKSTAT |
| Locations of existing pastures in İzmir | Document analysis and interviews | 1/ 100.000 and 1/ 25.000 Plans, maps generated by Research Institutes and Universities, Google Earth, 3D City Map of İzmir Metropolitan Municipality, in-situ observations |
| Transformation processes of pastures in İzmir | Document analysis and interviews | Laws and regulations, Provincial Directorate of Food Agriculture and Livestock, Provincial Pasture Commission, agricultural engineers, lawyers, planners, NGOs |
| Drivers of the conflicts, interest groups and types of responses, solutions proposed by responsible authorities | Interviews, media search, training | 18 snowball and 3 in-depth interviews with professionals in decision making institutions, agricultural engineers, planners and NGOs, media search, reports, site visits, Anadolu Meraları "Holistic Management" training |
| Conflicts at the case areas | Interviews, personal observation, statistical data | 50 in-depth interviews with village headmen at Aliağa, Bornova and Torbalı villages |
| eDPSIR model application | Workshop, survey, model application | Pasture dimensions from the case study, Group Consensus Workshop, expert opinion survey |

Unstructured snowball interviews and semi-structured in-depth interviews are the two types of total 68 interviews in the study. Snowball interviews in chatting format approximately took 30 minutes, including several leading questions to grasp the importance, conflicts and scope of the pastures, and the connections between the interviewees. There were two types of in-depth interviews in semi-structured format applied including 14 questions for professionals and 29 questions for village headmen at the case areas (APPENDIX A-B-C).

4th step – Content Analysis: Textual data and images are analyzed by using content analysis method. Content analysis is a research technique, which can be both quantitative and qualitative and aim to achieve valid and replicable inferences from all meaningful matters (e.g. texts, images, maps, and numerical data) to the context of their use. Interviews are frequently subjected to content analysis where researchers can reformulate their theory to summarize the qualitative inferences by using a coding scheme and extract contents for finding specific contexts and meanings. Qualitative content analysis is a process, which requires “inductive reasoning” to intensify raw data into themes and categories based on valid inferences. Themes and categories emerge

from the data through the examination and comparison processes.⁹ For encoding the textual material, “tabulation technique” is used to collect the same or similar recording units in categories and to present counts of how many instances are found in each to produce absolute (numbers) or relative (percentages) frequencies.¹⁰ This technique enables the collection of all issues (e.g. interviewees, answer types, answer frequencies) under the main themes to provide inferences of similarities or differences between different people and cases.

5th step – Model Application: DPSIR is a causal process model used by European Environmental Agency (EEA) in its reporting activities to understand the cause and effect relationships in environmental and natural resource management problems to evaluate the environmental indicators. The scheme is a tool to analyze economic, social and natural systems and to form a framework to identify relations, policy options and to evaluate responses.¹¹ In this study, pasture dimensions supported by an enhanced DPSIR (eDPSIR) causal network model.¹²

6th step – Evaluation: The data about the conflicts on the pastures in the case studies are evaluated by the content analysis method to become an input for eDPSIR Model of the pastures. The aim of the study is to conduct recommendations to prevent the conflicts on pastures.

The main limitations of the study are the difficulties to access the accurate information and quantitative data of the pastures in İzmir because of the constantly changing legislations, contradictory plans, erroneous and inadequate mapping and the possible bias of the interviewees. Moreover, Provincial Directorate of Food Agriculture and Livestock and Provincial Pasture Commission in İzmir refuse to share the agents, cases, valid numerical values and the formal determination, delimitation and allocation (3T) processes in İzmir, including the relevant documentary data (APPENDIX E). The more accurate data of the pastures in the case study areas are unofficially gathered from District Directorates of Land Registry and Cadastrate. Additionally, the media search is limited within five-year period due to the limitations of the Scientific Research Project

⁹ Barbra M. Wildemuth and Yan Zhang, *Qualitative Analysis of Content*, (USA: Libraries Unlimited Inc., 2009): 2.

¹⁰ Klaus Krippendorff, *Content Analysis: An Introduction to its Methodology*, (2nd Edition, Sage Publications, 2004): 411.

¹¹ Barry Ness, Stefan Anderberg and Lennart Olsson, “Structuring Problems in Sustainability Science: The Multi-Level DPSIR Framework,” *Geoforum*, 41(3) (2010): 479-488.

¹² David Niemeijer and Rudolf S. de Groot, “Framing environmental indicators: moving from causal chains to causal networks,” *Environment, development and sustainability* 10.1 (2008): 89-106.

(BAP) budget. I aim to verify the information and restrain the limitations and delimitations by case studies, content analysis, personal observations, comparison of the plans and aerial photos. Table 1.2 shows the phases of the study.

Table 1.2. Phases of the study

| Phases of the PhD. study | 2013 | 2014 | | 2015 | | 2016 | | 2017 | | 2018 |
|--|------|------|-----|------|-----|------|-----|------|-----|------|
| | Dec | Jun | Dec | Jun | Dec | Jun | Dec | Jun | Dec | Jun |
| Selection of the Research Topic | | | | | | | | | | |
| Literature Survey and Review | | | | | | | | | | |
| Identifying the Methodology | | | | | | | | | | |
| Thesis Proposal Jury | | | | | | | | | | |
| Document Analysis | | | | | | | | | | |
| Snowball Interviews | | | | | | | | | | |
| First Thesis Monitoring Jury | | | | | | | | | | |
| Preliminary DPSIR Schemes | | | | | | | | | | |
| In-depth Interviews with Professionals | | | | | | | | | | |
| Preliminary Content Analysis | | | | | | | | | | |
| Second Thesis Monitoring Jury | | | | | | | | | | |
| Holistic Management Training | | | | | | | | | | |
| Media Analysis (MTM) | | | | | | | | | | |
| Case Study (Bornova, Torbalı, Aliağa) | | | | | | | | | | |
| In-depth Interviews with V. Headmen | | | | | | | | | | |
| Third Thesis Monitoring Jury | | | | | | | | | | |
| DPSIR Model Application | | | | | | | | | | |
| Symposiums/Colloquiums/Panels | | | | | | | | | | |
| Fourth Thesis Monitoring Jury | | | | | | | | | | |
| Workshop & Expert Opinion Surveys | | | | | | | | | | |
| eDPSIR Model Application | | | | | | | | | | |
| Thesis Defense Jury | | | | | | | | | | |

1.3. Outline of Chapters

This study is composed of seven chapters. Chapter One gives introductory remarks, problem statement, research questions and the methodology. Chapter Two enframes the theoretical framework of the commons. Chapter Three enframes the theoretical framework of the rural systems in transition. Chapter Four gives detailed information about the pastures and relevant legislations, conflicts, previous studies and Holistic Grazing Management insights. Chapter Five enframes the methodology of the research design, data sources and limitations. Chapter Six focuses on the conflicts at the pastures in the case areas, DPSIR and eDPSIR model applications and evaluations. Chapter Seven gives concluding remarks and recommendations.

CHAPTER 2

COMMONS

Commons are the social systems in which the common users and producers decide the usage, production and distribution methods and usage of the common resources within a bottom-up administration of the users. Commons are of prime importance for both anti-capitalist social movements and the capital itself because commons are produced and locate against the capital, which demands the absorption and enclosure and can be a social power.¹³

Enclosure movements and the primitive accumulation are the processes that continue, and redefined as the “accumulation by dispossession”.¹⁴ Capital attempts to restore the commons to solve the common crises. In response to this, *commonism* practices are recommended as an alternative to move beyond the system of capitalism, as the commons can be the new organizational forms of the anti-capitalist communities or the social democracy. While the new labor-market created the proletariat, enclosure movements and the primitive accumulation become the interchangeable concepts.¹⁵

International Association for the Study of the Commons (IASC) was founded in 1989 to study on the common property in the academic sphere, leading by the articles of the political scientist Elinor Ostrom and her colleagues in IASC for along approximately 30 years. The commons definition of IASC leave in suspense the common sources as the embraced spaces in the city centers during the occupy movements, and stock variables of the common pool resources within the consensus of the communities from an economic perspective.¹⁶ Commons are taken as a tool and the common property regime is taken as a type of a management arrangement by several scholars, in which a well-defined group

¹³ Massimo De Angelis and David Harvie, “The Commons,” *The Routledge Companion to Alternative Organization* (2014): 280-294.

¹⁴ David Harvey, *The New Imperialism* (Oxford University Press, 2003).

¹⁵ De Angelis and Harvie, “The Commons,” 280-294.

¹⁶ Fikret Adaman, Bengi Akbulut and Umut Kocagöz, *Herkesin Herkes İçin: Müşterekler Üzerine Eleştirel Bir Antoloji*, (Metis Yayıncılık, 2017).

holding exclusive rights and duties to the use of a specific resource unit, its maintenance and improvement.¹⁷

Besides, if urban space is reduced to a proportion of a commodity, the urban commons are solely reduced to goods and resources such as water, air, electricity and soil. However, if urban commons are accepted as the results of urban commodification processes, then they become essentially different from many other urban goods and services. Urban commoning activities may take the urban space as a tool to re-shape the environment by commoning institutions.¹⁸

Common institutionalizations should be common organization mechanisms that organize the commoning practices. However, a “commoning policy” is required in order to constrain the common institutions from limiting the common distribution practices, against the “capitalist institutionalization”, which is a form of domestication and occupation of the common institutions. The city is an important tool for the re-shaping processes of the commoning institutions, because it casts the common collaboration and enclosure practices. Public spaces can be recreated by commoning and by emerging its political meaning.¹⁹

Commoning practices should always allow for the new potential commoners and the new agents. The city emerging by these participator practices can be a piece of art, a common world that recreates itself once again.²⁰

2.1. Types of Commons

According to Bauwens from Peer-to-Peer (P2P) association, there are three types of the commons: (1) inherited (or natural) commons such as soil, water and forest; (2) intangible commons such as information and culture, coordinations that depend on internet, such as open source softwares, wikipedia etc.; and (3) tangible commons such as common stock, common machines and other human-made resources.²¹ Common

¹⁷ Katrina Myrvang Brown, “New challenges for old commons: The role fo historical common land in contemporary rural spaces,” *Scottish Geographical Journal* 122.2 (2006): 126.

¹⁸ Stavros Stavrides, *Kentsel Heterotopya* (İstanbul: Sel Press, 2016), 213-220.

¹⁹ Jay Walljasper, “On the commons,” in *Müştereklerimiz, Paylaştığımız Her Şey*, ed. Bengi Akbulut (Metis Press, 2014): 250-252.

²⁰ Ibid, 213-220.

²¹ Anna Betz, “The School spreads its wings: A graceful inaugural flight sets a successful precedence,” posted to School of Commoning, accessed February 4, 2012, www.commoning.org

spaces are the spaces of public use and collective ownership, which belongs to society as a whole with a free access.²² Commons can also be divided into two groups: (1) ecological commons (e.g. air, water bodies, and pastures) and (2) civic commons (e.g. streets, public spaces, and public transit) which can also be defined as the public goods (Table 2.1).²³

Commons involve: air, water, internet, public parks, streets, public schools, public transport and other public services, blood banks, food banks, museums, NGOs, fashion trends, social security, social services, fishery, radio, TV, cellular waves, traditional holidays, games, biodiversity, medical and scientific research funded by taxes, Wikipedia, myths and fairy tales, traditional recipes, traditional clothes, accounting systems, open source softwares, jokes, slangs and anecdotes, dictums and idioms, anonymous things, oceans, Antartica, space and milky way.²⁴

Table 2.1. Common Types²⁵

| COMMONS | Rural Commons | | Urban Commons | |
|-----------------------------|--|---|--|---|
| | Tangible | Intangible | Tangible | Intangible |
| Natural / Ecological | Pastures, rivers, forests and other natural resources | Air, climate | Rivers, seashores | Air, climate |
| Artificial / Manmade | Village square, picnic areas, village fountain, cemeteries | Village traditions, apparel types, dances, music, accents | Urban square, streets, public spaces, cemeteries, urban parks, urban forests, public transport | Urban traditions, music, styles, software and information commons |

According to the categorization matrix of the commons, there are tangible and intangible commons; rural and urban commons; and the natural/ecological and the artificial/manmade commons.²⁶ Rural and urban commons can contain ecological, manmade, tangible and intangible commons, such as the village common spaces that belong to the village legal entity until the 6360 numbered Metropolitan Law contain ecological, manmade, tangible and intangible commons, which includes the village

schoolofcommoning.com/content/school-spreads-its-wings-graceful-inaugural-flight-sets-successful-precedence.

²² Orlando Alves dos Santos Junior, "Urban common space, heterotopia and the right to the city: reflections on the ideas of Henri Lefebvre and David Harvey," *urbe. Revista Brasileira de Gestão Urbana* 6.2 (2014): 146-157.

²³ Vinay Gidwani and Amita Baviskar, "Urban commons," *Economic and Political Weekly* 46.50 (2011): 42-43.

²⁴ Jay Walljasper, "On the commons," in *Müştereklerimiz, Paylaştığımız Her Şey*, ed. Bengi Akbulut (İstanbul: Metis Press, 2014 [2010]), 25-26.

²⁵ Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: CUP, 1990).

²⁶ Ibid.

square, village fountain, cemeteries, picnic areas, pastures, village traditions, apparel types, dances and accents. Natural resources, rivers, forests and pastures are included in the ecological-tangible commons. Therefore, in this study, pastures are categorized as the rural-ecological commons, which are crucial in terms of ecological sustainability, biodiversity, common culture, erosion prevention and the rural tradition.

2.2. Enclosure Movements on Commons

The commodification of nature and commons dates back to the primitive accumulation, which Marx (1867) explains the capital enclosure on the rural common lands at the countryside of England in 17th century.²⁷ Landlords excluded the commoners from the free access to their land and owners of small parcels sold their land to large-scale landlords, which is called the “first enclosure movement”.²⁸ Since the 1980s, the second enclosure movement of neoliberal policies continue to enclosure of the ecologic commons and the natural resources. Discussions about 2008 crisis reveal that the capital is looking for a “third and ultimate enclosure movement” in the name of *green economy*, which labels and values natural the processes and the cycles as well as the natural products. Commodification of the water resources, germplasms, patenting of life forms can be accounted within this third enclosure movement.²⁹

According to Swyngedouw (2007), there is not a singular nature around a sustainability policy. There are multitude natures and possible socio-natural relations, which sustain the nature. People create artificial natures (e.g. green revolution, genetic engineering, and the city) as a kind of sustainability, which has certain side effects (e.g. flu viruses, obesity, and nuclear energy threat). This variety of examples shows the links between the human and the artificial, the technological and the natural; and suggests that there are various natures some of which are sustainable and some of which are not.³⁰

Although, there are possible other sustainable ways of dealing important socioenvironmental problems (e.g. animal ethics, food supply), most of the sustainability processes damage the world. Many scientists spread messages about the present

²⁷ Karl Marx, “Kapital, Birinci Cilt,” (İstanbul: Sol Press, 2004 [1867]), part 26-27.

²⁸ Shin Lee and Chris Webster “Enclosure of the urban commons,” *GeoJournal* 66.1-2 (2006): 27-42.

²⁹ Stefo Benlisoy, “Müşterekler Üzerinde Piyasa Baskısı,” in Heinrich Böll Stiftung Association, accessed April 14, 2015, 5. Yeşil Ekonomi Konferansı, İstanbul, <http://tr.boell.org/tr/2014/11/05/musterekler-uzerinde-piyasa-baskisi>.

³⁰ Benlisoy, “Müşterekler Üzerinde Piyasa Baskısı”.

environmental dangers, which may get worse unless we act reverse immediately. They have a chaotic imaginary while asking questions about socioenvironmental issues within the context of a neoliberal hegemony. From their point of view, “Sustainability is a return to a perceived global climatologically equilibrium that continue sustainably”.³¹

Sustainability as a systematic process contains three types: (1) ecological, (2) economical and (3) social sustainability, which have a primary goal to improve the economy within the limits imposed by the social and natural environment.³² Late 20th century globalization creates competitive cities, which have entrepreneurial public policies. The city creates epicenters and the urban fringe emerges new landscapes such as diffused urbanity as a representation of the fragments of a city-center and the dispersed in the countryside. In brief, diffused urbanity become a post-industrial type of landscape that distinguish two sub-categories such as (1) exurban new centralities and (2) exurban housing dispersal. These changes in the city landscape at both the urban fringe and the inner result in the dislocation and displacement of former activities and residents in the particular areas by urban regeneration and gentrification processes that have both costs and benefits.³³

Briefly, the post-industrial era has physical, sociological and cultural impacts on the cities. Intercity competition and the entrepreneurial public policies invite the gentrifiers, increase land rent and new developments to meet the needs of the global city, mega city or post-industrial city requirements. The inner city becomes the market and the commodity while its sub-centers emerge at the urban fringes. Old residents are forced to move suburbs while gentrifiers come and settle down to give prestige to the city. There are also the new professions such as information and communication technologies and new production modes are required, which create a mutual benefit in the post-industrial global city for both the city governance and the individual elites.³⁴

People started to realize their negative impacts on the nature, environment, and the living creatures and their future in the post-war period of the 20th century. By the development of the ecological worldview, the idea of the limited resources and the energy

³¹ Erik Swyngedouw, "Impossible sustainability and the post-political condition," *Making strategies in spatial planning*, Springer Netherlands (2010): 185-205.

³² Nicholas Low and Brendan Gleeson, "If Sustainability Is Everything, Maybe It's Nothing?" *Environment* 1 (2006): 1.

³³ Aspa Gospodini, "Portraying, classifying and understanding the emerging landscapes in the post-industrial city," *Cities* 23.5 (2006): 311-330.

³⁴ *Ibid*, 313-330.

scarcity became familiar. In 1960s, Carson's book "Silent Spring" (1962) claimed that people are responsible for the pesticides and other forms of the pollution in the food chain of birds, fishes and animals and extincting species;³⁵ and "Sierra Club" (1968) told about the foundation of an environmental organization in 1892 in US, which led a change in environmentalism from minority interests to mass movements (e.g. anti-nuclear movements).

In the 1970s, there was the golden era of the environmental movements. Greenpeace founded in 1971 and Stockholm Conference submitted the declaration on the human environment in 1972. Schumacher's book "Small is Beautiful" is released in 1973 at the date of oil crisis and promoted the concept of the wise and economical use of nature.³⁶ Environmental movements were one of the main components of social movements in 1970s. The "Deep Ecology Movement" (1974) questioned the dominant economic approaches in the capitalist western society.³⁷ Deep ecology was founded biocentrism with radical green politics. The substantial point of their ecologism was its political ideology about the intrinsic value of the nature rather than being a resource. According to deep ecologists, we needed an ethic that recognizes the intrinsic value of all aspects of the non-human world because ecological sensitive actions were not always environmentally ethical. Eco-socialists approved the "environmentalism" as an extension of the humanist concerns and rejected the idea of putting human interests behind those of nature. They centered the human labor within an environmentalist approach and criticized the disaster metaphors about the nature and the deep ecologists' ecofascism and supremacist movements.³⁸

In the 1980s, sustainability and sustainable development concepts emerged (e.g. Brundtland report, 1987) and Lovelock suggested "Gaia Hypothesis" which claims that the living organisms always keep their planet fit for life. This hypothesis placed at the center of the scientific and political ecology by displacing the human beings from the center of the earth.³⁹ However, adaptation of this hypothesis in ecological politics still

³⁵ Carson, Rachel, *Silent spring*, (Houghton Mifflin Harcourt, 2002).

³⁶ Anna Bramwell, *The fading of the greens: the decline of environmental politics in the West*, (Yale University Press, 1994).

³⁷ Susan Armstrong and Richard G. Botzler, "Environmental ethics," *Divergence and Convergence* (1993): 275-6.

³⁸ Andrew Dobson, *Green political thought*, (Psychology Press, 2000).

³⁹ James E. Lovelock and Lynn Margulis. *The Gaia Hypothesis*. 1996.

creates a shelter to the anthropocentric views within the “healthy planet target” for the future generations.⁴⁰

Sustainability of the socio-ecological well-beings usually contradict with the sustainability of continuous capital accumulation.⁴¹ “Ecological Marxist Theory” is one of the approaches, which tried to solve the contradictions between capitalist production relations and forces and the conditions of production (e.g. human and environmental concerns). Ecological Marxism or Eco-Socialism emphasized that the human labor was fundamental for our species of being. All projects that transform the ecologic relations are also the projects to transform social relations.

In the 20th century, there were many discussions of capitalism, nature and socialism by focusing on the capitalist scarcity while Marxist theories of the historically produced forms of nature, “capitalist accumulation and development”, e.g. limits to growth, resource scarcity, ecological fragility, over population and harmful industrial technology. Capitalization is mostly self-destructive and crisis-dependent as it destroys its production conditions, capital threatens its own profits and capacity to produce and accumulate more capital, e.g. revenues to prevent environmental destruction.⁴²

Howard (1898) proposed Garden City as a global and sustainable urban development model by *increased production* and *more just and equitable division* as a solution against the unhealthy giant cities during the 1890s.⁴³ However, Howard’s vision remained as a peaceful path to a social reform, which is never materialized. “Garden City Movement” was a reform of the spatial arrangement of social and economic life, and seriously influenced the whole 20th century planning with the form of environment embodied both town and country and both man-made and nature together. Garden City was a holistic approach adopted by contemporary approaches in late 20th century, e.g. agricultural belts, green belts and urban fringe belts. Many other environmental sensitive concepts and strategies emerged in relation with sustainability and sustainable development concept such as: sustainable urbanization, sustainable city types, e.g. eco-city, smart city, slow city, green city and compact city and the approaches such as right

⁴⁰ Low and Gleeson, “Sustainability,” 1.

⁴¹ David Harvey and Bruce Braun, *Justice, nature and the geography of difference*, Vol. 468 (Oxford: Blackwell, 1996).

⁴² James O’Connor, “Capitalism, nature, socialism a theoretical introduction,” (1988): 11-38.

⁴³ Ebenezer Howard, *Garden cities of to-morrow*, Vol. 23 (The MIT Press, 1965 [1898]): 128-137.

to the city, new urbanism, tactical urbanism and agrarian urbanism.⁴⁴ All these new approaches aim to create similar livable and healthier environments and cities while focusing green energy and technology.⁴⁵

Ecological approaches to nature focus on its intrinsic value as it is not a static vision of the natural world; rather it is the history of natural development and living forms that create rational, ecological and self-conscious environments.⁴⁶ Sustainability concept shares a similar vision for the future generations (e.g. Brundtland report⁴⁷) to have the ability to maintain forward looking long-term planning decisions.

According to Escobar⁴⁸, there are four criticisms for the sustainable development concept within capitalized nature. Sustainable development is the key element, which mediates the balance between nature and capital. Firstly, there is a great inequality about the resources and the resource exploitations among the countries, regions and classes. Secondly, economic activities regulate the sustainability discourse and ignores the neoliberal system forces. Thirdly, the sustainability discourse redefines the concerns about the basic needs and the limits to growth to prevent the negative outcomes. Finally, the sustainable development aims to “transform the nature into environment” within an anthropocentric perspective.

A singular nature image eventually disappeared where a sustainability policy frame around during the re-engineering process of the nature within neoliberal hegemony (e.g. wetlands, water provisions, cities). Political frame of environmental issues consolidated a politicized environment including artificial natures, new technologies, new types of illnesses, foods and energies.⁴⁹ Campbell⁵⁰ emphasizes the socially constructed view of nature and the nature-human duality as the reasons of many socio-environmental problems within the sustainable development. By the new imperialism since the mid-70s, there was a stagnation because of a crisis of the

⁴⁴ “Agrarian Urbanism,” DPZ, accessed December 18, 2016, <http://www.dpz.com/Initiatives/AgrarianUrbanism?from=Thought.AgrarianUrbanism>.

⁴⁵ Kermit C. Parsons and David Schuyler, "From Garden City to Green City. The Legacy of Ebenezer Howard." (2004).

⁴⁶ Murray Bookchin, *Remaking Society*, (Montreal: Black Rose Books, 1989).

⁴⁷ Gro Harlem Brundtland, "Our common future—Call for action," *Environmental Conservation* 14.4 (1987): 291-294.

⁴⁸ Arturo Escobar, "Construction nature: Elements for a post-structuralist political ecology," *Futures* 28.4 (1996): 325-343.

⁴⁹ Swyngedouw. "Impossible Sustainability", 185-205.

⁵⁰ Scott Campbell, "Green cities, growing cities, just cities?: Urban planning and the contradictions of sustainable development," *Journal of the American Planning Association* 62.3 (1996): 296-312.

overaccumulation, which resulted in the spatio-temporal fixes such as privatization of natural resources. Social struggles occurred by the rising exploitation of the commons, privatization of the socialized companies and the liberalization of the public services. Since the 1990s, increasing scarcity of the natural resources such as potable water resulted in the intervention of the West to Eastern resources.⁵¹

Economic and ecological resources contradict with each other (e.g. protecting or consuming nature as a resource). Natural resources are limited; as a result, there is a resource scarcity threat, e.g. food, water deficit. Flexibility, adaptation and resilience are crucial for their survivability. Therefore, assumption of the natural space as a commodity is a serious problematic for environmental sustainability. All three concepts aim to reduce the negative externalities of the economic development by improving the conditions and remain it to the future and make environmentally sensitive conditions of production.

Ecological and natural resources are mostly the common resources such as the sea, air and forests and the common resources are usually under the threat of being enclosed. The value of the land is a source of the political power. Since the last decades, several legal arrangements in Turkey such as Regulations in Tourism Promotion Law (2003, 2008), Mining Law, Forestry Law (2004), Soil Conservation and Land Use Law (2005) and Metropolitan Municipality Law (2012) facilitated the enclosure of the commons.⁵² These serious land allocation demands on the rural commons harmed independent small-scale farming under the dominance of the market. Most of the farmers lost their abilities for collective organization and migrated from rural to urban areas.⁵³

Hierarchical society that shapes our perception of nature and actions; therefore, the duality and domination and nature cannot be overcome unless the freedom of all kinds of social relations between genders, ethnic groups, ages and classes. Ecological movements, social movements and collective actions are all need to be engaged to eliminate this domination and to achieve ecological and social sustainability.⁵⁴ Economical, social and ecological dimensions of the sustainability require a revolutionary social idea for the efficient allocation and the just distribution of

⁵¹ Jean Batou, "Accumulation by dispossession and anti-capitalist struggles: A long historical perspective," *Science & Society* 79.1 (2015): 27.

⁵² Ali Kerem Sayse, "Müştereklerin Tasarımı, Kıstaslar ve Sorunlar, accessed April 14, 2015, 5. Yeşil Ekonomi Konferansı, İstanbul, <http://tr.boell.org/tr/2014/11/05/mustereklerin-tasarimi-kistaslar-ve-sorunlar>.

⁵³ Benlisoy, "Müşterekler Üzerinde Piyasa Baskısı".

⁵⁴ Murray Bookchin, *Toward an ecological society*, (Black Rose Books Ltd, 1980).

resources. However, achieving these three dimensions without a transformation in the mode of production may not be possible.⁵⁵

2.3. Hardin's Tragedy of Commons

The loss of the common resources by overuse and enclosure movements is one of the core problematics in this study. The resource pessimist literature started with "*An Essay on the Principle of Population*" (1789), which focuses to the problem of overpopulation vs. limited resources.⁵⁶ Malthus, an English cleric and economist, pointed out the contradiction between the arithmetic food production and exponential population growth to predict a possible future of environmental destruction, resource degradation, hunger, famine and violence. In 1970s and 1990s, alarmist neo-Malthusian literature⁵⁷ was dominant in the environmentalist discourse, which has criticized by *resource optimists* about being deterministic, underspecified and non-testable.⁵⁸

According to resource optimists, neo-Malthusian thesis understates the capacity to adapt to scarcities. They claimed that overpopulation has less influence on the historical and structural dimensions of violence, rather than the influences of globalization and colonies. Neo-Malthusians primarily concerned about the resources, which are essential to food supply and described five categories that may create violent conflicts: (1) fresh water, (2) croplands, (3) forests, (4) pastures and (5) fisheries.⁵⁹

Malthus is widely criticized by Marx in *Capital* (1867) by indicating him and his supporters as the non-productive members of English oligarchy. Marx also accused Malthus as a plagiarist of the former studies on the population (e.g. De Foe, James Stuart, Townsend, Franklin, Wallece). Malthus' suggestion, especially on the limitation of the proletarian population creates a clear conflict within the capitalist system, which constantly requires more labour power and concordantly promotes population growth.⁶⁰ According to Marx, the interest groups prevented Malthus to see the capitalist system that

⁵⁵ Low and Gleeson, "Sustainability," 1.

⁵⁶ Thomas Robert Malthus, "An essay on the principle of population vol.1," *Cosimo*, (2013 [1789]).

⁵⁷ Noel Castree and Bruce Braun, "Social nature," *Malden, MA: Blackwell Publishing*, (2001).

⁵⁸ Richard A. Matthew, "Environment, Population and Conflict: New Modalities of Threat and Vulnerability in South Asia." *Journal of International Affairs* (2002): 235-254.

⁵⁹ Henrik Urdal, "People vs. Malthus: Population pressure, environmental degradation, and armed conflict revisited." *Journal of Peace Research* 42.4 (2005): 417-434.

⁶⁰ Marx, "Kapital Birinci Cilt," 588.

created the “surplus” proletarian population by the help of the technological innovations and exploitations of women and children. Eventually, Malthus attempted to oversimplify the over-population phenomenon by the natural law, rather than the political economy and the historical processes of the production.⁶¹ Hardin, a neo-Malthusian ecologist, brought forward the idea of “*Tragedy of Commons*” (1968), which claims that the finite resources cannot support the exponential population growth.⁶² According to him, population problem cannot be solved by the conscience of the human being within a system of profit maximization. He claimed the necessity of a finite, an optimum population within a limited access to commons and he proposed two solutions: (1) private enterprise and (2) government control, which became the arguments on behalf of the enclosure movements.⁶³

Hardin’s view criticized by many, including Ostrom, a political economist, as the privatization or government control cannot guarantee the sustainable use of resources. Ostrom⁶⁴ proposed an alternative solution by “collective action” in her works about “financial governance and commons analysis” that gained a Nobel Economy Prize. Hardin supposed that there cannot be any collective action between individual users. However, several case studies and examples revealed that there could be other solutions such as cooperations and other collective action practices. Therefore, Hardin’s “tragedy of the commons” is accused from providing a base for the capital enclosure on the common resources and triggers the attempts of privatization.

Ostrom and her colleagues constituted IASCP (International Association for the Study of the Common Property) in 1989, which took the name of IASC (International Association for the Study of the Commons) in 2006, to disprove Hardin’s claims. The starting point of the commons analysis of Ostrom is the matrix of the common goods (Table 2.2). Ostrom⁶⁵ revealed that the model established by Hardin was a free access model, rather than the commons model; as the commons are the courses, in which the common users are the members of a well defined group or organization and have a right to prevent the outsiders of that specific common or resource.

⁶¹ Marx, “Kapital Birinci Cilt,” 502.

⁶² Garret Hardin, “The Tragedy of the Commons*.” *Journal of Natural Resources Policy Research* 1.3 (2009 [1968]): 243-253.

⁶³ De Angelis and Harvie, “The Commons”.

⁶⁴ Adaman, Akbulut and Kocagöz, *Herkesin Herkes İçin: Müşterekler Üzerine Eleştirel Bir Antoloji*.

⁶⁵ De Angelis and Harvie, “The Commons”.

Accordingly, each pasture is assigned to a defined village and the common users of that specific village can be an example of this close group, as they prevent the “other villages” from using their pastures (actual or legal fights between villages can be an example of this). Although, the pastures of Turkey are under the government control and protection by the legislations such as 4342 numbered Pasture Law and monitoring by Provincial Pasture Commissions; however, there are serious enclosure attempts, which result in pasture quality degradation.

According to Ostrom, there eight rules that prevent Hardin’s “tragedy”, which are defined as eight design principles: (1) clearly defined boundaries; (2) congruence; (3) collective-choice arrangements; (4) monitoring; (5) graduated sanctions; (6) conflict-resolution mechanisms; (7) minimal recognition of rights to organize; and (8) nested enterprises.⁶⁶

Table 2.2. Types of the common goods⁶⁷

| | | Subtractability of Use | |
|---|------|--|--|
| | | High | Low |
| Difficulty of excluding potential beneficiaries | High | <i>Common-pool resources:</i> groundwater basins, lakes, irrigation systems, fisheries, forests etc. | <i>Public goods:</i> peace and security of a community, national defense, knowledge, fire protection, weather forecasts etc. |
| | Low | <i>Private goods:</i> food, clothing, automobiles etc. | <i>Toll goods:</i> theaters, private clubs, daycare centers |

Ostrom⁶⁸ focuses on the limit of the use of natural resources to ensure their long-term economic viability. By specifying CPR (common pool resources), she claims that under favorable conditions, resource systems can produce maximum quantity of a flow variable, without harming the resource system (e.g. fishing grounds, groundwater basins, pastures). According to the “allocation process” of CPR, “as long as the average rate of withdrawal does not exceed the average rate of replenishment, renewable resources can be sustained over time.” Ostrom’s promising option for commons is also criticized because of its suspended definition of users and community. First criticism was about the possible inequalities during the administration process of the commons as there cannot

⁶⁶ Elinor Ostrom. "Reformulating the commons," *Swiss Political Science Review* 6.1 (2000): 41.

⁶⁷ Elinor Ostrom, “Beyond markets and states: polycentric governance of complex economic systems” *Transnational Corporations Review* 2.2. (2010): 1-12.

⁶⁸ Ostrom, “Reformulating the Commons,”41.

be a homogeneous community where everyone is equal (e.g. classes, sexes).⁶⁹ Secondly, the enclosure movements are the internal dynamics of capitalism and commons are enclosed by wider political economic context. Without the considerations of the systemic problem, commons or commonization process cannot be critical to neoliberal policies while the global market pressure prevents the sustainable administration processes. To sum, none of the commonization practices can be independent from the political economic context, which is the missing part in Ostrom's proposal.⁷⁰

2.4. Use Value of Commons

The city can be defined as a hybrid socio-natural thing, which is an anti-thesis of the green and pleasant nature.⁷¹ Green spaces can penetrate within the cities by health concerns such as avoiding industrialization in the center. Past utopian cities that aimed to create ideal living conditions in relation with nature, e.g. garden city⁷² while critical perspectives seek the answers to explain which nature is constructed within modern and late modern societies.⁷³ The problem of nature, space and uneven development are the capital-generated and the discussions about the production of space and production of nature are actually the value discussions. In order to produce surplus value, capital invests in the built environment, while expresses itself in the contradiction between the two factors of commodity: (1) use value and (2) exchange value.⁷⁴

Use value is intrinsic and the core of the wealth, whereas, the exchange value is phenomenological and depends on labor and time. The value of a commodity is determined according to its comparison to other commodities while the money becomes a measurement tool in the process, in which the workers produce surplus value, while the capital produces workers and converts this surplus value into the new capital.⁷⁵

⁶⁹ Bengi Akbulut, "Küresel, özel ve kamusal mallar," accessed April 14, 5. Yeşil Ekonomi Konferansı, İstanbul, <http://tr.boell.org/tr/2014/11/05/kuresel-ozel-ve-kamusal-mallar>.

⁷⁰ Adaman, Akbulut and Kocagöz, *Herkesin Herkes İçin: Müştarekler Üzerine Eleştirel Bir Antoloji*.

⁷¹ David Harvey and Bruce Braun, *Justice, nature and the geography of difference*. Vol. 468. (Oxford: Blackwell, 1996).

⁷² Konstantina Soureli and Elise Youn, "Urban Restructuring and the Crisis: A Symposium with Neil Brenner, John Friedmann, Margit Mayer, Allen J. Scott, and Edward W. Soja," *Critical Planning* 16.1 (2009): 35-59.

⁷³ Noel Castree and Bruce Braun, "The construction of nature and the nature of construction," *Remaking reality: Nature at the millenium* (1998): 3-42.

⁷⁴ Neil Smith, *Uneven development: Nature, capital, and the production of space*, (University of Georgia Press, 2010).

⁷⁵ Marx, "Kapital Birinci Cilt," 26-27.

Common spaces are the spaces of public use and common ownership, which belongs to the society as a whole within free access, and have use value over exchange value, e.g. spaces for preservation.⁷⁶ Urbanization oriented by private decisions do not protect common property rights and do not take the common goods or public interest into consideration. Thus, the common rights need to be protected by a superior common good.⁷⁷ Debates on the commons, public spaces, civil acts and nature-human duality gained more importance since the last decades, parallel to the biocentrism view against the anthropocentrism view. Accumulation by dispossession, commodification of land, enclosure movements and declining ecological sustainability are some of the main problems related with the commons. The commodification of the land directly leads to the enclosure of the commons by transforming their use value into exchange value that creates a clear conflict between common and private spaces regarding the administration and social segregation.⁷⁸ Today, the governance of the common resources is still in the middle of debates; and a more comprehensive theory is necessary.⁷⁹

Ecological Society Approach of Bookchin⁸⁰ suggests more decentralized, small-scale production patterns that are formed by cooperations,⁸¹ and thus, ecological movements may create a more equal and coherent society without the domination over people and nature⁸² within the context of the global equity and justice. Therefore, we may claim that commons are one of the most crucial debates of the present day⁸³ and the role of the planning in the process is related with the generation of new utopias from the perspectives of the collective action to create environments that are more equitable.

⁷⁶ Gidwani and Baviskar, "Urban commons," 42-43.

⁷⁷ Lee and Webster "Enclosure of the urban commons," 27-42.

⁷⁸ Lyn H. Lofland, *The commodification of public space*, Urban Studies and Planning Program, (University of Maryland, 2000).

⁷⁹ David Feeny et.al. "The tragedy of the commons: twenty-two years later," *Human ecology* 18.1 (1990): 1-19.

⁸⁰ Santos Junior, "Urban common space," 146-157.

⁸¹ Gökhan Orhan, *Türkiye'de Yerel Yönetimler ve Çevre: Küresel Sorunlar, Yerel Çözümler ve Yeniden Merkezileşme Tartışmaları*, (Bursa: Ezgi Kitabevi Yayınları, 2014),

⁸² Bookchin, "Toward an ecological society".

⁸³ Benlisoy, "Müşterekler Üzerinde Piyasa Baskısı".

CHAPTER 3

RURAL SYSTEMS IN TRANSITION

The strict borders between the rural and urban areas are disappearing by the intermeshing economic activities and new geographical, transnational borders. Disappearance of the borders has potentials and threats, as the rural-urban fringe is a multifunctional and dynamic zone in terms of historical development, biodiversity, production, recreation, identity and aesthetic landscapes.⁸⁴ Thus, controlling the urban sprawl, eliminating the reasons of rural-urban migration and increasing the life quality in Turkey are the major problems to be solved.⁸⁵

The rural-urban fringe differs from the dense urban mass and offers an area to breathe in the open, green and alternative usages, similar to the urban fringe belts. They offer the possibilities of recreative and agricultural alternative land uses for urban citizens. However, the rapid urbanization pressure increases the risks of urbanization at the rural-urban fringe and the rural areas. Under these circumstances, planning policies and the approaches become crucial.

New views of sustainability that aim to reach the *triple bottom line* of sustainability (3S), positions the cities within a more biocentric approach. The phrase *triple-bottom line* firstly defined by Elkington⁸⁶ and used especially by 'green' corporations within a threefold focus: planet, people and profit.⁸⁷ According to Castells (2000), an overall urban sustainability requires these economic, social and ecological dimensions: Economic sustainability is the ability to generate wealth and resources by productivity and competitiveness of the cities in the global market, while social sustainability is the ability to acknowledge the plural identities, avoiding social exclusion to make cooperation and competition compatible within society. Ecological sustainability is the ability to prevent the deterioration of the environment and the quality of life, including the idea of nature in the city.⁸⁸ Therefore, planning policies at the rural-urban

⁸⁴ Nick Gallent et.al. *Planning on the Edge* (Routledge, 2006): 1.

⁸⁵ Tekeli, "Türkiye'de kent bölgeler,"

⁸⁶ John Elkington, "Enter the triple bottom line," *The triple bottom line* (Routledge, 2013): 23-38.

⁸⁷ Ante Glavas and Jenny Mish, "Resources and capabilities of triple bottom line firms: Going over old or breaking new ground," *Journal of Business Ethics* 127.3 (2015): 623-642.

⁸⁸ Manuel Castells, "Urban sustainability in the information age," *City* 4.1 (2000): 118-122.

fringe should pursue the ecological and social sustainability as well as the economic sustainability. Changing rural-urban dimensions should be analyzed in detail to understand these transitions among the rural and urban systems.

3.1. Changing Rural-Urban Dimensions

According to Lefebvre⁸⁹, the reconceptualization of the city is a necessity for understanding the nature of the society. There is a variety of urban transformations and urban restructuring as well as a variety of the epistemology of the new forms of urbanization. The rural-urban dichotomy as distinct environments lose validity due to the disappearance of the spatial limits by social and economic interfering.

In Turkey, most of the rural areas are under a serious urban pressure and have several conflicts due to the continuous transformation processes as the re-productions of the space. The rural-urban fringe is a convenient area to observe all these dimensions.⁹⁰ Today, “city regions” are the principal spatial units to understand the agglomeration of social, cultural and financial economies. The re-distributional concerns within city regions create struggles such as uneven development. Especially after the global financial crisis of the late 2000s, three macro trends appeared: (1) uneven spatial development, (2) differentiated and polymorphic ‘cityness’ and associated forms of ‘land grabbing’, and (3) reconstitution of inherited geographies of polarized, relatively uncoordinated landscape of territorial and networked governance.⁹¹

Brenner and Schmid⁹² defines three types of urbanization: (1) concentrated urbanization, (2) extended urbanization, and (3) differential urbanization (Table 3.1). The production of these operational landscapes is the result of the imperatives such as food circulation, water, energy and construction materials, waste and pollution management and the labor-power mobilization. Especially extended urbanization, which locates at an operational landscape called the “rural-urban fringe” is related with the progressive enclosure, operationalization and industrialization of the natural landscapes such as

⁸⁹ Lefebvre, *Kentsel Devrim*.

⁹⁰ Neil Brenner and Christian Schmid, "Towards a new epistemology of the urban?" *City* 19.2-3 (2015): 151-153.

⁹¹ Andrew EG Jonas and Kavin Ward, "Introduction to a Debate on City- Regions: New Geographies of Governance, Democracy and Social Reproduction." *International Journal of Urban and Regional Research* 31.1 (2007): 169-178.

⁹² Brenner and Schmid, "Towards an epistemology of the urban?" 166-169.

rainforests, pastures, oceans and even the atmosphere. Extended urbanization agglomerates various types of “non-city spaces” to meet the basic needs of the metropolitan growth, which are crucial to the consolidation and restructuring of the urban centres.

Table 3.1. Dimensions of the urbanization⁹³

| DIMENSIONS | Spatial Practices | Territorial Regulation | Everyday Life |
|----------------------------------|--|---|--|
| Concentrated Urbanization | The production of built environments and sociospatial configurations to agglomeration | Rule-regimes and planning systems governing socioeconomic and environmental conditions | The production of routines, everyday practices and forms of life |
| Extended Urbanization | The activation of places, territories and landscapes in relation to agglomerations, diverse sites of socio-economic transformation | Governance systems oriented towards the socio-economic processes that support major urban centers | The social routines, everyday practices and forms of life that emerge as diverse places, territories and landscapes |
| Differential Urbanization | Recurrent pressures to creatively destroy inherited geographies of agglomeration | Mobilization of state institutions and other regulatory instruments to promote, manage, accelerate or influence the reorganization of agglomeration | The reorganization of social routines, everyday practices and forms of life in conjunction with the creative destruction of built environments |

Urbanization includes spatial practices and sociospatial transformations mediated through the territorial regulations, which rules the labor and resources, financial flows and territorial developments. Since the 1980s, the form of the urbanization became planetary by the neoliberalization of the global, national and local economic governance, the digital revolution, flexible and global production and the new forms of market-oriented territorial regulation at different scales. Expansion of the urban agglomerations around the major cities, surrounding territories, hinterlands and the major expansions of the agro-industrialization, mineral and oil extraction, long-distance transportation and communication infrastructures transformed the rural zones. Agro-industrialization and the land enclosure devastated the small and medium size productions and destabilized the environmental security, social reproduction and the organization of the land functions, which eventually resulted in the rural-urban migration.⁹⁴

Neo-liberal policies, which create the city regions and cause uneven spatial development, uneven extensions of the industrial infrastructures, financial speculation and the “accumulation by dispossession”. The practice of collective social actions have

⁹³ Brenner and Schmid, “Towards an epistemology of the urban,” 171.

⁹⁴ Ibid, 170-175.

the power to create new forms of experience and new forms of life as suggested in the concept of “right to the city”. Enclosure of the everyday social spaces may result in the anti-gentrification movements against the enclosure and large-scale investments (e.g. mining) for more equitable, democratic and eco-friendly spaces rather than the neoliberal ones.⁹⁵

The concept of “bio-regions” can be an alternative within the context of space involving struggles and conflicts. Bioregionalism is a framework, which suggests, “*For every bioregion, there is a unique set of practices of planning, design and management that will result in a bioregionally unique set of landscape patterns.*”⁹⁶ Bioregion is an area defined by the natural boundaries and significant living communities. The framework is suggestive to comprehend and design the geography and the place for long-term sustainable communities. Patterns of bioregional territories require community-based management for social and ecological sustainability. The framework can provide a place-based thinking, which is crucial for planning, design and conservation at regional scales.

Bioregional patterns of the living environments are regionally unique and favorable within the geomorphic, climatic, biotic and cultural influences. Thus, a study on bioregional patterns relating with a holistic knowledge patterns: natural place, sacred place, identity, local arts, practices, food and wisdom, which can provide: (1) linking cognitive maps to environmental data, (2) connecting sequences of symbols and patterns in place and time, (3) designing spatial forms to future landscapes, and (4) achieving combined ecological and social sustainability.⁹⁷

Bioregional framework can also acknowledge the participants about the limitations of the resources of a specific place by accepting the vulnerabilities of a region and taking precautions to achieve sustainable and restorative outcomes. While mapping the environmental patterns, gaps and networks is widespread in the conservation literature, the bioregional focus capture much about the cultural heritage as well as the natural resources. Patterns of landscape elements may form a pattern-language as a spatial narrative to understand the connections between the patterns and ecological processes,

⁹⁵ Brenner and Schmid, “Towards a new epistemology of the urban,” 171.

⁹⁶ Robert L. Thayer, *LifePlace: Bioregional thought and practice*, (Univ. of California Press, 2003), 144.

⁹⁷ Janet Silbernager, "Bio-regional patterns and spatial narratives for integrative landscape research and design." *From Landscape Research to Landscape Planning: aspects of integration, education, and application* (2005): 107-118.

and the composition of biotic and abiotic elements. Thus, the patterns of shape, structure, material, formation, and function become the meanings of the words. Especially the landscape architects use this pattern-language to see the landscape continuum as a complex design composition rather than a distinct individual element.

Bioregional framework can suggest spatial patterns, which reflect the cultural-landscape history, knowledge and experience, environmental science, conservation and landscape-planning projects, by synthesizing the visual and experiential sources. Patterns provide solutions for locational choices to diminish or enhance the quality of life, sense of place, and sustainability. Recognizing the source of landscape patterns divergent to the regional landscape (e.g. sprawl, fragmentation); consideration of the history of ecological systems may ease the decisions of the planners and administrators within the natural systems capacities.⁹⁸

Bioregional framework is a combination of spatial narratives, horizontal, sometimes overlapping layering of maps, figures, photos, diagrams to form a meaning and patterning like a storyline, rather than an analysis of multiple layers (Figure 3.1). Along with the pattern language synthesized within the environmental data, the concept of building narratives can increase the community awareness by identifying a dialectic between objective geographic space and subjective experiential place. Holistic tools that operationalize the research and design processes by synthesized layers of the landscape information within the environmental data and mapping can arrange the cultural and biophysical data to provide new sustainability debates and landscape understanding.

Strengthening the agriculture systems and the biodiversity of the farmlands is one of the most complicated actors that planners should deal with. Today, the main global/industrial agricultural model is under a practice that leads to undescribed local/regional food systems. Thus, the concept of the “bioregional food systems” emerges to correlate the triple bottom line of the sustainability. Local governments can use the bioregional concept, e.g. Municipally Enabled and Supported Agriculture (MESA) by the tools of the sustainable production system, community trust farming, farm schools and greenhouse strategies. Bioregional concept aims to create ecologically, economically and socially resilient food systems to provide the food security.⁹⁹

⁹⁸ Silbernagel, "Bio-regional patterns and spatial narratives," 107.

⁹⁹ Ibid, 108.

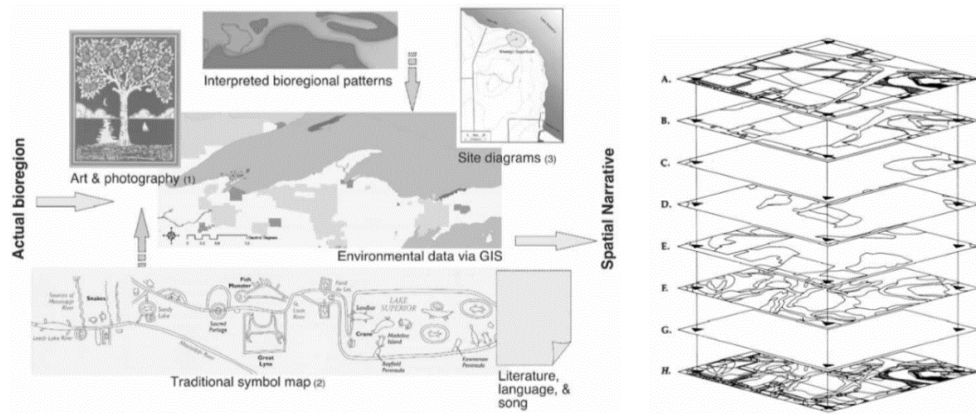


Figure 3.1. Conceptual framework for linking bioregional patterns.¹⁰⁰

According to MESA (2012) “Bioregional concept advances the food systems based on regional resource capabilities that respect ecological limitations, focus on and nurture the place and the community, and complement the global system by optimizing land and resource utilization through maximizing the regional food self-reliance”.

There are four bioregional dimensions: (1) environment (geography, natural resources, climate, biodiversity), (2) economy (population, employment, transportation, agriculture), (3) socio-cultural (community, culture, policy, planning), and (4) food (production, distribution, consumption, waste management). If the local governments support small scale, human intensive agro-food systems, there can be better local and regional economies, well-protected land and increasing product self-reliance.¹⁰¹

Another relevant concept with bioregionalism is *Agrarian Urbanism*, which proposes the “water-food-energy nexus” by the economic and social interchange of the rural and urban. Agrarian Urbanism encourages the combination of agriculture and urbanism to improve the local development, healthy food and food sovereignty. There are many advantages of the locally grown food such as being close to the market cycle, which reduces the costs of transportation, disposal, and reduced pesticides and fertilizers, which eventually reduce GMOs (Figure 3.2).¹⁰²

¹⁰⁰ Silbernagel, "Bio-regional patterns and spatial narratives," 107.

¹⁰¹ Arthur Fallick, “Strategies to enhance the integration of agri-culture with urban-culture in British Columbia, Canada,” *International Sustainability Conference* (2012).

¹⁰² “Agrarian Urbanism,” DPZ, accessed December 18, 2016, <http://www.dpz.com/Initiatives/AgrarianUrbanism?from=Thought.AgrarianUrbanism>.



Figure 3.2. Agriculture at the edge of the community.¹⁰³

Pastures can be included within the bioregional dimensions (environment, economy, socio-cultural and food), in terms of their important biodiversity, contributions to rural economy (e.g. husbandry), rural tradition and lifestyle, reduced fertilizers, healthier food by the meat and milk of the grassfed animals, purified from GMOs; as well as the “water-food-energy nexus” of Agrarian Urbanism.

3.2. Rural-Urban Fringe

Briefly, the rural-urban fringe is a zone of transition between the edge of the urban area and the countryside, which is a dynamic arena including a mix of various *urban uses* such as decentralized office spaces, campus universities, district hospitals, industrial areas, warehouses, nurseries, football stadiums; and *rural uses* such as farming, forestry and conservation areas. Rural-urban fringe contains potential resources for leisure, conservation, economic development and green energy production activities, emerge spontaneously and organically without an effective spatial planning and landscape management, and thus, needs a more formalized planning approach.¹⁰⁴

Rural-urban fringe is an integral part of the urban system, which is not well defined as an urban edge, urban periphery or urban shadow where farming activities are located and its special characteristics include several illegal activities (e.g. fly tipping). The ignorance on these areas create the contemporary fringe as a zone where the land prizes are lower than the urban center, whereas easier access to road networks. The fringe areas are more peri-rural than peri-urban in terms of having more vacant plots and

¹⁰³ “Agrarian Urbanism,” DPZ, accessed December 18, 2016, <http://www.dpz.com/Initiatives/AgrarianUrbanism?from=Thought.AgrarianUrbanism>.

¹⁰⁴ Gallent et.al. *Planning on the Edge*, 6.

agricultural uses. However, these areas are usually under the urban pressure, which results a degradation of the agricultural lands. Malpractices, new legislations and planning permissions for the new developments are the primary triggers of the degradations on the undermanaged farmlands and pastures.¹⁰⁵

Urban fringe belts are the urban entities, which are different from other urbanized parts of the city due to their pattern and usage. Fringe belts are created between the building cycles at the urban periphery, and become embedded within as the city enlarges. Conzen¹⁰⁶ made the first comprehensive definition of these areas as “A belt like zone originating from the temporarily stationary or very slowly advancing fringe of a town and composed of a characteristic mixture of land-use units initially seeking peripheral locations”.

Urban fringe belts are the former urban peripheries and rural-urban fringes, which are embedded within the city due to the urban growth. Particular policy delimitations (e.g. green belt policy in UK) may help to protect the characteristics of these landscapes. The formation of urban fringe belts embraced by Whitehand¹⁰⁷ due to the economic boom and stagnation periods and integrated with formal economical thinking, e.g. building cycles, land values and innovations in transport (Figure 3.3). Fringe-belt concept is linked with the land-rent theories, relating the creation of fringe belts to slumps in residential building and periods of low land values (h: housing development, i: institutional development).

Accordingly, there is a relation between the land rent due to stagnation periods and the locational choice of the housing and institutional uses. Housing uses tend to locate at the edge of the built up area at the economic boom, while the institutional uses tend to locate at the edge of the built up area at the stagnation periods. Therefore, fringe uses can be observed by the developments at the stagnation periods.¹⁰⁸

The urban periphery and the urban fringe belt concepts can be confused with each other. This is merely because the urban fringe belts are the former urban peripheries, which become embedded within the city. Economic stagnation periods effect the investments and the formation of the fringe areas. In contrast to more densely built up areas, fringe belts offer both breathing space and alternative activities such as urban

¹⁰⁵ Gallent et.al. *Planning on the Edge*, 7.

¹⁰⁶ Conzen, “How Cities Internalize Their Former Urban Fringes,” 29-51.

¹⁰⁷ Jeremy W.R. Whitehand, “Background to the urban morphogenetic tradition,” *The urban landscape: historical development and management: papers by M.R.G. Conzen*, Institute of British Geographers Special Publication 13 (Academic Press, London, 1981): 1-24.

¹⁰⁸ *Ibid*, 103-104.

gardening. Fringe belts have importance for ecological sustainability as they are usually comprised of urban heritage sites, ecological corridors and buffer zones, which protect natural areas from the negative effects of the city.¹⁰⁹

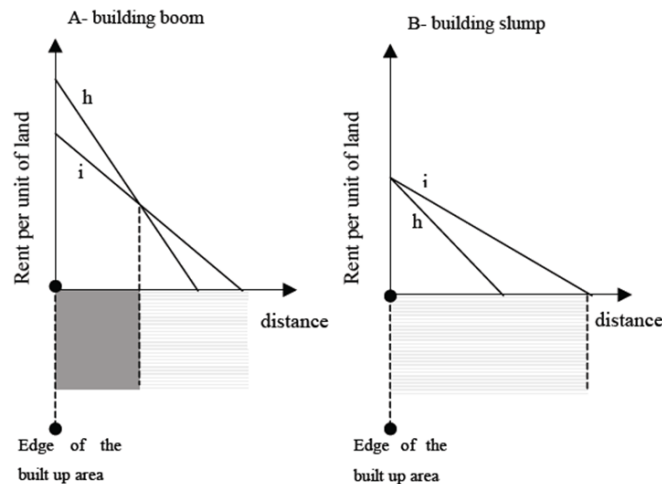


Figure 3.3. Hypothetical relationships between bid rent and distance.¹¹⁰

Institutional uses (e.g. hospitals, churches, mosques), public uses, industrial uses, warehouses, military sites, cemeteries, urban parks, recreational uses (e.g. golf, horse riding), airports, university campuses, orchards, hobby gardens and bulkhead lines show fringe characteristics due to their land uses and relatively larger plot sizes. The fringe belts do not contain housing and commercial uses; as well as the agricultural, pasture, forestry and other rural uses. There are three types of fringe belts due to their formation periods: inner fringe belts (IFB), middle fringe belts (MFB) and outer fringe belts (OFB). Urban fringe belt formations are more visible especially in slowly growing cities. Population increase and the need for new the development plots may result in the fringe belt alienation and especially the inner fringe belts (IFB) that are close to CBD face with serious development pressure (Figure 3.4).¹¹¹

In addition, New Urbanism approaches such as “Agrarian Urbanism” proposes a “transitional model” for the rural-urban fringe for sprawl management including the urban core, inner edge (urban), fringe, outer periphery (horticultural uses), rural and

¹⁰⁹ Hazar and Kubat, “Fringe Belts in the Process of Urban Planning and Design,” 53-65.

¹¹⁰ Estelle Ducom, “Fringe belts and planning: a French example,” *Urban Morphology* 7.2 (2003): 103-104.

¹¹¹ Conzen, “How Cities Internalize Their Former Urban Fringes,” 29-51.

natural areas (Figure 3.5). Rural-urban fringe can be labelled as an “uncultivated land” if it is too steeply or too contaminated or can be lost to its previous function (e.g. ex-military sites, barren pastures).¹¹²

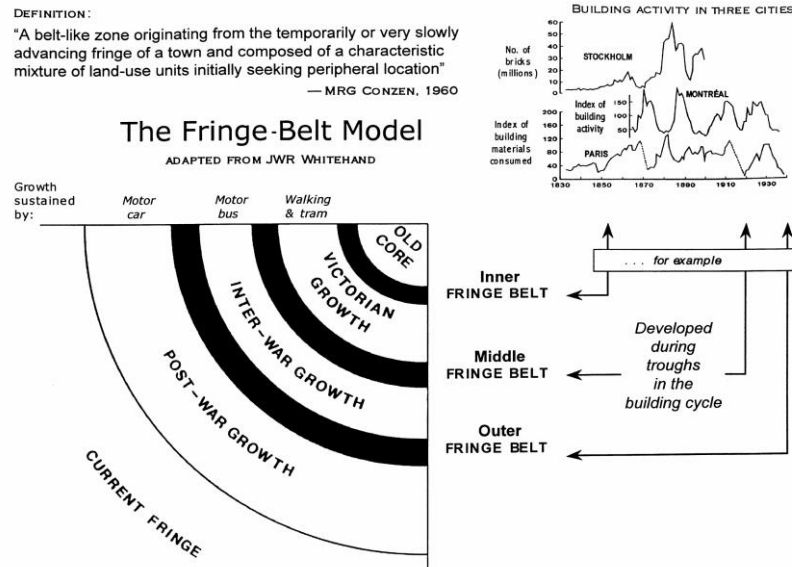


Figure 3.4. Urban Fringe Belt Model.¹¹³

Understanding the fringe landscapes and the integration of the urban and rural communities while recognizing the importance of the natural assets is crucial. The rural-urban fringe is a diverse, dynamic and multifunctional landscape in terms of historical functionality, ecological functionality, economic functionality, sociocultural functionality and aesthetic functionality. An integrated fringe management strategy may help to provide the improvement and the sustainable management of these areas. However, the sustainability is a concept, which suffers from overuse or misuse; and the planning may bring the risks of the loss of the unique fringe characteristics such as mixed uses and multifunctionality.¹¹⁴

¹¹² “Agrarian Urbanism,” DPZ, accessed December 18, 2016, <http://www.dpz.com/Initiatives/AgrarianUrbanism?from=Thought.AgrarianUrbanism>.

¹¹³ Conzen, “How Cities Internalize Their Former Urban Fringe,” 29-51.

¹¹⁴ Gallent et.al. *Planning on the Edge*, 10.

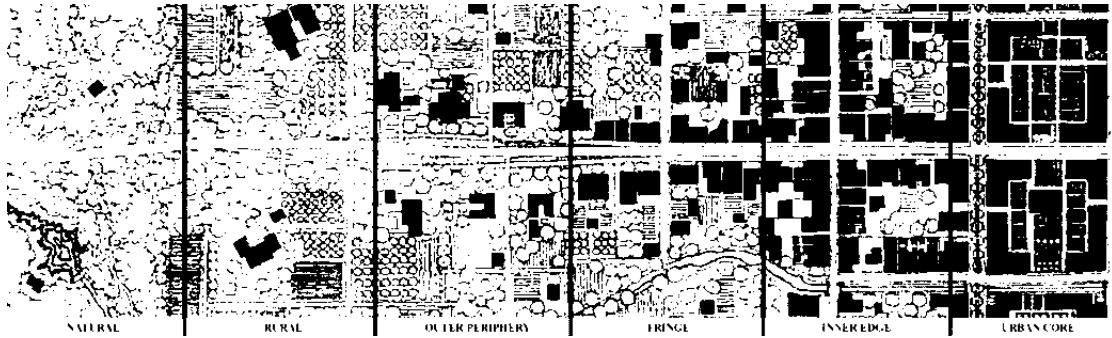


Figure 3.5. The rural-urban transition.¹¹⁵

Social, economic and political processes form the rural-urban fringe. Firstly, less desirable land uses and activities are accepted and promoted to locate outside the urban core, with a potential of demographic decentralization. Therefore, fringe becomes a historic landscape and a mixture of industrial, agricultural, military and institutional development. Planning and management strategies may reproduce and of these areas, e.g. old industrial buildings transform into institutional or recreational uses. Additionally, the fringe landscapes may reveal a cultural representation of the area within the physical ingredients such as mountain, forestry and pasture regions.

Remaking the rural-urban fringe through the planning may reduce its functionality by considering the aesthetic appeals (e.g. transforming an agricultural area into a peri-urban theme park). After the economic shift from agriculture to the industry and the relocation of the industry from the center to the urban edge have resulted a mixed use at the fringe, though the farming activities, which are the key economy at the rural-urban fringe have maintained. Farmlands and pastures at the rural-urban fringe are usually face the land speculation at the urban edge, which encourage landowners to allow the intentional degradation of the land for a future planning permission.

Although, farming is a potential profitable use, the authorities give permission for other profitable economies. Thus, the rural-urban fringe becomes the most acceptable location for extractive industry (e.g. Alija) for mineral extractions, landfilling, quarries, waste management facilities, and a mix of new service functions. These kind of activities are the functions of the politics and the planning decisions, which result in the degradation of the farmlands, forests and pastures and result-in the rural-urban migration. Green belt

¹¹⁵ “Agrarian Urbanism,” DPZ, accessed December 18, 2016, <http://www.dpz.com/Initiatives/AgrarianUrbanism?from=Thought.AgrarianUrbanism>.

policies may help to eliminate these conflicts, although there are adverse legislations in Turkey such as 6360 Metropolitan Law, 6306 Urban Renewal Law, and the new provisions of 4342 Pasture Law. Farmers urgently need encouragement by the local authorities and public voice to promote and buy local products. This situation at the rural-urban fringe is a clear conflict between the competitive economic uses, which is also the main conflict in the case study areas of this study.

Rural-urban fringe is a sociocultural asset and a common perception for the fringe users (e.g. farmers) by its possible rich landscape of biodiversity, flora and fauna, plant life and a mix soil types. However, several areas face with malpractices especially in husbandry. Planning at the rural-urban fringe should consider to create a balance between the development and the rural nature.¹¹⁶

Rural-urban fringe can also be categorized within the *periurban* concept of the contradictory processes and environments including different degrees of the ruralness and urbaness, in which socio-economic forms exist in relation with the demographic, economic-sectoral and social-psychological components. To sum, the rural-urban fringe is a dynamic, interactive and transformative area of the rural-urban transition.¹¹⁷

¹¹⁶ Gallent et.al. *Planning on the Edge*, 115-118.

¹¹⁷ David Iaquinta and Axel W. Drescher, "Defining the peri-urban: rural-urban linkages and institutional connections." *Land reform 2* (2000): 8-27.

CHAPTER 4

PASTURES

Pastures are the natural lands, which can eliminate erosion, vegetation fires, floods and many other natural hazards and which are as crucial as forestlands and deltas in terms of biodiversity and husbandry in terms of rural economy and development. According to 4342 numbered Pasture Law, pastures are “the lands that are previously assigned for the public use or used for husbandry since the ancient times”. Pastures are the lands covered with grass and other low plants suitable for grazing animals, especially cattle or sheep.¹¹⁸ Pastures (or grasslands) can contain natural and artificial plants, which are mostly the rare and short grasses, and not suitable to be reaped due to being rough lands.¹¹⁹

Pastures are included within the biosphere reserve, ecological footprint and ecological capacity, climate change adaptation, cultural landscapes, which are vulnerable under the impact of irreversible changes. They are vulnerable ecologic and cultural landscapes, as an example of a traditional human settlement and land use, which is a representative of human interaction with the environment¹²⁰, e.g. original meadow-pasture sites of Slovakia are in the tentative list of UNESCO World Heritages.¹²¹

Pastures contain valuable and endemic vegetation that prevents erosion, fires and floods. Pastures are as crucial as forests and deltas for insuring the wealth of the countries. However, increasing in population results a reduction in the amounts of forests and pastures while malpractices and reclamations transform them into more artificial lands, rather than natural lands. According to fossil records, 100 million years ago, *poaceae* (*buğdaygiller*) evolved from the burnt forests. Recent discoveries reveal that those fires

¹¹⁸ “Oxford dictionary definition of pasture”, accessed September 10, 2017, <https://en.oxforddictionaries.com/definition/pasture>.

¹¹⁹ “Türk Dil Kurumu mera tanımı”, accessed September 10, 2017, http://www.tdk.gov.tr/index.php?option=com_bts&arama=kelime&guid=TDK.GTS.59b53827f0c114.51319490

¹²⁰ UNESCO World Heritage Center, “New sites included in World Network of Biosphere Reserves,” accessed September 27, 2017, <https://en.unesco.org/news/23-new-sites-added-unesco-s-world-network-biosphere-reserves>.

¹²¹ UNESCO World Heritage Center, “Original meadow-pasture sites of Slovakia,” accessed September 27, 2017, <http://whc.unesco.org/en/tentativelists/1685/>.

were mostly human-made. Another reason that triggered pasture formation rather than forest formation may be drought. Therefore, the recent literature came to conclusion to define old pastures as “ancient” rather than “natural” because of the possible human-effect.¹²² A section of the pastures among natural areas, forests and agricultural areas can be seen in Figure 4.1.¹²³

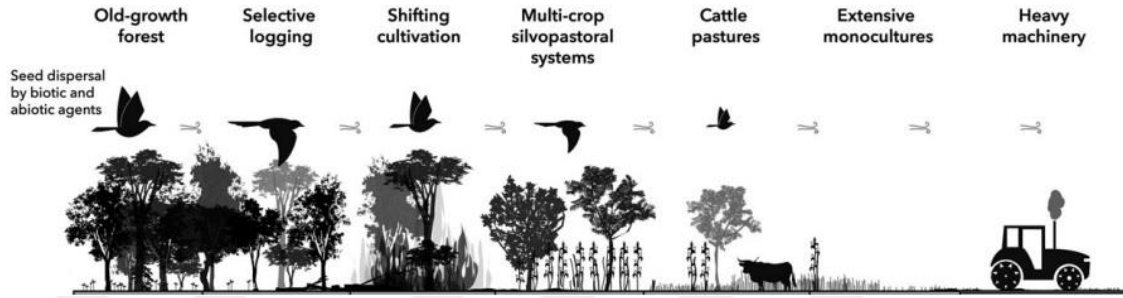


Figure 4.1. Pastures.¹²⁴

Worldwide pastures vary according to two climate types: transitional and tropical. Pastures in Turkey are categorized as the “sub-tropical pastures” including steppe vegetation and barren pastures in terms of *poaceae* and biomass production. Due to the lack of precipitation, water resources and human-made fires, sub-tropical pastures are under the worldwide threat of overgrazing. These types of pastures have fragile ecosystems that rapidly change and may lead the countries to national calamities.¹²⁵

Pastures constitute the forage plants; cover 3.5-billion-hectare land, which is the 72% of the total agricultural lands and 27% of the total lands in the world. Pastures are crucial natural resources, which provide free forage crops for husbandry and unique flora and fauna of the biodiversity. Pastures require urgent protection. However, in Turkey, due to irregular, unseasonable and heavy malpractices (e.g. overgrazing), pastures continuously lose their productivity, parallel to the occupations by urbanization

¹²² Michael Bradshaw and Ruth Weaver, *Physical geography: an introduction to earth environments*, (Mosby-Year Book Inc, 1993).

¹²³ Miguel Martinez-Ramos et. al. “Natural forest rege regeneration and ecological restoration in human-modified tropical landscapes,” (Biotropica 48.6, 2016): 745-757.

¹²⁴ Ibid, 745-757.

¹²⁵ Rıza Avcıoğlu et.al. *4342 Sayılı Mera Kanunu Uygulamaları ile Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, (İzmir: Ege Üniversitesi, 2009): 3.

and rural settlements, public investments and appropriation to other uses such as agriculture, wind energy plants, quarries and mining.¹²⁶

The 4342-numbered Pasture Law (1998) aims to provide protection and reclamation for the degraded pastures in Turkey. The rules of the determination, delimitation and allocation (3T), reclamation projects and funds, professional training to improve field crops and the relevant organizations are described in the 4342 Pasture Law. Ministry of Food, Agriculture and Livestock, Universities, Agricultural Faculties and several NGOs study for the improvement of pastures. However, the juridical problems interfere as well as the failure of the farmer participation in the process; and thus, malpractices continue and protection and reclamation of the pastures inevitably fail without the participation of the farmers.

Briefly, there are vigorous efforts and several positive developments; however, there are many economic, technical and social conflicts and constraints against the protection and reclamation of the pastures in Turkey.¹²⁷

4.1. Previous Studies on Pastures

Previous studies on the pastures mostly concern about the changing rural dynamics, driving effects, interest groups, conflicts, tools and models for the reclamation and the recommendations for the conservation and improvement of the common pastures within the contemporary rural dimensions (Table 4.1).

The study of Sutcliffe et.al.¹²⁸ describes the collective action on the agricultural policy of the common pastures, which used to be a historical tradition in Romania in 1947-1989. Following the 1990s, pasture maintenance neglected, which resulted in the decrease in the pasture quality and the emigration of young people due to the inadequacy of rural job opportunities and costs of living. In addition, Romania's accession to EU in 2007 re-modified the context of common use and by several legislations, especially by EU Common Agricultural Policy (CAP) in relation with the market liberalization. Rental of the communal pastures to individuals or associations increased dependent on CAP payments and the communal function of the pastures is weakened. Moreover, the

¹²⁶ Ibid, 14.

¹²⁷ Avcioğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 3.

¹²⁸ Laura Sutcliffe et al., "Pastoral commons use in Romania and the role of the Common Agricultural Policy," *International Journal of the Commons* 7.1 (2013): 58-61.

agricultural subsidies by the town hall rarely implemented properly and not effective for users and pasture quality.¹²⁹

Table 4.1. Previous studies on pastures

| Author | Year | Topic | Case Area | Method | Aim/Finding |
|-------------------------------|------|--|---------------|--|---|
| Sutcliffe et al. | 2013 | Pastoral commons use in Romania and the role of the Common Agricultural Policy | Transylvania | Qualitative semi-structured interviews | Promoting collective action for common governance |
| Brown | 2006 | New challenges for old commons: The role of historical common land in contemporary rural spaces | Scotland | In-depth interviews, pilot survey, questionnaire | Improving stakeholders' salience by collective management |
| Loheide & Gorelick | 2005 | A local-scale, high-resolution evapotranspiration mapping algorithm (ETMA) with hydroecological applications at riparian pasture restoration sites | Sierre Nevada | ETMA | Monitoring pasture restoration |
| Davoudi et al. | 2012 | Resilience Assessment of a Pasture Management System in Northern Afghanistan | Ishkashim | Resilience Assessment Analysis | Interactive guidance for systems reorganization |
| Lopez et al. | 2001 | Predicting land-cover and land-use change in the urban fringe: a case in Morelia city, Mexico | Morelia | Markov matrices | Recording the change in land-use patterns |
| Löfvenhaft et al. | 2002 | Biotope patterns in urban areas: a conceptual model integrating biodiversity issues in spatial planning | Stockholm | Biotope Model | A tool to define ecological-geographical aspects |

The study focuses on the types of the commons and their changing role in the community, internal and external drivers of these changes and implications for the sustainability of the commons in the case study area at Tarnava Mare, Transylvania. In the case area, three models administrate the common pastures: (1) private property of the historic community organization for sheep pastures (*comosesorat*), (2) private property for the community organization for cow pastures (*obste*), and the (3) public property of the town hall (*izlaz*). Issues regarding the pasture are discussed within an annual public meeting attended by all stakeholders.¹³⁰ Study aims to provide evidence to restructure of the future common governance by promoting collective action and cooperation as a measurement tool for management addressing transparent and accountable for production and conservation in common agricultural landscapes.

¹²⁹ Sutcliffe et al., "Pastoral commons," 65-69.

¹³⁰ Sutcliffe et al., "Pastoral commons," 62-64.

The study of Brown¹³¹ describes the historical common lands at the highlands of Scotland and increasing enclosure legislations by privileging the individual forms of property, which undermine the communal resource rights in relation with the pressures of their population growth, commercialization and industrialization. Common lands that cover a crucial part of the country's rural resource, face several conflicts because of the economic restructuring, socio-cultural recomposition and changing policy context. The study aims to indentify the current use and governance characteristics of the common pastures within the contemporary challenges and the revaluation of the collective land management and suggests improving policies to support stakeholders to increase the salience of the land by restored collective land management. Eliminating the institutional barriers, encouraging public good provisions such as conservation or tourism initiative on common pastures provide favorable access to capital for renewable energy projects, e.g. wind power and full community ownership.

The study of Loheide and Gorelick¹³² presents an algorithm for mapping evapotranspiration (ET) called ETMA as a new tool to generate high-resolution maps by thermal imagery analysis from weather stations. This tool may help to pre-monitor and understand the effects of the climatic or environmental changes on vegetation. The results reveal that significant differences observed between the ET water consumption of degraded and restored pastures. The method can be useful for long-term monitoring of pasture restoration progress to eliminate the undesirable effects. Due to ET effect, ETMA method may become common to monitor the riparian pasture restoration.

The study of Davoudi et.al.¹³³ presents a resilience approach to the pastures, from the perspective of the climate change adaptation and planning practice. Firstly, authors examine the purpose of the resilience in the ecological sustainability literature, and translate it from ecology to society, which relates to power, politics and the conflicts. Secondly, they reframe the resilience as a contested concept, a radical agenda and finally a practice (e.g. resilient assessment). As a framework, "resilience assessment analysis" manages the dynamics of the resilience in social-ecological systems, to provide a set of participatory tools to identify the thresholds, drivers, dynamics, and actions.

¹³¹ Brown, "New challenges for old commons," 120-126.

¹³² Steven P. Loheide and Steven M. Gorelick, "A local-scale, high-resolution evapotranspiration mapping algorithm (ETMA) with hydroecological applications at riparian meadow restoration sites," *Remote Sensing of Environment* 98.2 (2005): 182-200.

¹³³ Simin Davoudi et. al. "Resilience: a bridging concept or a dead end," *Planning theory & practice* 13.2 (2012): 299-333.

Final phase of the study focused on Ishkashim, which is located at the border of Afghanistan and Tajikistan. During the study, a series of workshops held by the local participants, and Ishkashim's pasture management system defined as a social ecological system, facing with a major threat: desertification. Woody vegetation and the land tenure identified as the key variables for the pasture quality. Grazing practices are mostly influenced by the corruption, food insecurity and population growth, while the variables strongly shaped by external drivers: climate change, political instability and war.

Finally, the study reveals that the resilience assessment as a planning tool can be an interactive guidance to bring opportunities for the systems reorganization. A conceptual model is generalized for the socio-ecological system diagram to conceptualize the internal and external factors (Figure 4.2).¹³⁴

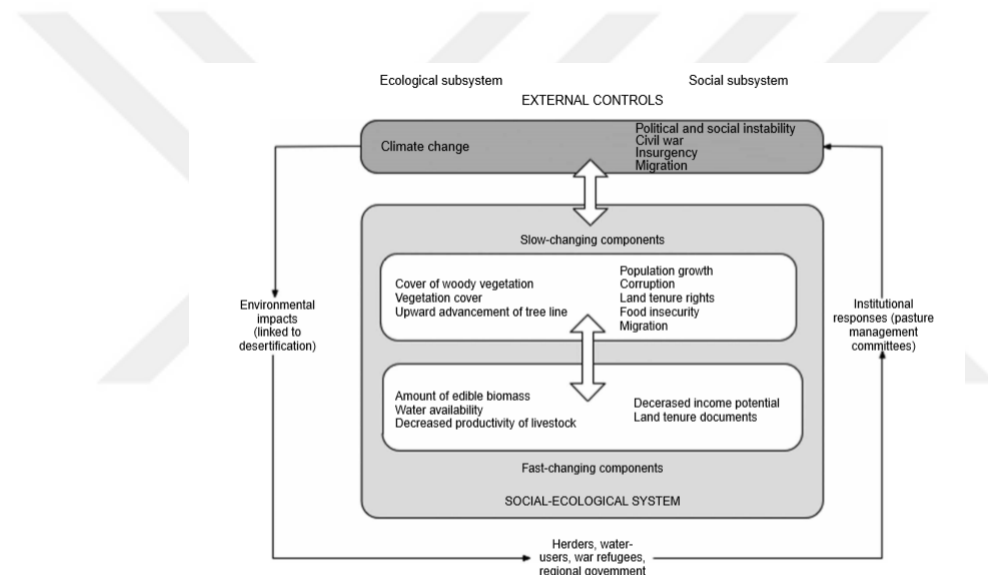


Figure 4.2. Conceptual model of pasture management.¹³⁵

The study of Lopez et.al.¹³⁶ explores the relationships between the urban growth and landscape change. They focus on the land-cover and land-use changes in Morelia city, Mexico, which are quantified 35 years using rectified aerial photographs and GIS. They project the data for the next 20 years by using Markov chains and regression analyses and suggest a linear regression to project the growth tendencies of the cities in regions with similar characteristics. They use Markov matrixes as a descriptive tool to

¹³⁴ Davoudi et. al. "Resilience: a bridging concept or a dead end," 299-333.

¹³⁵ Ibid, 299-333.

¹³⁶ Erna Lopez, et. al. "Predicting land-cover and lan-use change in the urban fringe: a case in Morelia city, Mexico," *Landscape and urban planning* 55.4 (2001): 271-285.

develop a typology of the urban land-uses. The findings revealed that 46% of the urban area is located on the alluvial plain (former agricultural). Urban expansion occurs on different types of slopes, some of which affected by the landsliding. The pastures and shrublands used to be the most dynamic classes because of the traditional farming system in the region. The most dynamic classes within the city were the residential–commercial areas and the vacant plots in 1960-1990. Authors conclude that Markov matrices as a valuable descriptive tool, which may develop a typology for the urban land-uses and record the changes in the patterns.

The study of Löfvenhaft et.al.¹³⁷ presents a biotope model considering the spatial aspects of biodiversity in the urban planning. Main concerns of the study are the spatial units, land use change-sensitive ecosystems, the reasons and the data transposability in planning. The model has three steps: (1) information sources, (2) target biotopes, and (3) presentation strategies adapted to priorities in planning. They use a classification method by interpretation of aerial photographs in Stockholm, Sweden. First National Urban Park in the world (2.700 ha.) is located close to the city centre. The park and its surroundings as the large areas of woody grasslands and forests host many endangered species. The major methodological steps are the classification system, data collection by the stereographic interpretation of aerial photographs, a digital database, ecological analyses, presentation strategies, and implementation of the results in the planning. The main purpose of the model is to eliminate the gaps between research of biodiversity issues and planning in urban areas. Biotope level caused by land-use changes can be detected and biotopes may become represented cartographically.

The term biotope defines an environmental area characterised by the certain conditions and populated by a characteristic biota. GIS (ArcView) tool is used for identifying the distribution of the biotopes. The study concludes that it is possible to develop tools for the biodiversity issues at the planning scale.

In addition, studies about pastures in Turkey, mostly focus on the flora and fauna, animal health and contagious diseases, pasture quality and management, pasture vegetation measurements and the plant distribution. Dissertations about pastures in Turkey dates back to 1972 and primarily prepared by the Departments of Agriculture,

¹³⁷ Katarina Löfvenhaft, Cristina Björn and Margareta Ihse, “Biotope patterns in urban areas: a conceptual model integrating biodiversity issues in spatial planning,” *Landscape and urban planning* 58.2 (2002): 223-240.

Forestry and Forest Engineering, Botany, Environmental Engineering, Veterinary Medicine, Geodesy and Photogrammetry, Zoology and Public Administration (Table 4.2).¹³⁸

Table 4.2. Previous studies on pastures in Turkey¹³⁹

| Author | Year | Topic | Department | Method / Case | Aim / Finding |
|--------|------|---|---------------------------------|---|---|
| Rasekh | 2018 | Removal of indicator microorganisms in pastures after biosolid application ¹⁴⁰ | Environmental Engineering | Time-dependent variation | Biosolid disposal at pasture improvement for reducing the need for commercial fertilizer |
| Dursun | 2017 | Determination of vegetation structure of the Catoluk forest rangeland in Isparta province ¹⁴¹ | Forestry and Forest Engineering | Analyzing the vegetation and the general features of the soil of the rangeland area in the forest | Increase the quality of vegetation to protect the land against erosion by decreasing the grazing pressure |
| Kasap | 2017 | A research on performance of an artificial field established in arid conditions of Van region ¹⁴² | Agriculture | Analyzing the pasture quality in 12 ha. artificial pasture | Botanical Composition, Pasture Statue Skill, pasture quality grade on Artificial Pasture |
| Firat | 2017 | The prevalence of helminths according to faecal examination in grazing sheep in Manisa province ¹⁴³ | Veterinary Medicine | Frequency Analysis | Widespread helminth presence in feces of sheep in Manisa. |
| Duman | 2017 | Determination and modelling of soil properties of degraded forest and grassland areas in some micro catchments of Artvin, Erzurum and Bayburt using satellite images ¹⁴⁴ | Forestry and Forest Engineering | Landsat 8 OLI/TIRS satellite data, remote sensing indices and ecological factors | Soil properties estimation by using remote sensing data and ecological factors |
| Karan | 2017 | Comparison of grazed and non-grazed herbage yield, pastures quality in terms of plant species and composition in Hal village of Elazığ province ¹⁴⁵ | Agriculture | Comparative Analysis | Herbage yield and quality with plant species and compositions |

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¹³⁸ National Thesis Centre, accessed May 15, 2018, <https://tez.yok.gov.tr>.

¹³⁹ Ibid.

¹⁴⁰ Pamir Rasekh, "Removal of indicator microorganisms in pastures after biosolid application" (MSc diss., Sakarya University, 2018), 1-69.

¹⁴¹ İbrahim Dursun, "Determination of vegetation structure of the Catoluk forest rangeland in Isparta province," (MSc diss., Suleyman Demirel University, 2017), 1-74.

¹⁴² Ercan Kasap, "A research on performance of an artificial field established in arid conditions of Van region," (MSc diss., Yuzuncu Yil University, 2017), 1-51.

¹⁴³ Ahmet Firat, "The prevalence of helminths according to faecal examination in grazing sheep in Manisa province," (MSc diss., Adnan Menderes University, 2017), 1-94.

¹⁴⁴ Ahmet Duman, "Determination and modelling of soil properties of degraded forest and grassland areas in some micro catchments of Artvin, Erzurum and Bayburt using satellite images," (PhD diss., Artvin Coruh University, 2017), 1-172.

¹⁴⁵ Halil Karan, "Comparison of grazed and non-grazed herbage yield, pastures quality in terms of plant species and composition in Hal village of Elazığ province," (PhD diss., Dicle University, 2017), 1-149.

Table 4.2 (cont.)

| Author | Year | Topic | Department | Method / Case | Aim / Finding |
|---------|------|---|---------------------------------|---|---|
| Erdem | 2017 | Investigation of above and below ground biomass of rangeland vegetation in Ahir mountain, Kahramanmaras ¹⁴⁶ | Forestry and Forest Engineering | Time-dependent variation | Determine 13 seasonal changes in average above and below ground biomass values of the rangelands in growth period |
| Erkovan | 2017 | Ecophysiological relationships between dominant grasses and forbs species in rangelands ¹⁴⁷ | Agriculture | Randomized plot experiment design in split plot arrangement | Determine relationships between species in rangeland vegetations, making decision toward to prepare suitable range management plans by sustainable use of resources |
| Taş | 2017 | Changing of dry matter yield, botanical composition and forage qualities in different altitude and aspects in Kosk Village, Erzurum ¹⁴⁸ | Agriculture | Status Analysis | Near to watering point is used more heavily compared to the other rangeland sites |
| İlçin | 2017 | Seasonal fluor levels in water and pasture plant samples of Kargi province of Çorum ¹⁴⁹ | Veterinary Medicine | Fluoride measurements at sample areas analysis | Regular fluoride measurements in terms of human and animal health and the possibility of contamination |
| Diñç | 2017 | Determination and modelling of above ground and below ground carbon contents in forest, grassland and agriculture areas with association by using satallite images in some sub-basins of Artvin, Erzurum and Bayburt ¹⁵⁰ | Forestry and Forest Engineering | Determining above and below ground carbon contents in 11 sub-basins by using satellite images | Above ground biomass (AGB) contents can be effectively estimated using remote sensing data |
| Tüfekçi | 2017 | Researching the usage possibilities of GPS tracking systems for pasture management ¹⁵¹ | Geodesy and Photogrammetry | Monitoring GPS tracking devices | Varieties of usage of GPS tracking system for pasture management |

(cont. on next page)

¹⁴⁶ Dilan Erdem, "Investigation of above and below ground biomass of rangeland vegetation in Ahir mountain, Kahramanmaras," (MSc diss., Kahramanmaras Sutcu Imam University, 2017), 1-68.

¹⁴⁷ Şule Erkovan, "Ecophysiological relationships between dominant grasses and forbs species in rangelands," (PhD diss., Ataturk University, 2017), 1-134.

¹⁴⁸ Muhammet Taş, "Changing of dry matter yield, botanical composition and forage qualities in different altitude and aspects in Kosk Village, Erzurum," (MSc diss., Ataturk University, 2017), 1-61.

¹⁴⁹ Nuri İlçin, "Seasonal fluor levels in water and pasture plant samples of Kargi province of Çorum," (PhD diss., Ondokuz Mayıs University, 2017), 1-86.

¹⁵⁰ Musa Diñç, "Determination and modelling of above ground and below ground," (PhD diss., Artvin Çoruh University, 2014), 1-252.

¹⁵¹ Hakan Tüfekçi, "Researching the usage possibilities of GPS tracking systems for pasture management," (MSc diss., Selcuk University, 2017), 1-66.

Table 4.2 (cont.)

| Author | Year | Topic | Department | Method / Case | Aim / Finding |
|--------|------|---|---------------------------------|---|---|
| Budak | 2016 | On the botanical composition of the forage yield and quality of naturel randland of Adıyaman Kuyulu village ¹⁵² | Agriculture | Transect Methods | Pasture condition and carrying capacity of the protected area, compored to grazing areas |
| Süzer | 2016 | Experiments on development of quality index in forage crops based on relative forage quality ¹⁵³ | Agriculture | Quality index analysis (RFV, RFQ) | Determinate relative feed value (RFV) and relative forage quality (RFQ) of rangeland plants and relationships between some quality criteria |
| Güler | 2016 | Combined effects of drought, invasion and land use treatment in Turkish grasslands ¹⁵⁴ | Botany | Linear mixed effect models | Resilience of pastures to climate change by the total plant cover or the species richness of the grassland system |
| Akar | 2014 | Change detection for rangeland and plateau areas, and a new approach to rangeland management model ¹⁵⁵ | Geodesy and Photogrammetry | Aerial photos and ortophotos analysis | Eliminate the deficiencies of the current information system by a new rangeland management |
| Kuzu | 2001 | 4342 sayılı Mera Kanunu'nun incelenmesi ve eleştirisi ¹⁵⁶ | Public Administration | Analysis and Criticizing of Law of Rangeland | Right to utilize from rangeland |
| Genç | 1990 | Erzurum şartlarında arı kolonilerindeki varroa bulaşıklık düzeyinin kışlatmaya; yemleme, mera ve ana arı çıkış ağırlığının koloni performansına etkileri ¹⁵⁷ | Agriculture | Nonlinear regression analysis of honey bee colonies by the effect factors of feeding, pasture, queen weight at emergence on colony development and honey production | Effects of infestation levels of honey bee colonies with varroa and effect of factors as feeding, pasture, queen weight at emergence on colony development and honey production |
| Palta | 2008 | Quantitative properties of range vegetation and rehabilitation ¹⁵⁸ | Forestry and Forest Engineering | Transect Method | Botanical composition, canopy coverage, rangeland quality |

(cont. on next page)

¹⁵² Sinan Budak, "On the botanical composition of the forage yield and quality of naturel randland of Adıyaman Kuyulu village," (MSc diss., Harran University, 2016), 1-73.

¹⁵³ Reyhan Pınar Süzer, "Experiments on development of quality index in forage crops based on relative forage quality," (MSc diss., Ondokuz Mayıs University, 2016), 1-73.

¹⁵⁴ Behlül Güler, "Combined effects of drought, invasion and land use treatment in Turkish grasslands," (PhD diss., Artvin Celal Bayar University, 2016), 1-252.

¹⁵⁵ Alper Akar, "Change detection for rangeland and plateau areas, and a new approach to rangeland management model: A case study in the district of Akçaabat, Trabzon," (PhD diss., Karadeniz Teknik University, 2014), 1-208.

¹⁵⁶ Zülfü Kuzu, "4342 sayılı Mera Kanunu'nun incelenmesi ve eleştirisi," (PhD diss., Marmara University, 2001), 1-176.

¹⁵⁷ Fırat Genç, "Erzurum şartlarında arı kolonilerindeki varroa bulaşıklık düzeyinin kışlatmaya; yemleme, mera ve ana arı çıkış ağırlığının koloni performansına etkileri," (PhD diss., Atatürk University, 1999), 1-116.

¹⁵⁸ Şahin Palta, "Determination of some quantitative properties of range vegetation and ecological conditions for range rehabilitation in Bartın Uluyayla," (MSc diss., Zonguldak Karaelmas University, 2008), 1-81.

Table 4.2 (cont.)

| Author | Year | Topic | Department | Method / Case | Aim / Finding |
|----------|------|--|-------------|--|--|
| Albayrak | 2003 | An Investigation on the establishment of artificial pasture in Ankara ecological conditions ¹⁵⁹ | Agriculture | Randomized block design with four replications | Determine suitable perennial forage species for establishment of short-term pastures under dry conditions |
| Bakoğlu | 1999 | A Comparison for some vegetations and soil properties in crazed and closed range areas ¹⁶⁰ | Agriculture | Nonlinear regression analysis on canopy and soil properties in the Rangelands in 1996 and 1997 | Aggregate stability was significantly correlated with grass (-) and legume ration while specific density was correlated with grass ration. Water infiltration was related to canopy mass, organic matter content with below ground biomass (-), silt (-) and sant ration and range quality degreee |
| Kendir | 1991 | Investigations on the flora of the Ankara Ahlatlıbel dryland range and the distributions of the some of the important range plant species ¹⁶¹ | Botany | Observations on some of the most abundant and important range plants distribution | Small amount of climax plant species, poor condition of the dryland range, no expected improvement in the vegetation of this range which was rested for 25-30 years |
| Aras | 1987 | Edirne yöresi çayır ve mer'a karınca faunası (hymenoptera; formicidae) ¹⁶² | Zoology | Time-dependent variation / Case Study: Edirne | Discovery of new species of ants on pastures-meadows |
| Yılmaz | 1976 | Meraların bitki örtüsü üzerinde araştırmalar ¹⁶³ | Agriculture | Konya | - |
| Altın | 1972 | Gübrelerin meraların verimine, etkileri ¹⁶⁴ | Agriculture | Erzurum | - |

Among the dissertations about pastures, the study of Akar¹⁶⁵ aims to eliminate the deficiencies of the current information system by a new rangeland management

¹⁵⁹ Sebahattin Albayrak, "An Investigation on the establishment of artificial pasture in Ankara ecological conditions," (PhD diss., Ankara University, 2003), 1-167.

¹⁶⁰ Adil Bakoğlu, "A Comparison for some vegetations and soil properties in crazed and closed range areas," (PhD diss., Atatürk University, 1999), 1-128.

¹⁶¹ Hayrettin Kendir, "Investigations on the flora of the Ankara Ahlatlıbel dryland range and the distributions of the some of the important range plant species," (MSc diss., Ankara University, 2008), 1-48.

¹⁶² Abdullar Aras, "Edirne yöresi çayır ve mer'a karınca faunası (hymenoptera; formicidae)," (MSc diss., Trakya University, 1987), 1-60.

¹⁶³ Tamer Yılmaz, "Konya ili sorun alanlarında oluşan meraların bitki örtüsü üzerinde araştırmalar," (PhD diss., Çukurova University, 1976), 1-94.

¹⁶⁴ Murat Altın, "Erzurum şartlarında azot, fosfor ve potasyumlu gübrelerin tabii çayır ve meranın ot verimine, otun ham protein ve ham kül oranına ve bitki kompozisyonuna etkileri üzerine bir araştırma," (PhD diss., Atatürk University, 1972), 1-162.

¹⁶⁵ Akar, "Change detection for rangeland and plateau areas," 1-208.

proposal by aerial photos and ortophotos analysis (Figure 4.3). The study of Tüfekçi¹⁶⁶ also aims to find the varieties of usage of GPS tracking system for pasture management, GIS to provide the opportunity to make correct planning by monitoring GPS tracking devices in Konya.

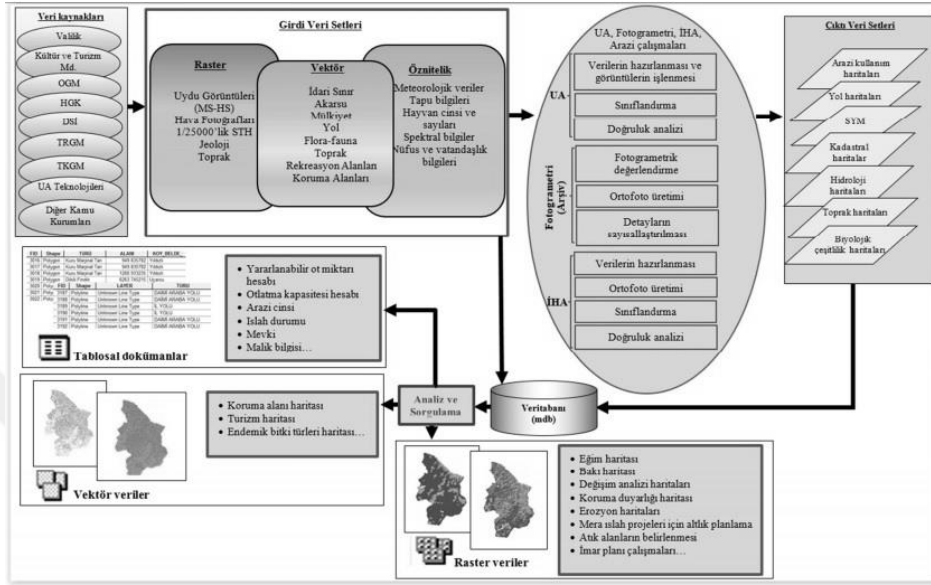


Figure 4.3. Pasture management proposal.¹⁶⁷

The study of Güler¹⁶⁸ reveals a technical analysis of the resilience capacity of pastures in Manisa. He simulated the prediction of the climatic changes such as drought by plastic rain out shelters in the periods of growing seasons, combined with expected land use changes and plant invasions on semi-natural grasslands in the framework. He planted seedlings of two invader species and used linear mixed effect models to analyse the effect of drought, invasion and land use on biomass production and total plant cover. He found that the biomass production of the studied grassland was stable under strong droughts, which occur in the middle of the growing season, while juvenile invaders did not change productivity. The results showed that grassland type was resilient to drought effect; and a recovery by regrowth is possible. This result reveals that pastures in Manisa are resilient to climate change, which may not trigger desertification without other conditions (e.g. overgrazing).

¹⁶⁶ Tüfekçi, "Researching the usage possibilities of GPS tracking systems for pasture management," 1-66.

¹⁶⁷ Ibid, 1-208.

¹⁶⁸ Güler, "Combined effects of drought, invasion and land use treatment in Turkish grasslands," 1-252.

Overall, there are several technical responses against the conflicts on the pastures from the previous studies such as: (1) collective action as a measurement tool for management;¹⁶⁹ (2) policies to support stakeholders and collective land management;¹⁷⁰ (3) monitoring pasture restoration;¹⁷¹ by digital database;¹⁷² (4) determining key variables and “resilience assessment” as a planning tool;¹⁷³ and (5) developing a typology of urban land uses;¹⁷⁴ (6) alternative pasture management proposal.¹⁷⁵

This study is distinctive from the previous studies in terms of having a different field and perspective for the pastures. Ecological importance of the pastures is crucial to achieve the triple bottom line of sustainability; and thus, pastures should be protected and improved. This study suggests that pastures can be protected and improved by the planning regulations. This study also suggests a new model (eDPSIR) within the pasture management strategies and planning decision proposals. This study claims that planning discipline can be a guidance to protect the rural-ecological commons by the technical and social responses to prevent the drivers and the pressures of the conflicts before they emerge. To sum, this study on the rural-ecological commons and the pastures is distinctive for being within a proactive field and approach, rather than reactive.

4.2. Pastures as Rural-Ecological Commons

Natural resources including rivers, forests and pastures are the ecological-tangible commons. Pastures are included in the rural-ecological and tangible commons within the commons categorization.¹⁷⁶ Pastures are crucial in terms of ecological sustainability, biodiversity, common culture, erosion prevention and rural tradition. However, the amount and quality of the pastures decreasing due to malpractices. Village common lands, which used to belong to the village legal entities until the 6360 numbered Metropolitan Law contain uncultivated lands, threshing floors, and recreational spaces, mosques, cemeteries, village square, fountains, traditions, apparel types, dances and accents.

¹⁶⁹ Sutcliffe et al., “Pastoral commons,” 58-61.

¹⁷⁰ Brown, “New challenges for old commons,” 109-110.

¹⁷¹ Loheide and Gorelick, “ETMA,” 182-200.

¹⁷² Löfvenhaft, Björn and Ihse, “Biotope patterns,” 223-240.

¹⁷³ Davoudi et. al. “Resilience,” 299-333.

¹⁷⁴ Lopez, et. al. “Predicting land-cover,” 271-285.

¹⁷⁵ Akar, “Change detection for rangeland and plateau areas,” 1-208.

¹⁷⁶ Ostrom, *Governing the Commons*.

Rural areas, forestry, pastures, sea, are the subjects of the common property, which arrange the rural life practices.¹⁷⁷ Public grazing lands, e.g. public treasury lands' property are not under the provision of 4342 numbered Pasture Law, while these areas are as important as registered pastures for husbandry and ecological sustainability. However, enclosure of the public grazing lands is easier, e.g. renting as private orchards. Pastures and public grazing lands are usually brittle against the climatic and legislative conditions.

In the following part, grazing systems in Turkey, relevant changing land regime and conservation, legislations, implementations of new grazing methods (Holistic Grazing Management) are presented. There are several reflections of the worldwide socio-economic shifts, reductions in the small farming and the promotions of the corporatization in agriculture and husbandry sectors in Turkey.

4.3. Pastures in Turkey

Pastures cover the 19% of the total surface area (approx. 21,000,000 ha.) of Turkey. There are two types of pastures: (1) coastal pastures (30%) and (2) steppe pastures (70%). Most of the coastal pastures locates at Black Sea, Marmara, Aegean, Mediterranean and Thracian regions, which requires minimum 600-2800 mm annual precipitation.¹⁷⁸ If there is an optimum grazing activity in the pastures, precious *poaceae* and *fabaceae* field crops exist. However, due to the overgrazing activities, these field crops replaced with other plants. In addition, damaged forestlands transformed into within the forests. Steppe pastures are rich floristically and faunistically, especially, for the insect fauna. In Turkey, the interwoven agricultural lands and pastures usually complicate the biodiversity classification.¹⁷⁹

There are four types of pasture property in Turkey: (1) public treasury common property; (2) village legal entity; (3) appendant endowments (*mülhak vakıflar*), and (4) private property. After the 6360 numbered Metropolitan Law, the rights of village legal entities transformed to Municipalities, some of the pastures assigned to the public

¹⁷⁷ David Harvey, "The Creation of the Urban Commons," *Rebel Cities: From the Right to the City to the Urban Revolution* (London, 2012): 117-142.

¹⁷⁸ BUGEM, "Annual total precipitation," accessed December 16, 2016, <http://www.tarim.gov.tr/BUGEM/Haber/261/2015-yili-mera-islak-ve-amenajman-projelerini-degerlendir>

¹⁷⁹ Çevre ve Orman Bakanlığı, *Ulusal Biyolojik Çeşitlilik Stratejisi ve Eylem Planı* (2007).

treasury, which created an ambiguity. It is crucial to know that private pastures are not subjected to 4342 numbered Pasture Law.¹⁸⁰

In Turkey, there is a lack of adequate infrastructure for pasture reclamation activities, because, there are not enough seeding, planting and reaping machines, and not enough artificial pasture applications by forage crop seeds and irrigation systems. Turkey does not have a prospering pasture condition, which creates conflicts such as *ecological constraints* (e.g. climate conditions, uncultivated lands, limited water resources), and *human constraints* such as malpractices (e.g. overgrazing, false mapping). Because of the inefficient engineering, lack of adequate seed stocks, machine parks and water resources, in addition with the malpractices and the fund decimations, pasture reclamations continuously fail. Determination, delimitation and allocation (3T) processes boom the mining, energy, industry and tourism sectors and public investments on the pastures.¹⁸¹

There is not a properly rehabilitated pasture since the last two decades because the reclamation acts are impossible within the current accounting system. Especially base pastures, which usually rented to private sector, are in better condition by relatively conscious practices, by using *medicago sativa* (clover) and seasonal grazing activities. The segmental structure of the property rights is also a serious problem especially in the agricultural sector. New legislations such as “National Farming Project” and several changes in the 4742 numbered Civil Law may eliminate the land division to protect farmlands for a more professional farming, while the other legislations, e.g. bag laws (2017) may eliminate the farmlands and pastures themselves permanently. Today, the rural population tends to move to the urban areas due to the lack of profit in farming.

Ancient pastures in Turkey survived 12-13 million hectare within an optimistic view and they need urgent attention. The 4342 numbered Pasture Law accelerated the pasture improvement process with the help of TEMA non-governmental organization. In addition, Ministry of Food, Agriculture and Livestock, Universities and NGOs continue calling attention for the protection of the pastures. However, the conflicts on the pastures are long way from the predictions, because there is a need for a compulsory and well-developed technical, judicial and social background information for regaining the pastures, decreased from 42 million hectare to 12.3 million hectare within 67 years.¹⁸²

¹⁸⁰ Interviewee P_1, November 8, 2016.

¹⁸¹ Interviewee P_3, November 29, 2016.

¹⁸² Avcıoğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 7.

Especially in Marmara and Aegean regions, most of the pastures converted into croplands and building plots. Recent conditions reveal that the most accurate information comes from Ministry of Food, Agriculture and Livestock by the determination, delimitation and allocation processes (3T). Especially, due to the 4753 numbered Provision of Land for Farmers Law, 650.000 family are given 10-million-hectare land, mostly from fertile pastures in 1928-1965. Parallely, approximately 10 million hectare pastures added into forests until the enactment of the 4342 numbered Pasture Law in 1998. Forests increased from 10.4 million hectare to 21.2 million hectare land and while shrinkage of pastures reduced, sheap and goat husbandry almost by the half.

Rural population continues to decrease since the last decades due to urbanization period, in which, some of the abandoned agricultural lands showed pasture features. Eventually, the direct income support policies and public support packages promoted the recycling of the agricultural lands, while Ministry of Forestry and Water Affairs doubled the forests by forestation, powerful equipment tools and seedling production stations institutionalized most of the agricultural lands in between the forests and added them into forestry. Thus, 7-million-hectare land, which mostly contain poaceae and suitable for grazing are registered as forestry today; although the shrubbery, maquis shrublands and the pastures are the key field crop resources for sheap and goat farming. Due to these types of necessary arrangements are deficient in the 4342 numbered Pasture Law, many pasture lands are not registered today. Additionally, rural common properties such as watering place and picnic areas are not in the pastures category either.¹⁸³ The contradiction between the rural and urban became vague especially after the 5216-numbered Metropolitan Municipality Law (2004), and the 6360-numbered Metropolitan Municipality Law (2014), which enlarges the authorization of the metropolitan municipalities and transformed the villages, into neighborhoods. Eventually, the rural-urban dichotomy legally disappeared.

In Turkey, the economical sustainability can only be achieved through the sustainable production in the agricultural sector, while protect and improve the natural and biological resources and become more compatible against the foreign source dependency. Especially, protecting the germplasms and the CO₂ absorbtion areas such as pastures, forests and agricultural lands are crucial for the climate change resistance.

¹⁸³ Avcioglu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eđitim Kitabı*, 8.

Therefore, the common property arrangements on pastures and forests are crucial. Informing the producers and consumers about the food security, preventing land fragmentation for efficient use of agricultural lands, sustainable use of the water resources, renewable energy and basin reclamations are some of the objectives to achieve sustainable agricultural production. However, after the 6360-numbered Metropolitan Law, protecting the pastures became harder, because these areas usually assigned or sold to the contractors by the public institutions, especially at the villages, which has no active agricultural or husbandry activities.¹⁸⁴

Turkey has 24.5 million hectare potential land for agriculture, which is the first of the Europe and the 12th of the world.¹⁸⁵ Turkey used to have an extensive agricultural production since 1960s even using the marginal lands to feed the population. Then, Turkey had an intensive agricultural production while the agricultural lands shrank since 1980s, the amount of the products increased. Since the 1980s, new agricultural development paradigm in Turkey resulted in substantial changes in the rural land uses. There is a regular increase in the forests since 1995 due to the changing state programs. However, the verification of the data about the pastures is not adequate. Pastures and meadows should not be evaluated only for being the grasslands for husbandry activities, but also for being the natural heritages and socio-cultural assets.

Pastures are the main sources for the high quality field crops and crucial for the protection of the soil, biodiversity, greenhouse effect reduction and wildlife habitat. Pastures, groundwater basins and forests apart from the scope of the enounced conservation areas protect Turkey's biodiversity. Husbandry in Turkey is crucial in terms of feeding the growing population and being the industrial raw material. In order to prevent the decrease in the number of animals, 4631-numbered Animal Reclamation Law (2001) enacted which resulted in the establishment of the several breeder associations.¹⁸⁶

The number of the sheep, hair goat and Angora goat decreased until 2010 due to the non-utilizable pastures, the warfare at East and South-East Anatolian regions and the increasing demand towards meat. However, since the 2010s, the situation reversed by the increasing demand in the goat milk and products.¹⁸⁷ The number of the cattles, which

¹⁸⁴ İlhan Tekeli, *İzmir İli/Kenti İçin Bir Tarımsal Gelişme ve Yerleşme Stratejisi* (İBB, 2017): 53-54.

¹⁸⁵ Fersan Dursun and Erhan Ekmen, "Uluslararası Kooperatifler Yılı Biterken," *Türktarım*, Sayı 208, (2012).

¹⁸⁶ Özgün Talan, "Doğal Mirasımız Mera ve Yaylaklarımız", *Türktarım*, Sayı 217, (2014): 46.

¹⁸⁷ Mehmet Soner Tanışık and M. Yavuz Çelik, "Sürü Yönetimi Elemanı", *Türktarım*, Sayı 217, (2014): 8.

decreased until 2002, started to increase as well as the scale of the stock husbandry enterprises due to the subsidies. Husbandry percentage within the agricultural subsidies increased from 4.4% (2002) to 30% (2013), which reveals a transition from the pasture husbandry to barn husbandry. Accordingly, the need for forage crops and the clover (*medicago sativa*) and corn production for silages increased.¹⁸⁸

Villages that became neighborhoods, urbanization pressure, expropriation acts, demands of mining and energy sectors and bag laws weakened the protective power of the 4342-numbered Pasture Law. Due to these legislative arrangements, pasture, agricultural and forestry lands face to several conflicts. One of the main conflicts on the pastures in Turkey is the overgrazing problem due to the malpractices and the geographical and seasonal factors. In order to eliminate this problem, “grazing capacity” should be calculated. If technicians inform the users about the optimum grazing capacity of the pastures and control the use of the pastures, the malpractices may decrease.¹⁸⁹

Turkey needs to develop its own unique amelioration techniques, primarily for the local plants. Sub-tropical climates, which do not contain much high grasses, may not meet the needs for the cattles; therefore, sheep and goat husbandry should be promoted especially at the pastures of the western Turkey. However, current governmental subsidies give priority to cattle husbandry, which result in the foreign source dependency in meat. The unique brittleness scale, scale-economy and the employment in Turkey should be well analyzed and the red meat gap should be closed by the sheep and goat husbandry, rather than imported cattles. To sum, current agricultural policies in Turkey are not suitable for the geographical conditions. The main problems are related to political economy, as well as the technical infrastructure. Being free from the neoliberal politics may create a biological agriculture, against the current chemical agriculture, increasing public disclosure and small-scale good practices in agriculture.¹⁹⁰

¹⁸⁸ Tekeli, *İzmir İli/Kenti İçin Bir Tarımsal Gelişme ve Yerleşme Stratejisi*, 109.

¹⁸⁹ Avcıoğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 96-100.

¹⁹⁰ Durukan Dudu, Tayfun Özkaya, Rıza Avcıoğlu, Mustafa Kaymakçı “Başka Bir Mera Mümkün Mü? Meralarda Bütüncül Yönetim ve Bütüncül Planlı Otlatma,” *Conference*, February 2, 2018.

4.3.1. Grazing Capacity

Grazing Capacity is the optimum animal number grazing on a certain pasture for long years and for same length of periods within the sustainability of the vegetation, soil and other natural resources. Accordingly, there should be a favorable balance between the pasture plants and the animal number. Otherwise, undergrazing or overgrazing may occur. Pasture conditions are classified into four different classes considering the percentage of the climax plant species (Table 4.3).

Table 4.3. Pasture Condition Classification¹⁹¹

| No | Classes | Climax Plant Species (%) |
|----|-----------|--------------------------|
| 1 | Very Good | 76-100 |
| 2 | Good | 51-75 |
| 3 | Average | 26-50 |
| 4 | Poor | 0-25 |

Plant species in pastures are clustered within three main groups: (1) descending species as the principal species in climax plants, (2) augmenting species as substitute of the descending species and (3) invasive species, which are not involved in climax plants, e.g. thorns. Determination of the “grazing power” of pastures previously requires pasture condition by knowledge about precipitation, soil type, vegetation, percentage of botanical composition and accurate mapping. Following the pasture condition, grazing power can be calculated by the animal units.¹⁹² Ecological conditions (e.g. precipitation and heat), “grazing time” and “number of animals” are other important factors to determine the grazing capacity. “Utilization Factor” is an important concept to sustain field crops because some of the areas need to be rest without grazing. In Turkey, utilization factor is 50% in arid regions and 80% in intensive pastures. However, it takes 50% in calculation which means that “Feed the half, leave the half”. If grazing capacity is well determined, vegetation and natural resources can be under protected within an optimum husbandry.

“Cutting method” determines the grazing capacity according to the field crop quantities. In spring, random chosen fields of 1 m² cut, dried fodders are weighed; and then the arithmetic mean of the fodders is calculated as the capacity/decare. 50% of the

¹⁹¹ Avcioğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 96-100.

¹⁹² Ibid, 96-100.

total field crop (capacity/da.) need to be grazed, which is called “Utilizable Feed”. Animal unit (BBHB) represents “Grazing capacity”. Approximately, one cattle equal to 500 kg is equal to 1 BBHB (Table 4.4).¹⁹³

Table 4.4. Animal Units Conversion Factors.¹⁹⁴

| Animal Type | Factor | Animal Type | Factor |
|------------------------|--------|---------------|--------|
| Water Buffalo (male) | 1,05 | 2 old Calf | 0,35 |
| Water Buffalo (female) | 0,90 | 2 old Foal | 0,35 |
| Cow | 0,75 | Donkey | 0,30 |
| Big Horse | 0,75 | 1 old Horse | 0,25 |
| Middle Horse | 0,75 | 1 old Calf | 0,25 |
| Bull | 0,70 | Sheep | 0,08 |
| Cattle | 0,60 | Goat | 0,08 |
| Heifer | 0,50 | Yearling Lamb | 0,06 |
| Small Horse | 0,50 | Lamb | 0,04 |
| Hinny | 0,50 | Kid | 0,04 |
| Mature cow | 0,50 | Turkey | 0,01 |
| Calf | 0,40 | Chicken | 0,004 |

Number of the grazing days is estimated approximately 200 days for coastal regions (Marmara, Aegean and Mediterranean) and Southeastern Anatolian Region, 180 days for Central Anatolia Region, 150 days for Eastern Anatolia Region. Grazing season may change due to the weather conditions and regional differences. The best grazing seasons in Mediterranean climate zone is between April and November. Grazing out of these seasons harm vegetation and risk the future of the pastures.¹⁹⁵ Overgrazing eventuates if grazing capacity is exceeded due to malpractices. Due to overgrazing and malpractices, most of our fruitful pastures are almost lost. Additionally, urbanization, rural development, agricultural and mining activities plundered the pastures and contributed this loss with the help of the recent regulations in the 4342 numbered Pasture Law. This unavoidable pasture loss has serious negative impacts on husbandry activities and the number of the animals. Overgrazing is one of the fundamental problems on the pastures in Turkey. Decrease in the number of common pastures, results in an increase of the animal per unit, overgrazing, and a decrease in the field crops, husbandry products and the pastures quality, while increase the risk of erosion.¹⁹⁶

¹⁹³ Avcioğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 98.

¹⁹⁴ Ibid, 98.

¹⁹⁵ Ibid, 99-100.

¹⁹⁶ Ibid, 96-100.

Table 4.5. Grazing Capacity Formula.¹⁹⁷

| | |
|---|---|
| Grazing Capacity | Seasonal Field crop The quantity consumed in 1 season by 1 unit |
| Grazing Capacity (BBHB) | $\frac{\text{Pasture land (da)} \times \text{Utilizable Feed (kg/da)}}{\text{Feed need for 1 animal unit (kg/day)} \times \text{Number of grazing days (day)}}$ |
| Utilizable Feed (kg/da) | Fodder in 1 m ² x 0,5 (Utilizable Factor) x 1000 |
| Daily feed need for animal unit (kg) | 10% of the weight of animal unit |
| Example: | 50 kg <u>feed</u> or 12.5 kg <u>fodder</u> (1/4 feed) for a 500 kg cattle. |

ATAE (2007) made a research about the usage, productivity and conflicts of the pastures, in relation with the authorities, socio-cultural and demographic profile, information, education, and the malpractices. According to ATAЕ (2007), the main findings of the study are the lack of initiatives, lack of self-confidence, need for education, need for social security, need for young farmers as a professional farming potential. Main conflicts are determined as the non-professional farming, unregistered production and lack of precision. If farming and husbandry are taken seriously as a profession, this precision can increase and result in an optimization of agricultural production. The first step to increase the income level of the rural residents is to create potentials of human capital and natural resources. Optimization of agricultural production is necessary to improve rural development. In Turkey, if husbandry production is made for domestic use rather than marketing while 1% of the farmers use pastures rather than the barns.¹⁹⁸

Education is another important aspect to understand the 4342 numbered Pasture Law properly. Therefore, the village headmans and associative and cooperative members are better informed than the pasture users. Female rate of illiterate in İzmir (2,91) is above than the male rate of illiterate (0,71). According to the Table 4.6, farmers in İzmir have potential to understand the laws and regulations, as the rate of illiterate in İzmir is lower than the average of Turkey (Table 4.7).¹⁹⁹

¹⁹⁷ Avcioğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 96-100.

¹⁹⁸ ATAЕ, *Anadolu Tarımsal Araştırma Enstitüsü Raporu* (Eskişehir, 2007): 51-107.

¹⁹⁹ TURKSTAT, "Rate of illiterate," accessed 2015, <http://www.tuik.gov.tr>.

Table 4.6. Grazing Capacity Example²⁰⁰

| | |
|--|--|
| 82 hectare pasture including 20 decare river, Field crop: 800 gr. feed/m², Daily feed need: 10 kg/day fodder, Number of grazing days: Aegean Region (200 days) | |
| Pasture land | 82 ha – 2 ha = 80 hectare = 800 decare |
| Utilizable Feed | $= \frac{\text{Feed}}{4} \times \frac{1}{2} \times 1000 \text{ m}^2$ $= \frac{800 \text{ gr/m}^2}{4} \times 0,5 \times 1000 \text{ m}^2 = \mathbf{100 \text{ kg/da}}$ |
| Grazing Capacity | $\frac{800 \text{ da} \times 100 \text{ kg/da}}{10 \text{ kg/day} \times 200 \text{ day}} = \mathbf{40 \text{ BBHB}}$ |
| Pasture land per animal unit (da) | $\frac{\text{Daily feed need (kg)} \times \text{Grazing day}}{\text{Utilizable feed (kg/da)}}$ |
| Pasture land per animal unit (da) | $\frac{10 \text{ kg/day} \times 200 \text{ day}}{100 \text{ kg/da}} = \mathbf{20 \text{ decare}}$ |
| To sum, 1 animal unit (BBHB) needs 20 da. grazing land for 200 days. | |

Table 4.7. Rate of Literacy in Turkey²⁰¹

| Year | Region Code | Region Name | Total | Total / M | Total / F | Illiterate Rate / T | Illiterate Rate / M | Illiterate Rate / F |
|------|-------------|-------------|----------|-----------|-----------|---------------------|---------------------|---------------------|
| 2015 | TR | Türkiye | 70497783 | 35304074 | 35193709 | 3,78 | 1,29 | 6,28 |
| 2015 | TR3 | Ege | 9270030 | 4622921 | 4647109 | 2,22 | 0,81 | 3,62 |
| 2015 | TR31 | Izmir | 3822238 | 1902942 | 1919296 | 1,81 | 0,71 | 2,91 |

Overgrazing eventuates due to malpractices, unseasonal practices and the occupation by neighbor villagers; while undergrazing eventuates due to the limited number of animals, occupation by rural development and other public uses by municipality on pastures. Village headmen used to be responsible for pastures until the 6360 numbered Metropolitan Law. Villages became neighborhoods and today, District Directorate of Agriculture, Provincial Directorate of Food Agriculture and Livestock and Provincial Pasture Commission are responsible for the pastures.

According to the report, education of farmers, laws, regulations, and pasture reclamations are urgent needs to eliminate the rural poverty and the malpractices. A guidance for the encouraging local initiatives and the stability of the local market by new marketing tools and techniques is necessary. Otherwise, the future of the husbandry and small-scale agriculture in Turkey are under serious risks. Thus, there is a need to cultural transformation to practice, worldwide professional husbandry standards are urgent need.

²⁰⁰ Avcıoğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 96-100.

²⁰¹ Ibid, 96-100.

The farmers should be well informed about the rules and Municipalities should act responsibly to prevent the violation of these rules.²⁰²

4.3.2. Grazing Systems

According to ATAE (2007), there are several precautions to follow the grazing seasons. Firstly, forage plant breeding should be increased containing *Fabaceae* (legume, baklagiller): *medicago sativa* (clover, yonca), *onobrychis* (sainfoin, korunga), *vicia sativa* (vetch, fiğ), *granum* (grain, tahıl); and *Poaceae* (graminae, buğdaygiller): *sorghum* (sorgum), *drummondii* (sudan grass, sudan otu) and *zea* (corn, mısır). Secondly, the artificial pastures can be established on the unproductive pastures that have irrigation potential. Thirdly, rotation of farm pastures for 1-5 year period should be generated. Finally, stubbles (*amzlık*) can be used as pastures. These precautions may eliminate the overgrazing problem and improve the reclamation of pastures.

There are also several technical rules, which is called “grazing rules” for the optimum utilization of the pastures: (1) compliance to “grazing capacity”, (2) compliance to “grazing season”, (3) appropriate animal species, and (4) “uniform grazing”. Uniform grazing is the homogeneously equal grazing on the pasture, which may eliminate overgrazing on the certain parts. Uniform grazing operation needs “grazing systems” application suitable for the specific pasture and the animal type. Grazing systems usually become successful on the smaller pastures, which have intensive vegetation cover; however, pastures in Turkey have larger lands and rarer vegetation cover.

Table 4.8. Vegetation Cover and Efficiency of Pastures in Turkey²⁰³

| Regions | Vegetation Cover (%) | Efficiency = Fodder (kg/da) |
|---------------------------------|----------------------|-----------------------------|
| Central - Southeastern Anatolia | 10-12 | 30-40 |
| Aegean - Mediterranean | 20-30 | 40-60 |
| Black Sea - Eastern Anatolia | 50-60 | 90-100 |

Grazing systems and uniform grazing operations are hard to apply in Turkey’s rarely covered and extensive pastures. Therefore, some extra facilities are needed such as

²⁰² ATAE Raporu, 79-111.

²⁰³ Avcioğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 96-100.

potable water facility, additional feeders, saltcellar, shady spots, itching tools, pasture fences, detractive materials.²⁰⁴

4.3.3. Land Regime and Conservation in Turkey

Land regime and conservation in Turkey continuously changed due to the regime shifts and changing legislations. In Ottoman Empire, agricultural land was a commonwealth as a property of the state and the rural areas used to have the equilibrium between needs, population, techniques and resources. *Miri* land regime, timar holders and villagers used to have collaboration without competition. The structuring of corporations, foundations and social security institutions was both centralist and decentralist which created a balanced social structure. Since the 16th century, the privatization attempts closed the deficit in public treasury and resulted in the disappearance of *timar* holders, rise of taxmen (*mültezim*), which disturbed of the property order. Eventually, the balanced social structure disappeared by the emergence of the landlords, and the villagers faced a very difficult situation, which caused a decrease in the agricultural productivity, serious famines, and migrations in 1870s.

In 17th century, “advanced village formation” broke down by exploitation covered up by westernization. Enclosure and/or privatization processes continued since the 19th century by a shift to Western Land Law. In the 19th century (Tanzimat Reform Era), “Land Code” (*Arazi Kanunnamesi*) enacted in 1858, which brought fundamental changes in Ottoman Ground System and featured private ownership by classifying the land, which is the first comprehensive law including pastures. Foreigners had the property right, which accelerated the fragmentation of the lands. Primitive accumulation started in 16th century in UK, had reflections in Ottoman Empire in 17th and 18th centuries.²⁰⁵

However, several administrative and legal confusions continued including a considerable part of the pastures that got lost or became arid by several laws (e.g. 442 numbered Village Law, 2510 numbered Settlement Law, 1580 numbered Municipality Law, 4753 numbered Provision of Land for Farmers Law, 1757 numbered Soil Agriculture Improvement Law, 3401 numbered Cadastral Law and 766 numbered Land

²⁰⁴ Avcıoğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 117.

²⁰⁵ İsmail Cem, *Türkiye’de Geri Kalmışlığın Tarihi*, vol.11 (Cem Press, 1970).

Registration Law). The special registry of the pastures by the 1757 numbered Land and Farming Reform Law (1973) cancelled in 1978, which resulted in a 20 years of legal gap on pastures, a quite long period to left the pastures unattended, until the 4342-numbered Pasture Law enacted in 1998 by the efforts of TEMA.²⁰⁶

However, the internal structure of the legislations changed, as well as the reclamation practices (e.g. Bergama-Kozak) failed due to several reasons, such as lack of grounds for legal action and technical inadequacies. Number of the pasture reclamations decreased parallel to the fund decimations.²⁰⁷

According to the 4342 numbered Pasture Law, pastures are defined as “the lands which were previously assigned for the public use or which were used as pastures since the ancient times”. Pastures are under the provision and ownership of the State that are assigned to the use of one or few village(s) or town/county municipalities to utilize for grazing or vegetation. The common benefit and use of these areas are under the control of the villages or municipalities. These lands are common and cannot carried over to private property or cannot be used out of purpose. However, their “use right” can be rented according to the principles specified by the regulations (e.g. mining, tourism, public investments, village implementary development plans, land conservation, national parks, forest conservation, flood control, stream and water resource rearrangements, geothermal resources, public emergency and security situations). Additional regulations in the 4342 numbered Pasture Law allowed the 6306 numbered Urban Renewal Law to the out-of-purpose use of the pasture by the permission of Ministry of Environment and Urbanization.²⁰⁸

In addition, due to the 20 years of abandonment period, many illegal developments, private or public buildings locate on the pastures today. According to the 4342 numbered Pasture Law, these buildings should be determined, demolished and the land should be registered as a pasture – in theory. However, today, it is assumed that there are approximately 12.3 million ha. pastures, most of which are mostly unregistered in practice.

Since the 20th century (Republican Era), due to the failing of the village institute projects, industrialization, need for cheap labor, unprofitable rural economy, rural-

²⁰⁶ N. İ. Sarı, *Özel Meralar ile Tapu Kütüğünde Köy ve Belediye Tüzel Kişilikleri Adına Kayıtlı Meraların Hukuki Durumu* (2015).

²⁰⁷ Interviewee P_3, November 29, 2016.

²⁰⁸ The 4342 and the 6360 Numbered Laws.

urban migration, enclosure/privatization acts (especially after 1980) continue on the rural lands. Primary legislations relevant to the pastures are the 4342-numbered Pasture Law, the 6360-numbered Metropolitan Law, the 3402-numbered Cadastral Law, the 3091-numbered Property Law, the 5403-numbered Land Conservation and Land Use Law and Regulations, the 6831-numbered Forest Law, the 3573-numbered Olive Grove Law, the 831-numbered Water Law, the 167-numbered Groundwater Law, and Ramsar Contract. Savannah Law is supposed to be in this list in near future. Lands, which used to be owned by the “village legal entities”, are transferred to Municipalities and the villages became neighborhoods.

Moreover, added regulations in the 4342 numbered Pasture Law created the risk of more building constructions on the pastures by the land allocation acts (e.g. urban renewal projects). Especially, the effects of the 4752-numbered Provision of Land for Farmers Law, the 4342-numbered Pasture Law, the 5216-numbered Metropolitan Municipality Law, and the 6360-numbered Metropolitan Law on the pastures are explicit. In addition, the facilitator changes in the 6306-numbered Urban Renewal Law, the 3213-numbered Mining Law, the 5346-numbered Renewable Energy Law and several bag laws create legal gaps in the 4342-numbered Pasture Law and the outdated the 442-numbered Village Law, while contain serious risks for the loss of the pastures. According to the 53th article of the recent 7061-numbered Tax Law or bag law, pastures can become legally lost to the industrial areas. Relevant legislations of the pastures are shown below.²⁰⁹

According to the 5403 numbered Land Conservation and Land Use Law, dry farming, irrigated farming, special product lands, pastures, forests and planted trees are the primarily protected agricultural land types, while marginal agricultural lands are turned into nonagricultural land uses. Rocks, riverbeds, coastal dunes (*kumul*), reed beds (*sazlık*) and bogs (*bataklik*) are some of the other nonagricultural common land types. Other land use types are categorized as the military, industrial, tourism, recreational, residential and infrastructural land uses. The 3958-numbered Wetland Conservation Regulation and the Ramsar Contract specify the conservation zones by the ecosystem evaluation reports and rehabilitations, if necessary.

²⁰⁹ The relevant legislations are determined according to the personal investigations on laws.

Table 4.9. Relevant legislations, 1858-1985

| 1858 | 1924 | 1930 | 1934 | 1945 | 1956 | 1966 | 1973 | 1982 | 1983 | 1985 |
|--------------------|---------------------|---------------------------|----------------------|---------------------------|---------------------|-------------------------------|-------------------------------------|--------------------------------|--------------------------|---------------------|
| 4342- Land Code | 442- Village Law | 1580- Municipality Law | 2510- Housing Law | 4753- Farmers Land Law | 6831- Forest Law | 766- Land Registration Law | 1757- Land and Farming Reform | 2634- Tourism Incentive Law | 2872- Environment Law | 3213- Mining Law |

Table 4.10. Relevant legislations, 1987-2018

| 1987 | 1998 | 2001 | 2004 | 2004 | 2005 | 2005 | 2006 | 2007 | 2012 | 2012 | 2017 | 2018 |
|------------------------|----------------------|-----------------------------|------------------|------------------------------------|--------------------------------|-------------------------------|----------------------|-----------------------------------|----------------------------|------------------------------------|------------------|----------------------|
| 3402- Cadastral Law | 4342- Pasture Law | 4631- Animal Reclamation | 5177- Bag Law | 5216- Metropolitan Municipality | 5403- Land Conservation Law | 5346- Renewable Energy Law | 5488- Farming Law | 5686- Geothermal Resources Law | 6306- Urban Renewal Law | 6360- Metropolitan Municipality | 7061- Bag Law | Development Peace |

Wetland Conservation has several principles such as: (1) protection the natural and ecological characteristics and preventing the contamination; (2) protection and development of the biodiversity; (3) rehabilitation; (4) increasing the bird population; (5) being aware of the side-effects of the projects and activities; and (6) following the provisions of the 2863 numbered Cultural and Natural Heritage Protection Law.

The 6831-numbered Forest Law contains natural and manmade growing trees and shrubs. National parks, state-owned forests, public utility forests and private forests are the types of forests. However, the reeds, bramble patches, parks, cemeteries, trees on the private land, on the agricultural land or a forest border, and shrubs on lands smaller than 3 hectare outside the forest line, private lands for the special products around the forest line, and olive groves and shrubs which do not show the land conservation character are not counted as forests. According to the *article 2/b*, low quality forestys are given to agricultural, pastures, development and mining activities by the permission of the Ministry of Forestry and Water Affairs.

Ramsar Contract aims to protect wetlands, marsh, reeds, and turbaries and pastures because water birds are ecologically depended on these lands. Protecting the current wetlands or carrying wetlands by creating new ones or rehabilitate the current ones, increases water bird population, prevents contamination and promotes investigation on ecosystems. Smaller wetlands (less than 8 ha.) allowed to dried or filled by the permission of the Ministry of Forestry and Water Affairs.

According to Turkey Climate Change Strategy (2012), Mediterranean Basin is one of the most climate change affected areas. The main strategies to eliminate this threat are, reduced the greenhouse gas emissions, enhanced resilience of the lands, cleaner production strategies, increased information networks, drought management and protection strategies and improvement of the pastures. Techniques are developed to increase the carbon absorption of the soil, clean energy technologies, and more research-development.²¹⁰

In Turkey, the pastures are the common lands whose use-right belongs to the local farmers. However, use right without rules and preconditions may result in malpractices. The 4342-numbered Pasture Law enacted quite lately; and thus, the 3T processes of the pastures continue.²¹¹

Recently, several draft laws and “Development Amnesty” (2018) are discussed about the olive forests, pastures and seashores in Turkey. Farmers, environmentalists, civil activists, several advocates and NGOs aim to repulse the governmental pressures, which aim to sacrifice these lands to the facilities of mining and energy sectors as well as the industrial sector with the help of the 7061-numbered bag law (2017). Nevertheless, there is a significant positive feature of 4342 numbered Pasture Law for inventory analysis of the pastures in Turkey. By using the recent digital techniques such as GIS, MERBIS and the employment of survey engineers in Provincial Agricultural Directorates, inventory analysis is now able to generate accurate information, which may eliminate the technical and informative struggles at the rural areas.

In Turkey, 70% of the valuable field crops are lost or under the threat of extinction such as orchis, poaceae, leguminosae. It is surely beyond doubt that the pastures may remain in the future, only if the current conflicts are eliminated.²¹² Approximately one year before the enactment of the 4342 numbered Pasture Law, pasture educations started in Agricultural Faculties of Universities. Accordingly, Pasture Head of Departments established at Ministry of Agriculture and Provincial Directorates of Agriculture and Provincial Pasture Commissions are established. “Pasture Fund” constituted as a budget for pasture reclamations. Then, a conflict emerged in 1998-2000, because the pasture

²¹⁰ Çevre ve Şehircilik Bakanlığı, *Türkiye İklim Değişikliği Stratejisi 2010-2023* (2012).

²¹¹ ÇOB, *Biyolojik Çeşitlilik Stratejisi*.

²¹² Avcioğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 7.

fund is spent for other needs of Provincial Directorates of Agriculture, rather than the reclamations.

Due to other expenditures, such as office equipments, fund supporters opposed to give money for the pasture fund, which is then shrunk until it became almost useless. Pasture Fund abolished and transferred into “Annexed Budget” as “Special Allowance Record”, and 3% wage cut from tobacco and alcoholic beverages replaced with a 1% wage cut from “Special Consumption Tax” due to 4760 numbered Special Consumption Tax Law in 2002, which also abolished in 2003. This situation clearly caused a disruption for reclamation processes and the fund for the financing of the projects.²¹³ Although the pastures are the common spaces for public use, there are also private pastures according to the 4342 numbered “Land Code”. Owners of the private pastures are not under the obligation of 4342 numbered Pasture Law.²¹⁴ Evaluation and allotment of the pastures are the obligation of Provincial Pasture Commissions. Fundamental principles of the 4342 numbered Pasture Law are the pasture determination and allocation, improvement of the utilization and maintenance, protection of the ancient pastures or allocation for other uses if necessary after the completion of juridical and maintenance processes.

These objectives became more tangible in “Pasture Fund Regulations” and “Pasture Regulations” which are enacted in 1998. Administrative and legal gaps disappeared, “Pasture Administration Units” constituted at the villages while farmers were given more responsibility. “Provincial Pasture Comissions”, “Teams”, “Research Agents” and “Pasture Fund” constituted for applying the pasture reclamations. Pastures rented and presumed to prevent the erosion. Several arrangements and collaborations were made with *Yuruks* to prevent uncontrolled grazing and NGOs to prevent pastures from degradation. Village meetings and educational courses for pasture users were made under the consultancy of members from Universities, Provincial Pasture Comission and Pasture Association and “Pasture Reclamation Projects” extended to national scale.

However, the recent changes in the legislations and the malpractices of the farmers, village legal entities, mining and tourism sectors, urbanization pressure worked againts pastures as well as other unpredicted conflicts. For instance, farmers, Mayors and

²¹³ Interviewee P_3, November 29, 2016.

²¹⁴ Sarı, *Özel Meralar ile Tapu Kütüğünde Köy ve Belediye Tüzel Kişilikleri Adına Kayıtlı Meraların Hukuki Durumu*.

headmen cannot adapt the technical rules on the places once they used recklessly. Allocation acts on behalf of the mining and tourism sectors and the need for new development plots in the villages, resulted in the loss of pastures with the help of the political support.²¹⁵

According to the *article 14* in the 4342 numbered Pasture Law, land allocations on pastures which are close to development areas, power plants, oil and mining operation areas, highway constructions, flood protection facilities and especially touristic facilities continue. The misperception of pastures as being the accessible and cheaper plots should be changed immediately. Education is the crucial dimension to increase the awareness of the farmers and the local authorities to take more responsibility. Many determination and delimitation studies and the reclamation projects could not complete due to the juridical and cadastral problems. Juridical files take more time than technical studies due to the number and qualification of the technical staff (e.g. engineers, lawyers) in the Provincial Directorates of Ministry of Food Agriculture and Livestock and Research Institutes are not adequate. In addition, the pasture specialists should also be involved in Provincial Pasture Comissions to eliminate the loss of time for waiting the expert opinions from the research institutes and universities.

Today, most of the “determination” studies (approx. 8 million ha.) completed; however, “delimitation” problems and pasture invasions continue which result delays in the reclamation processes (Table 4.11). Since 2015, 1211 reclamation projects on 590.000-hectare land continue in 36 Provincial Directorates of Food Agriculture and Livestock.²¹⁶

Table 4.11. Pasture determination, delimitation and allocation studies²¹⁷

| Village Number | Determination | | Delimitation and Allocation | | Reclamation |
|----------------|---------------|------------|-----------------------------|------------|--------------|
| | Pasture (ha) | Village N. | Pasture (ha) | Village N. | Pasture (ha) |
| 38.450 | 7.850.577 | 27.046 | 1.719.534 | 13.469 | 1.000.000 |

There are seven (7) major Research Institutes and nine (9) Regional Research Institutes containing 34 special research interests (e.g. apiculture, cotton, nutshell, vineyard, oil, veterinary medicine) exist under the Ministry of Food, Agriculture and

²¹⁵ Avcioğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 11-16.

²¹⁶ BUGEM, “Mera ıslah ve amenajman projeleri”, accessed December 16, 2016, <http://www.tarim.gov.tr/BUGEM/Haber/261/2015-yili-mera-islah-ve-amenajman-projelerini-degerlendirir>.

²¹⁷ Avcioğlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eğitim Kitabı*, 96-100.

Livestock, General Directorate of Agricultural Research. However, “pastures” are not included in these special research interests and/or subunits of the present institutes have not enough fund of knowledge about pastures. Pastures of Turkey have many conflicts because of their location at subtropical and arid climate zone; and having uncultivated steppe character; and several pressures for hundreds of years. For pasture recovery, modern tools, intensive and multi-directional fund of knowledge, distinctive geographical studies and expert engineers, who are able to use advanced technological infrastructure are urgently essential. Also, forage plant breeding which has 7% cultivation areas need to be rise to 20% similar to the modern nations. Forage plants may reduce the pressure on the pastures to help the reclamation process. It is crucial that, 4342 numbered Pasture Law does not only contain pasture protection, reclamation and utilization acts; but it also contains the protection of the soil and water resources and the preclusion of the erosion within the context of “Watershed Management” for sustainable environment.²¹⁸

The 4342 numbered Pasture Law is inadequate in terms of penalty provisions, which cause several occupations and overgrazing practices on the land. However, the penalty fees are not persuasive and legislations are not district like the 3071 numbered Forestry Law.²¹⁹ Many regulations of the law usually punctured by the government, especially after the 6360 numbered Metropolitan Law due to the residual authorisation of the Municipalities.²²⁰

Additionally, “dissenting opinions” from TBMM Commission Reports against draft laws and bag laws reveal the following commentaries. According to the 242 numbered Commission Report, from the 24th legislative session and 2nd legislative year:

The counter statements of the ambiguous draft law about the permission for husbandry facilities on pasturelands remark a serious potential pastureland loss as the conservation and hiring of the land are contradictory situations. In the future, there can be a similar threat same as 2-B forestry lands and common pastures can subjected to privatization. Especially land allocation of the pastures that contain water resources can cause serious problems. There is not a specified upper limit for the rental of the common pastures. Also, there can be misused buildings as the natural lands that have common access of the nation are can be sacrificed in the profit of the capital. The greatest problem of husbandry is the lack of feedcrops, which can be solved within the pastures (indeed). Today, the pastures are the open targets of the capital as well as the seashores, agricultural lands, olive trees and forests. There are serious technical and social inadequacies within the pasture reclamation and administration. Improving social infrastructure in the rural

²¹⁸ Avciođlu et.al., *Mera Islah ve Amenajmanı Yaz Okulu Eđitim Kitabı*, 15.

²¹⁹ Interviewee P_1, November 8, 2016.

²²⁰ Interviewee P_2, November 11, 2016.

lands is depend on the sense of responsibility and the common ownership. Unfortunately, this draft law aims to destroy that sense of responsibility.”²²¹

According to the 439 numbered Commission Report, from the 22nd legislative session and 2nd legislative year, “pastures can be appropriated for another mining or oil exploration activities, if there are reserve areas around without any productivity analysis. With this draft law, protection of the pastures is much harder.”²²²

The 6360-numbered Metropolitan Law (2012) assigned the village legal entities and provincial administrations to Ministry, Governorates and Municipalities while transform the villages into neighborhoods. According to the *article 16*, all previous rights of forestry villagers and their rights to the village common properties and to the pastures continue within the frame of the 4342 numbered Pasture Law, even if the land titles of immovables of village legal entities transferred to Metropolitan Municipality, District Municipality, Treasury, Ministry and Provincial Organizations of Ministry (*article 1/5*). Immovable properties, which transferred to Public Treasury (e.g. pastures) assigned to the usufructuary institutions (The 6360 numbered Metropolitan Law).

After the enactment, Municipalities had a misunderstanding as if pastures were in their possession. Therefore, article 12 of 4342 numbered Pasture Law and article 16 of 6360 Metropolitan Law rearranged to clarify the situation of pastures under the supervisions of Provincial Pasture Commissions; and Provincial and District Directorates of Ministry. However, negligences continue in some Municipalities.²²³

Additionally, “dissenting opinions” from TBMM commission reports reveal the following commentaries. According to the 435 numbered Commission Report from the 24th legislative session and 3rd legislative year:

Metropolitan Municipality model that depends on the principle of local administration cannot be established in Provincial level. Centralized administration cannot meet the local common needs and national common needs. Provincial administrative boundaries cannot be the optimal scale for the local services. Identification of provincial scale and local scale is qualitatively impossible. In addition, there is not a single scientific and formal indicator for this regulation; there is solely a “claim” that centralization would increase the operation and productivity. This regulation is derogatory for the “principle of equality” in the Constitutional Law. In the organization of services, the principle rule is the equality in public services; yet, this regulation is against the equality principle at the 10th article of the Constitutional Law. There are three political feature of the regulation: (1) territorialization of Turkish administration under the Governorship, (2) restriction of the representative democratic base by assignments in spite of elections, and (3)

²²¹ TBMM, “Commission Reports”, accessed February 18, 2017, https://www.tbmm.gov.tr/develop/owa/sirasayi_sd.sorgu_baslangic.

²²² Ibid.

²²³ Interviewee P_1, November 8, 2016.

destroying the local governments. To sum, this regulation is not for residents, but in the sake of the capital, land rent and local and foreigner investors. There is an urgent need for a comprehensive public administration reform within a participatory approach. Metropolitan Municipality model is problematic and a redefinition is required for the size of the area and the task/authorization relations. Urban and rural neighborhoods should be categorized separately within the relevant local administration union systems.”²²⁴

In addition, recent “Development Amnesty Law” in the name of “Development Peace” (2018) allows the illegal housing on the natural lands, including pastures, forestry and seashores. Unfortunately, it is obvious that this law will create more conflicts on the pastures and commons, while consolidating the illegal housing and urban sprawl.

4.4. Pastures in İzmir

The verification of the numerical data and the field size of the pastures in İzmir are not adequate due to the contradictory information. Although, Ministry of Environment and Forestry stated an increase for the pastures by stating that there were 106.274 ha. pastures and grazing lands in 2001 and 113.668 ha. pastures and grazing lands in 2006 in İzmir; however, it is contradictory to the previous data. In 1999-2011 45.043 ha. pastures and grazing lands determined, 27.555 ha. land delimited and 2.810 ha. land appropriated by the studies of 3T. According to the data gathered from Provincial Directorate of Food, Agriculture and Livestock, 106.736 ha. pasture land (2001) decreased to almost its half 52.400 ha. (2015) within 14 years in İzmir. According to data gathered from İzmir Provincial Directorate of Food, Agriculture and Livestock, pastures and meadows covered 10.80% (106.736 ha.) of the total land of İzmir in 2001, which is reduced to 4.34% (52.400 ha.) in 2015. Bergama is in the forefront among the districts and following by Kiraz, Aliğa and Dikili in terms of pasture and meadow entities.²²⁵

Poor conditions of the pastures in İzmir resulted in the forage crop production and intensive cattle husbandry, which eventually became dependent on each other because a forage crop farmer cannot find breeders to sell its crops, while breeders cannot find forage crops if they do not produce themselves. *Medicago sativa* (clover) as a perennial plant is the most popular among the forage crops. However, especially small farmers do not plant clover, as they cannot plan long-range production.

²²⁴ TBMM Commission Reports. https://www.tbmm.gov.tr/develop/owa/sirasayi_sd.sorgu_baslangic.

²²⁵ İlhan Tekeli, *İzmir İli/Kenti İçin Bir Tarımsal Gelişme ve Yerleşme Stratejisi*, 82.

Reduction in the cotton production creates potential vacant lands for silage corn production. Silage corn has a share of 70% in İzmir, while has a share of 20% in Turkey among the forage crops. The dominance of the silage corns results in the exclusion of the sheep and goat farming. In addition, silage corn requires much water and nitrogen fertilizer, which creates more groundwater contamination (e.g. Ödemiş), attracts pigs, and thus, requires electrified fences. Although, İzmir is the primary city in Turkey in terms of forage crop production, there is still forage crop deficit. Silage corn production in İzmir is still under discussion because of the horticulture potential of the Aegean region.²²⁶

Figure 4.4 is generated from the visual data of İzmir Land Classification Report (2013) and shows the pastures in İzmir. However, the map is incompleting due to limitations and many of the pastures of the districts are not involved in the map, due to the continuing pasture digitization studies by Provincial Directorate of Agriculture.²²⁷

Figure 4.5 is from Aegean Agricultural Research Institute (2016), which shows the unregistered pastures in İzmir. However, the accuracy of the data is uncertain because it requires detailed technical and socio-environmental research.²²⁸

Pasture husbandry and livestock in İzmir are not adequate; as a result, Holstein cattles are used for milk and meat husbandry and the male calves are sold to butchers when they are 250 kg. approximately at the age of one. The main reason behind the fewer tendencies on the sheep and goat farming is the poor conditions of the pastures in İzmir. There is a need for immediate reclamation of the pastures to reach beyond the critic level for the sustainability of the sheep and goat farming. It is important to understand that the pastures are not solely crucial for being forage crop resources, they need a recovery for protecting their biodiversity.

Pastures as common properties should be managed by “Village Pasture Management Associations”, which is defined in the 4342-numbered Pasture Law to prevent overgrazing and to provide reclamation.

²²⁶ İlhan Tekeli, *İzmir İli/Kenti İçin Bir Tarımsal Gelişme ve Yerleşme Stratejisi*, 152.

²²⁷ İzmir Land Classification Project, *İzmir Land Classification Report* (İzmir Provincial Special Administration Press, 2013).

²²⁸ Hakan Yıldız, Field Crops Central Research Institute, GIS and Remote Sensing Department, accessed in 2016, <https://arastirma.tarim.gov.tr/etae>.



Figure 4.4. Pastures of İzmir (registered pastures).²²⁹

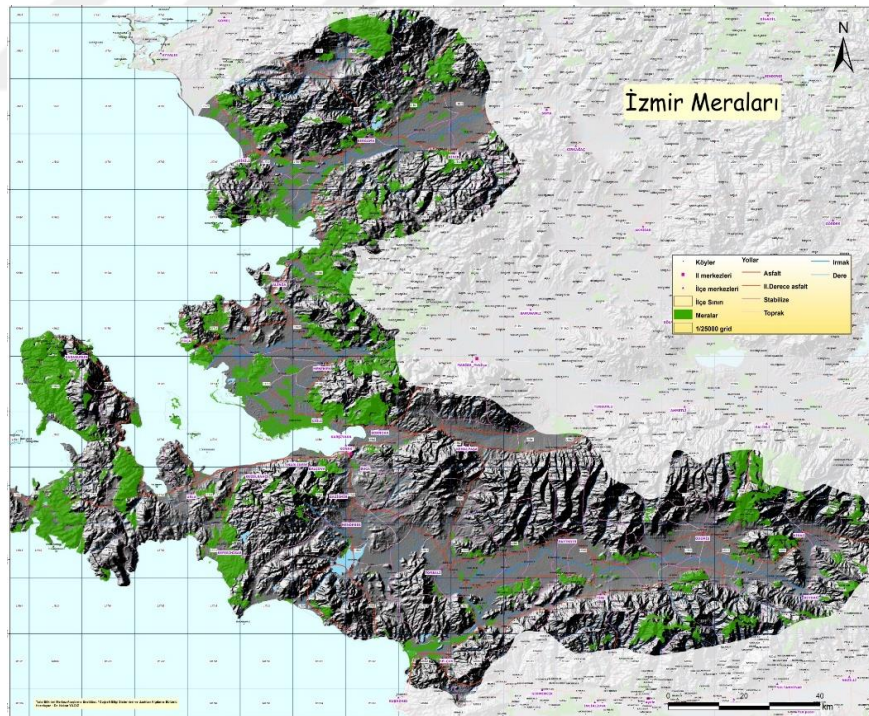


Figure 4.5. Pastures of İzmir (unregistered pastures are included).²³⁰

²²⁹ İzmir Land Classification Project, 2013.

²³⁰ Yıldız, Field Crops Central Research Institute, accessed in 2016, <https://arastirma.tarim.gov.tr/etae>.

According to İzmir-Manisa Planning Region 1/100.000 scaled Master Plan (2014), pasturelands are shown within the “meadow-pasture” legend. Plan Sentence 4.45 reveals that the meadow-pasture is the area determined and delimited by the 4342 Pasture Law for the grazing of the animals, utilization of the herbs and the areas that are used for these reasons since the ancient times. Pastures are the second-degree legal thresholds, available for controlled use, which should be protected according to the plan, which identifies the agricultural and husbandry development areas, including agricultural buildings and agricultural organized integrated facilities. However, plan also suggests “the areas in which the natural characteristics will be protected” status for the pastures. Areas, which shows the meadow-pasture character within the planning region should be protected and improved for the husbandry activities, within every legal characteristic. Development or similar damaging activities on these areas are forbidden by the planning provisions. Plan proposes green belts by afforestation of the degraded pasturelands, maquis shrublands and cliffs.²³¹

According to İzmir Metropolitan Region 1/25000 scaled Master Plan (2012), pastures are defined as determined and delimited by the 4342 numbered Pasture Law, for the grazing of the animals, utilization of the herbs and the areas that are used for these reasons. Plan reveals that the protection of the agricultural areas, forestry areas, maquis shrublands, pastures and all environmental assets is crucial to sustain the ecological balance and transferring the resources for the future generations. Pastures are the second-degree thresholds for the development. Registered and assigned pastures by the Ministry of Food, Agriculture and Livestock are the basis for the planning decisions. According to the potential and the use of the pastures, these areas are not preferred for the development. Plan notes claims that opinions of the relevant institutions and the current borders of forestry, conservation and pasture areas, geological data and transportation data are transferred into the plan.

Plan has a principle attitude for the spatialization and the land use pattern of the thresholds: it proposes gradual green corridors by alternative projects on the segmental agricultural, pasture and forestry lands to re-create the sustainability of the ecological system on the region. Protection principles of the plan require the protection of the pastures and the grazing lands. Plan notes reveal that whether pastures are shown as the

²³¹ İzmir-Manisa Planlama Bölgesi 1/100.000 Ölçekli Çevre Düzeni Planı (2014), accessed July 11, 2018, <http://mpgm.csb.gov.tr/izmir-manisa-planlama-bolgesi-1-100.000-olcekli-cevre-duzeni-plan-i-82265>.

meadow-pasture in the plan or not; they should be protected from development if they are public lands; and only controlled development should be allowed if they are private lands.

Pastures can be included within the “ecological interaction regions”, related to the wetland ecosystems, which are supported by the habitats such as the sea, scrub, seashore, shrubbery, forestry, meadow, pasture and rice lands. Plan notes reveal that the holistic protection of the areas that are defined as pastures in the plan is principal according to the 4342 numbered Pasture Law and Regulations. However, the areas that lost its pasture characteristics (e.g. plant cover) due to the agricultural activities are exceptional.²³²

According to İzmir Metropolitan Region 1/25000 scaled Master Plan notes (2012), pastures cover 9275.6 ha. land in İzmir Metropolitan Region, which is the 5.9% of the total land uses and 1.7% of the total surface area. Torbalı district has 1116.6 ha. land, which is the 3.7% of the total land uses and 2% of the total surface area. Aliağa district has 534.7 ha. land, which is the 8.5% of the total land uses and 1.7% of the total surface area. However, Bornova district is unspecified.²³³

After the 6360-numbered Metropolitan Law, a reform in the 4342-numbered Pasture Law became necessary for the future of the rural neighborhoods. Pastures are not legally well protected against the occupations by the agricultural or non-agricultural uses. Therefore, the number of the pastures and their resistance decreased since the last decades.

Especially the pastures, agricultural and forestry lands of the coastal districts (e.g. Dikili, Aliağa, Foça, Urla, Karaburun) have tourism pressure and secondary houses. Decentralization of the city center by the urban sprawl and industrialization (e.g. organized industrial zones and free zones) has also creates an urbanization pressure on the coastal districts and the rural-urban fringes. The enlargement of this polycentre result in the offensive agents to transform the pastures, agricultural and forestry lands. Large public investments and mass housing development initiatives accelerate the urban sprawl in İzmir.

Two of the natural lands in İzmir are preserved by strong legislations. First is the forestry land, which covers the 40.5% of the province; and second is Gediz Delta, 8000 ha. covered wetland, the most valuable conservation focal of İzmir, preserved by

²³² İzmir Metropolitan Municipality, 1/25000 Ölçekli İzmir Büyükşehir Bütünü Çevre Düzeni Planı (2012), accessed July 11, 2018, <http://www.izmir.bel.tr/>.

²³³ Ibid.

international Ramsar Wetland Contract. However, Gediz Delta is also under the threat of “Gulf Transition Project” along with İnciraltı Urban Forest. Remained natural areas, agricultural lands, pastures and meadows are primarily plundered due to their legally more brittle character. Vertical mountains to the coastal line, give the opportunity to Mediterranean flora for entering the hinterlands. Therefore, it is crucial to understand the importance and the resistance of the pastures in İzmir during the land use planning processes.

It is crucial to know that the main aggregations from the “farmer register system” in İzmir are Bayındır (4.549), Bergama (6.332), Beydağ (1.251), Dikili (1.429), Kemalpaşa (2.549), Kınık (2.054), Kiraz (5.004), Menderes (2.150) (Menemen (2.150), Ödemiş (5.936), Seferihisar (1.419), Selçuk (1.309), Tire (5.372), Torbalı (2.986) and Urla (668). Larger agricultural lands are located in Bergama, Ödemiş, Bayındır, Torbalı, Tire, Menderes, Kemalpaşa and Menemen, although there are many more unregistered farmers due to several reasons.²³⁴ According to Tekeli (2017), pasture reclamations on 770.000 ha. land are supposed to be completed due to 2023. Additionally, 30 agricultural basins are determined. Pasture, forestry and agricultural lands should be protected against the climate change and changing legislations, because the use of the village common lands became questionable after the 6360 numbered Metropolitan Law. There are also predictions about the increase on the occupations and destructions on pastures due to including the pastures into the municipal province. Besides, the pastures may be allocated to other lands uses in the villages that give up agricultural activities (e.g. 2B forestry lands). There is a fact of “impoverishment without dispossession” in Turkey; and thus, small farmers have to work in non-agricultural activities as secondary or primary jobs.

Agricultural land sizes in Turkey and particularly in İzmir are relatively smaller than European standards. Average agricultural facility sizes are 16.7 ha. EU, whereas 6.1 ha. in Turkey and 3.7 ha. in İzmir. There is an irrigation potential on the 82% of the agricultural lands in İzmir. However, the reliability of the data about the pastures and grasslands in İzmir is also questionable. There are many dynamic reasons behind the loss or degradation of the pastures. Due to the degraded pastures, intensive cattle farming at barns and forage crop production (e.g. clover, corn silage) increased in İzmir. However, corn requires much water and fertilizer, which result in nitrogen contamination in water

²³⁴ Tekeli, *İzmir İli/Kenti İçin Bir Tarımsal Gelişme ve Yerleşme Stratejisi*, 126.

(e.g. Ödemiş). In terms of forage crop production, İzmir is the primary in Turkey; however, forage crop deficit in İzmir is still approximately 250.000 ton. Cattle husbandry continues at barns, rather than pastures, and Holstein race is preferred for meat and milk production, rather than the native races.

An integrated irrigation plan is constituted in Bakırçay Basin and Menemen Plain between agricultural and non-agricultural sectors. Besides, the production patterns, cooperatives, marketing, cold chain, branding, geographical indication studies, specialization zones are constituted according to the 5403 numbered Soil Protection and Land Use Law in “Savannah” announcement areas.

Organic and/or good agriculture practices including reliable certifications should be promoted in Turkey. Pastures, which are decreased in the number, should be protected in order to protect the biodiversity. Sheep and goat farming on the pastures are at a critical level in İzmir; therefore, the pastures should be restored without harming their biodiversity.

Village Pasture Unions should be constituted to eliminate the malpractices (e.g. overgrazing) and to improve the pasture reclamation practices. New arrangements should be enacted within the 4342 numbered Pasture Law for the protection of the pastures against the possible threats of the 6360 numbered Metropolitan Law. Recently, pastures are not adequately protected against the agricultural and non-agricultural occupations, and the use of pastures and grasslands are decreasing. The major function of the pastures is sustaining their biodiversity, which may help to sustain sheep and goat farming by the accurate reclamation methods. Macro land use plans (e.g. 100.000 scaled Master Plan) should be more focused on protecting the pasture biodiversity.²³⁵

4.5. New Grazing Management Methods

There are several grazing management and restorative farming methods, which are essential for the reclamation of the degraded pastures. Holistic Management is one of the restorative farming methods as well as the permaculture, pasture design, keyline design methods and so on. First applications started 40 years ago and became more widespread within last two decades. Reclamation of pastures by organic matter (OM)

²³⁵ Tekeli, *İzmir İli/Kenti İçin Bir Tarımsal Gelişme ve Yerleşme Stratejisi*, 168-207.

which is relevant to the soil microbiology has a faster positive affect than afforestation. However, the current OM in soil in Turkey is less than two percent, which results in barren pastures.²³⁶

Holistic Grazing Management is an approach to the for the grazing techniques and the reclamation acts developed by “Savory Institute” and applied by a NGO called “Anadolu Meraları” in Turkey. Durukan Dudu, one of the executives, claims that the Ministry of Food, Agriculture and Livestock and all the decision makers should be participated in this process for the necessary updates in the governmental policies. The system requires a shift from monoculture conventional agriculture to holistic management, which is widespread in the northern hemisphere.

There are many worldwide successful examples of CO₂ absorbtion by holistic management in several countries (e.g. USA, Sweden, Africa and Australia). Today, the pastures in Turkey produces only 5% of their potential. Unattended pastures can be the pilot areas for the holistic management to achieve sustainable and healthier pastures and healthier food and products by grassfat animals. The pasture of Anadolu Meraları locates at Çanakkale – Biga, in which they claim an improvement of 0.4% in the mineral of pastures by holistic management practices per year. In addition, the vegetation capacity and t he number of the animals fed increased 90% per year.²³⁷

4.5.1. Holistic Management Insights

Recently, the grassfat farming became a highly relevant restorative farming method (Table 4.12). The profit gained by one lt grassfat milk is three times bigger than one lt regular milk. There is a huge difference in the global markets. Grassfat farming is a monopoly today, but supposed to be increase in the number within next years.

In economic terms, pasture-raised farming is more logical than the grassfat farming because in the grassfat farming animal cannot be slaughtered within 14 months, as it requires gaining fat at livery stable. However, grassfat farming is healthier in terms of Omega-3 increases while Omega-6 decreases, on the contrary to grain-fed animals. Pasture-raised farming especially suggested in poultry husbandry.

²³⁶ Dudu, “Başka Bir Mera Mümkün Mü?” 2018.

²³⁷ Durukan Dudu, “Varoluşsal Tatmin”, TEDx Talks, accessed April 3, 2018, <https://www.youtube.com/watch?v=5KiwltDt9FE>.

Table 4.12. Restorative Farming Methods²³⁸

| Grassfat Farming | Pasture-raised Farming | Restorative Farming Examples |
|---|---|--|
| Each producer association has its own criteria about grazing periods, silage, wet or dry grass. | Pasture-based. Kars example. Including grain and grass. Used especially in poultry husbandry. | Holistic management, drilling, Anadolu Meraları, Aysun's Farm example. |

Anadolu Meraları is consulting to the farmers and the new starters of farming and husbandry. One of the main objectives of the organization is to fix the technical and operational fallacies by accurate methods in management. Human capital and management constitute the 80% of the process in farming, which is important as the soil type. Holistic Management training contains three modules and the first module, reveals the introduction module, key findings, ecosystem cycles, ecosystem tools, and decision-making framework (Figure 4.6).

The criticism ongoing is about the lack of scientific findings and foundations, although, there are several scientific articles that use the same techniques with different terms (e.g. AMP: Adaptable Management Planning, multi-paddock grazing). Today, trial-and-error processes continue in the current holistic management of the case pasture. There are four main “insights” of the holistic management: (1) holism, (2) brittle scale, (3) hunter relations, and (4) not the number, but the time.



Figure 4.6. Holistic Management Training, İstanbul.²³⁹

Holism is important because nature functions as patterns and wholes as there are complicated (e.g. ecosystem), and complex (e.g. technology) systems in nature. Complicated systems require an algorithm to be managed including repetitive patterns, context and decision making process. Holistic decision-making process also requires an

²³⁸ Personal Archive, Holistic Management Training, March 2017, İstanbul.

²³⁹ Ibid.

algorithmic process which depends on the context. Britte scale aims to understand the current situation of the land. There are several indicators such as annual precipitation, woody plants, desertification, perishable logs, dried logs, moss, and tree decomposition. Due to the “edge effect” of Turkey, Mediterranean Basin has many diversities (e.g. social, cultural, geographical), which result in anomalies. However, Mediterranean Basin is less brittle than expected due to its maquis shrubland.

Hunt-hunter relations affect the herd mentality and behavior. Herd dynamics also effect the growing of the plants. If the herd moves fast within big groups and do not easily turn back to the specific area as it want to escape from the hunter and creates a periodic disturbance; end eventually, the plants arrange their photosynthesis and growth algorithms by this behavior. Non-herd herbivories such as deers choose to be in the non-brittle ecosystems (e.g. forests) while sheep herds choose the more brittle ecosystems such as pastures, which require mob grazing by periodic disturbance that eliminates overgrazing. Paddocks in the holistic grazing are the proxies for the hunters, which create a hunt-hunter simulation. Not the number, but the time means that the reason of overgrazing is not the number of animals but the time they spend on that part of the pasture. In order to eliminate the overgrazing, most of the farmers keep their animal away from the pasture, which eventually accelerate the desertification process. Grazing time and moving cycle should be caunted by grazing management. To sum, the time indicator and the periodic disturbance are essential for the restorative farming and pasture reclamation.²⁴⁰

4.5.2. Ecosystem Processes

Ecosystem cycles are vital for the restorative farming methods. According to Holistic Management, there are four main ecosystem processes that effect the grazing processes: (1) water cycle, (2) mineral cycle, (3) energy flow, and (4) community dynamics. Water Cycle affects the soil within three moments in precipitation: (a) the moment of the collision, (b) the moment as soon after the collision, and (c) the moment long time after the collision. Firstly, if the plants, which has a canopy effect cover the soil at the moment of collision, water filtered in the depth of the soil. However, if the soil is

²⁴⁰ Personal Archive, Holistic Management Training, March 2017, İstanbul.

bare, copping and erosion happen. Secondly, the speed of the water suction of the soil increases if there is plant cover and high organic matter (OM) ratio at the moment as soon after the collision; otherwise, erosion may occur, especially if the land is sloping. Thirdly, if OM ratio is high, microbiological activities start at the moment long time after the collision, and high OM ratio can prevent flood and make precipitation constructive rather than destructive for the soil.

Mineral Cycle contains organic and inorganic constituents. Soil aims to improve its liveliness by photosynthesis and decomposing cycle to sustain the microbiological environment. The key element of the mineral cycle and the constituent of OM is the carbon (C). Especially pastures have a potential to bury more C into the soil. This potential decreases in summer due to the lack of water. Mulching and animal effect also help to bury more C into the soil. Plant covered soil is necessary for continuous mineral cycle.

Energy Flow includes photosynthesis that depends on the sunlight, (a) the leaf surface, (b) denseness of the plants and (c) the time. Grazing provides a, while animal effect provides b. The energy flow formula is “ $F = a.b.c$ ”. Finally, Community Dynamics contains symbiotic ecosystem plants that increase energy flow, mineral and water retention capacity and optimum animal effect (e.g. sheep plows the soil, pig hoes the soil).

4.5.3. Ecosystem Tools

According to Holistic Management, organic farming and mass husbandry can cooperatively progress together. There are four ecosystem tools, which do not harm the soil on the contrary to the pesticides: (1) fire tool, (2) rest tool, (3) grazing tool, and (4) animal effect tool.²⁴¹ Fire Tool effects on brittle and non-brittle lands in short and long terms are seen in Table 4.13 (↗: Major positive effect, →: Minor positive effect, ↘: Major negative effect, ←: Minor negative effect, ✖: No effect). According to the Table 4.13, fire tool is an unsuccessful ecosystem tool. However, due to less labor and short-term positive feedbacks make the fire tool as the primary method for farmers throughout the history.

²⁴¹ Personal Archive, Holistic Management Training, March 2017, İstanbul.

Table 4.13. Fire Tool.²⁴²

| Ecosystem Processes | Brittle Land | | Non-Brittle Land | |
|---------------------|--------------|-----------|------------------|-----------|
| | Short-Term | Long-Term | Short-Term | Long-Term |
| Water C. | ↙ | ↙ | ↙ | ← |
| Mineral C. | ↗ | ↙ | → | ↙ |
| Energy F. | ↗ | ↙ | → | ↙ |
| Comm. D. | ↙ | ← | ↙ | ← |

However, in long-term, fire resistant plants can increase. Fire tool accelerates the “energy flow” and usually solve the symptoms, rather than the problem itself. Rest Tool effects on brittle and non-brittle lands in short and long terms are seen in Table 4.14. Short time is approximately 1 year, and long time is 10 years. (↗: Major positive effect, →: Minor positive effect, ↙: Major negative effect, ←: Minor negative effect, ✖: No effect).

It is crucial to know that the rest (*dinlendirme*) and fallow (*nadas*) are two different processes. Fallow gives permission to husbandry when bans planting, while rest bans them both. If we suppose that most of our pastures are counted in the brittle lands, rest tool may has positive feedbacks in short term; however may has negative feedbacks in long term. If the land is brittle, rest period approximately should last within one year. Water cycle can also be improved by terracing and channel but it can be costly. A total rest is harmful for the brittle lands as it may result in desertification in brittle lands, while improve non-brittle land. Partly rest is suggested. Grazing Tool effects on the brittle and non-brittle lands are in Table 4.15. (↗: Major positive effect, →: Minor positive effect, ↙: Major negative effect, ←: Minor negative effect, ✖: No effect).²⁴³

Table 4.14. Rest Tool.²⁴⁴

| Ecosystem Processes | Brittle Land | | Non-Brittle Land | |
|---------------------|--------------|-----------|------------------|-----------|
| | Short-Term | Long-Term | Short-Term | Long-Term |
| Water C. | ↗ | ↙ | ↗ | ✖ |
| Mineral C. | ↙ | ↙ | → | → |
| Energy F. | ↗ | ↙ | ↗ | ↙ |
| Comm. D. | ↗ | ↙ | ↗ | ↗ |

Grazing tool has a positive feedback on brittle and non-brittle lands in short and long terms as it increases, the rivalry between the plants and it can restore the lands.

²⁴² Personal Archive, Holistic Management Training, March 2017, İstanbul..

²⁴³ Ibid.

²⁴⁴ Ibid.

Table 4.15. Grazing Tool.²⁴⁵

| Ecosystem Processes | Brittle Land | | Non-Brittle Land | |
|---------------------|--------------|-----------|------------------|-----------|
| | Short-Term | Long-Term | Short-Term | Long-Term |
| Water C. | × | ↗ | × | ↗ |
| Mineral C. | → | ↗ | ↗ | ↗ |
| Energy F. | ↗ | → | ↗ | ↗ |
| Comm. D. | ↗ | ↗ | ↗ | ↗ |

Grazing period is more necessary than the number of grazing animals to prevent overgrazing. If there is heavy grazing, rest period should be longer; while if there is soft grazing, labour due to paddock change increases. If the land is large and the number of animals are few, partly recovery is suggested. Grazing tool accelerates the plant metabolism and increases the embedded C in the soil. However, grazing is the most abused ecosystem tool. Recovery time can change within the grazing management. Overgrazing, independent from the number of animals, is related to the grazing period and frequency. A similar method of paddock system is used in sheepherding system in Ottoman Period and still in Erzurum-Kars region today. Animal Effect Tool effects on the brittle and non-brittle lands are in Table 4.16. Short-term animal effect is one week, while long-term animal effect is one month. (↗: Major positive effect, →: Minor positive effect, ↘: Major negative effect, ←: Minor negative effect, ×: No effect).

Table 4.16. Animal Effect Tool²⁴⁶

| Ecosystem Processes | Brittle Land | | Non-Brittle Land | |
|---------------------|--------------|-----------|------------------|-----------|
| | Short-Term | Long-Term | Short-Term | Long-Term |
| Water C. | ↗ | ↗ | → | → |
| Mineral C. | ↗ | ↗ | ↗ | ↗ |
| Energy F. | ← | ↗ | ← | ↗ |
| Comm. D. | ↗ | ↗ | ↗ | ↗ |

Animal Effect needs to be periodic, not perpetual. The time animal spends on the pasture and the time later they turn back to that part of the land are more crucial than the number of the animals. Mimicking hunt-hunter relationship requires spending a limited time on a pasture part to let its recovery prevents the overgrazing.²⁴⁷

The effects of the ecosystem tools are determined by active observations on the fields rather than statistical calculations. These observations can turn into pre-cognitions

²⁴⁵ Personal Archive, Holistic Management Training, March 2017, İstanbul..

²⁴⁶ Ibid.

²⁴⁷ Personal Archive, Holistic Management Training, March 2017, İstanbul.

at a time. For example, density of a plant type on the land and average of them may lead to different applications on that land, related to the context and pre-cognition. In spring, 25 days - 4 weeks' recovery time is enough. NGOs about Environmental Protection tend to distract the animals from pastures, e.g. goats and forests. However, negative feedbacks do not occur due to grazing; it occurs due to the ways of grazing. Animal effect tool gain importance if brittleness increase in the pasture. The essential part of Holistic Management is organization and management processes.

4.5.4. Decision Making Framework

Decision making framework in Holistic Management, includes main decision makers, daily decision makers, veto power, social, phsycial and financial capital. The processes are continuously re-constructed every time according to the context. The main agent who define the “whole” is the main decision maker. Daily decision makers can be the members of a team, volunteers, investors or the family members. All decision makers or external people and institutions have the veto power. Social capital contains volunteer pool, customer base, farmers, NGOs and social media etc. Human capital contains educations, talents, abilities and experiences. Physical capital contains the private land, rented land or commonly used land (pasture) and some technical tools. Financial capital contains the debts, dues, credits and revenues that come from the physical capital.

Decision making process is constituted within a trilogy: (1) quality of life, (2) forms of production, and (3) future resource base (Table 4.17) and can be improved by feedbacks.²⁴⁸ Based on the observations during the training, holistic management approach has a potential to combine the theoretical studies with the practice of farmers and the decision-making process of local governors. Overall, Holistic Management needs to be improved by further scientific research, pilot studies and NGO-university collaborations. Anadolu Meraları claims that if all pastures in Turkey would be restored by the holistic grazing techniques, there would be 40.000.000 more sheepes on the pastures. Holistic Management can also be used as a basin management strategy.²⁴⁹

²⁴⁸ Ibid.

²⁴⁹ Dudu, “Başka Bir Mera Mümkün Mü?” 2018.

Table.4.17. Decision Making Context Example²⁵⁰

| | |
|---|--|
| Context: Informing and encouraging farmers for pasture reclamation by Holistic Management to protect the biodiversity and increase the rural development | |
| QoL (Quality of Life) | FoP (Forms of Production) |
| Taking responsibility to find solutions and error the corrections | Research, education, thesis, presentations, statements of opinions |
| Enhancing rural and urban environments | Project groups or technical teams |
| Enhancing rural development | Informing the investors for pilot projects |
| Preventing rural-urban migration | Informing the groups that can be added to “Common Pasture Production Associations” |
| Protecting the biodiversity | Holistic Management for pasture reclamation |
| FRB (Future Resource Base) | |
| Safe, healthy, peaceful rural and urban environments | Successful Holistic Management and restorative farming applications |
| Better applications, better farming, husbandry and apiculture activities, better soil contains higher C and water retention capacity by embedding more OM | Decreasing rural-urban migration, increasing urban-rural remigration |
| High qualified farmers, enhanced rural development, enhanced rural income, high quality and healthy products (grassfat animals) | Achieve ecological, social and economic sustainability |
| Richer biodiversity, flora and fauna | Common Pasture Production Associations, volunteer pools, investors |

In brief, this section revealed the restorative farming methods and the holistic grazing management process as a solution to eliminate the conflicts at the pastures. Due to the changing legislations and practices that affect the rural life and the grazing activities and pasture and grazing management became one of the vital issues throughout the history, which have both technical and governmental dimensions. Overgrazing is one of the main conflicts on the pastures, which is directly related to the grazing period and frequency. Holistic Grazing Management suggests mobile paddock systems. Similar methods are used and continue being used in several regions as an *implicit knowledge* of the farmers throughout history in Turkey (e.g. grazing system in Ottoman Period, grazing systems in Erzurum-Kars region and Datça Taşlıca Village).

²⁵⁰ Personal Archive, Holistic Management Training, March 2017, İstanbul.

CHAPTER 5

METHODOLOGY

As discussed previously, pastures are the rural-ecological commons, which have multifaceted conflicts. However, there is not much available accurate data about the current situation of the pastures. The research questions of the study ask “what” and “how” questions; therefore, the research design is qualitative.

In qualitative research, the relation of the subject with the object is stronger than the quantitative research. A well-known method in the qualitative research is participant observation for who search to study by looking at the eye of the studied. Another commonly used method is unstructured interviewing which provides liberty to the interivewees by minimal guidance. Life history and group discussion are the other methods of the qualitative research. One of the intellectual pioneers of the qualitative research approach among the the phenomenology and symbolic interactionism is Max Weber’s idea of *Verstehen* which means, “To understand” in German.²⁵¹ *Verstehen* means an interpretive understanding of social action to reach a causal explanation.²⁵²

There are four forms of study in the qualitative research: (1) exploratory, (2) descriptive, (3) explanatory; and (4) interpretive.²⁵³ Exploratory research looks for the patterns, ideas or hypothesis rather than research, which tries to test or confirm a hypothesis.²⁵⁴ Exploratory research aims to explore what is happening and it can be conducted by: (1) a search of the literature; (2) talking to experts in the field; and (3) conducting focus group interviews.²⁵⁵ Exploratory case studies allow researchers using an existing dataset and/or constructing a new one by a small number of cases and variables of interest to gain in-depth knowledge of the issue as well as one or few cases.²⁵⁶

²⁵¹ Max Weber and Karl Emil Maximilian, *From Max Weber: Essays in sociology*, translated, edited and with an introduction by HH Gerth and C. Wright Mills. Kegan Paul, (1947).

²⁵² Alan Bryman, *Quantity and quality in social research*, (Routledge, 2003).: --

²⁵³ Joseph A. Maxwell, *Qualitative research design: An interactive approach*, vol. 41. (Sage Publications, 2012).

²⁵⁴ W. Paul Vogt and R. Burke Johnson, *Dictionary of Statistics & Methodology: A Nontechnical Guide for the Social Sciences: A Nontechnical Guide for the Social Sciences*, (Sage Press, 2011).

²⁵⁵ David E. Gray, *Doing research in the real world*, (Sage Press, 2013).

²⁵⁶ John Gerring, *Social science methodology: A unified framework*, (Cambridge University Press, 2011), 53.

Therefore, the phenomenon in this study requires exploratory research, which aims to explore what is happening. However, there are several validation problems in qualitative research such as: (1) the problem of interpretation; (2) the problem of connection between theory and research; and (3) the problem of generalization. To prevent these problems, methodological pluralism, which is the combination of the qualitative and quantitative research techniques, can be helpful. For example, a study within the tradition of qualitative research can also use some survey procedures. Another solution can be the methodological triangulation, which follows different paths to examine the same problem. With the help of these methods, the validity of research increases by confirmation.²⁵⁷

In this study, combination of the four datasets: (1) interviews with large number of open-ended and close-ended questions; (2) media search; (3) case study; and (4) a model conducted by pasture dimensions' dataset can be the example of the methodological triangulation. Briefly, this study aims to increase its validity by using methodological triangulation.

The empirical research of this study is based on an in-depth qualitative study, which includes snowball interviews, in-depth interviews, media search and case studies in İzmir. The first phase of the study is the extensive research, which aims to explore the scope of the issues about the pastures. The second phase of the study is the intensive research, which depends on the in-depth interviews and case studies, which aims to disclose the main conflicts on the pastures in İzmir. The following part reveals the research phases, data sources and limitations.

5.1. Research Design

This study aims to provide the information about the current conflicts on the pastures and underline the gaps between existing planning literature, legislations and rural development practices, and develop some planning policies about the pastures. Particular focus of the study is to determine the conflicts on pastures in İzmir from different perspectives (e.g. professionals, users, media) for identifying the causes of conflicts by using the eDPSIR causal analysis framework. Integration of the eDPSIR

²⁵⁷ Bryman, *Quantity and Quality*.

framework by the pasture dimensions may help the decision-making process because the framework is convenient to illustrate socio-economic dynamics between driving forces, pressures, state changes, impacts and social responses to the pasture change or loss.

5.1.1. DPSIR Model Framework

DPSIR (Driving force - Pressure - State - Impact - Response) is a causal process model used by European Environmental Agency (EEA) in its reporting activities, which is evolved from Organization for Economic Cooperation and Development's PSR model and United Nations Commission on Sustainable Development's DPR model.²⁵⁸ The scheme is a functional analysis tool to analyze the economical, social and natural systems, to identify the relations, policy options, and to evaluate responses.²⁵⁹

One of the main purposes for using DPSIR model is the organization of the information to communicate with the policy-makers.²⁶⁰ There are two approaches of DPSIR framework: (1) state/impact oriented and (2) pressure-based, driver-oriented. First focuses on the social responses to environmental state and impacts, while second focuses to monitor the pressures caused by the socio-economic driving forces. Pressures are usually imperceptible until there is an impact on the environment and the society, so the responses become reactive, rather than proactive. As physical changes, state and impacts are easier to grasp than the background dynamics of the pressures and the driving forces. Therefore, to eliminate the root causes, "pressure-based, driver-oriented" approach is more favorable.²⁶¹ Focusing on the root causes in the socio-economic system may minimize the loss of pastures before the pressures change the state of the environment.

Environmental dimensions provide information for (1) driving forces, the resulting environmental (2) pressures on the (3) state of the environment and (4) impacts resulting from changes in environmental quality and the societal (5) responses to these

²⁵⁸ EEA Report, *Environmental indicators: Typology and overview* (Copenhagen: European Environment Agency, 1999): 19.

²⁵⁹ Ness et.al. "Multi-level DPSIR framework," 479-488.

²⁶⁰ Laura Maxim et.al. "An analysis of risks for biodiversity under the DPSIR framework." *Ecological Economics* 69.1 (2009): 12-23.

²⁶¹ Shu-dong Zhou et.al. "Assessing agricultural sustainable development based on the DPSIR approach: case study in Jiangsu, China." *Journal of Integrative Agriculture* 12.7 (2013): 1292-1299.

changes. This framework is useful to describe the relationships and consequences of environmental problems.²⁶² However, DPSIR approach is criticized because of being a “mechanistic oversimplification” about the parameters, which can be both response and driving force at the same time. This framework helps to understand the environmental impacts caused by the socio-economical driving forces; however, it may not be adequate to grasp all the multi-dimensional and multi-level relationships, e.g. global climate change.²⁶³ Figure 5.1 shows the DPSIR model scheme used by EEA.

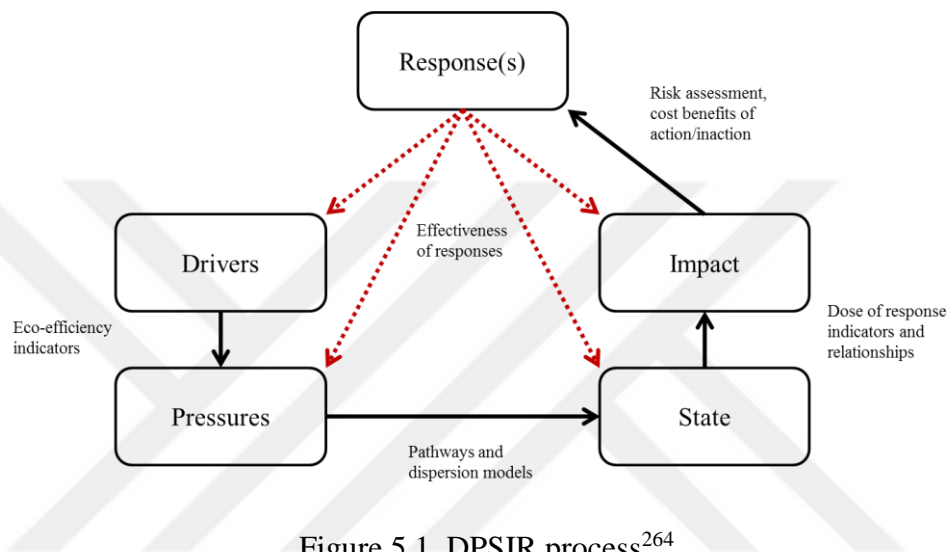


Figure 5.1. DPSIR process²⁶⁴

DPSIR model is taken as the base model and be enhanced in this study because it leads the process to the environmental dimensions (Figure 5.2). DPSIR is chosen also because of being a framework, which provides simplification to be understandable for policy makers and has a communication value. DPSIR theoretically provides the best insight into causality and accelerates the policy-making processes by easy feedbacks. In addition, DPSIR is available *to be developed* by systems analysis methods, cumulative causation, and nested domains, focusing on the environmental indicators.

Especially the natural assets and ecological commons, actors, power relations and social strategies strongly link to D-P process. Geography function and spatial strategies link to the process, which takes a pause in R stage for feedback.

²⁶² EEA Report, “Environmental indicators,” 19.

²⁶³ Ness et.al. "Multi-level DPSIR framework," 479-488.

²⁶⁴ EEA Report, “Environmental indicators,” 19.

DPSIR dimensions aim to simplify the complex reality, focus on the relevant data, and improve the communication between the aspects of natural species and the environmental system. Environmental dimensions are used for three main purposes: (1) to provide information about the environmental problems; (2) to support policy development and priority settings; (3) to monitor the effects of the policy responses to raise public awareness on environmental issues to increase the public support in policy-making processes.²⁶⁵

In this study, the data gathered from the interviews, document analysis, media search and case studies are evaluated by using content analysis to explore the pasture dimensions as a base for the eDPSIR framework.

5.1.2. DPSIR Model Development

As mentioned before, DPSIR model has a potential to be developed. There are several previous studies on DPSIR in order to attempt to create an enhanced DPSIR framework by supporter methods and methodological pluralism (Table 5.1). Some of the previous studies attempted to create an enhanced DPSIR model by using several techniques and combinations.

The study of Miokovics et.al.²⁶⁶ has a conservation biologist approach on the wetlands in Hungary. The study is based on the state-change of habitats. Laws, programmes and agri-environmental supports (R) were formed in the last decade to manage the grasslands by grazing to cultivate the arable land in an ecological way. Finally, the study reveals that a DPSIR framework could be effective to grasp the relations between complex factors and to determine landscape change.

The study of Niemeijer & Groot²⁶⁷ aims to create causal networks rather than causal chains, to apply systems thinking and to prevent over-simplification. The study suggests an enhanced DPSIR framework by using pressure interface and key nodes including root nodes, central nodes and end-of-chain nodes. The model used in the study is adapted to the pastures in this study. The study of Jago-on et.al.²⁶⁸ aims to prevent the

²⁶⁵ EEA Report, “*Environmental indicators*,” 19.

²⁶⁶ Eszter Miokovics, Judit Bodis and Zsolt Molnar, “Analysis of landscape change in the Nagyberék (Somogy, Hungary) with the DPSIR Framework,” *Nature Somogyiensis, Kaposvar* 24 (2014): 5-16.

²⁶⁷ Niemeijer and Groot, “From causal chains to causal networks,” 89-106.

²⁶⁸ Karen Ann Bianet Jago-on et al., “Urbanization and subsurface environmental issues: an attempt at DPSIR model application in Asian cities,” *Science of the total environment* 407.9 (2009): 3098-3104.

groundwater subsidence, flooding and contamination. They made timeline comparisons into DPSIR framework and have three stage responses: quantity, quality, and complex stages to anticipate effects of urban development on the subsurface environment.

The study of Maxim et.al.²⁶⁹ aims to eliminate the lack of clarity, adding political sphere to economic, ecologic and social aspects of sustainability by four spheres framework and cumulative causation.

Table 5.1. Previous studies on DPSIR model development

| Author | Year | Topic | Methodology | Finding |
|-----------------------------|------|--|--|---|
| Miokovics et al. | 2014 | Analysis of landscape change in the Nagyberék (Somogy, Hungary) | DPSIR framework | Grasping the relations btw complex factors |
| Niemeijer and Groot | 2008 | Framing environmental indicators: moving from causal chains to causal networks | eDPSIR Causal networks | Enhanced DPSIR framework, pressure interface, key nodes |
| Jago-on et.al. | 2008 | Urbanization and subsurface environmental issues: an attempt at DPSIR model application in Asian cities | DPSIR framework & timeline comparisons | 3 stage responses: quantity, quality, complex stages to anticipate effects of urban development on the subsurface environment |
| Maxim et.al. | 2009 | An analysis of risks for biodiversity under the DPSIR framework | DPSIR & Four Spheres Framework | Cumulative causation on ALARM project |
| Ness et.al. | 2010 | Structuring problems in sustainability science: the multi-level DPSIR framework | DPSIR & Hagerstrand system of nested domains | Multi-level structure on HELCOM project |
| Tscherning et.al. | 2011 | Does research applying the DPSIR framework support decision making? | DPSIR, Conceptual frameworks | eDPSIR on SENSOR project |
| Zhou et.al. | 2013 | Assessing agricultural sustainable development based on the DPSIR approach: case study in Jiangsu, China | DPSIR framework & timeline comparisons | Indicators, 3 years timeline, pilot studies in Jiangsu, China |
| Azarnivand and Chitsaz | 2014 | Adaptive policy responses to water shortage mitigation in the arid regions – a systematic approach based on eDPSIR, DEMATEL and MCDA | eDPSIR causal networks, DEMATEL, MCDA | Key APRs to mitigate water shortage, a robust technique to improve quantitative network analysis of environmental indicators |
| Hazarika and Nitivattananon | 2016 | Strategic assessment of groundwater resource exploitation using DPSIR framework in Guwahati, India | DPSIR Framework & household surveys | Conclusions and recommendations on the groundwater resource exploitation in India |

The study of Ness et.al.²⁷⁰ aims to create a multi-level perspective, cross-scale interactions and improve the actor level by two methods: DPSIR and Hagerstrand system of nested domains.

²⁶⁹ Laura Maxim, Joachim H. Spangenberg and Martin O'Connor, "An analysis of risks for biodiversity under the DPSIR framework," *Ecological Economics* 69.1 (2009): 12-23.

²⁷⁰ Ness et.al. "Multi-level DPSIR framework," 479-488.

The study of Tscherning et.al.²⁷¹ aims to support decision making by conceptual frameworks of an eDPSIR framework. The study of Zhou et.al.²⁷² aims to assess the sustainable development of agriculture in Jiangsu, China by DPSIR timeline comparisons. The study of Azarnivand and Chitsaz²⁷³ aims to provide effective law enforcement, updating the standards and regulations, providing social learning, and boosting stakeholders' collaboration by integration of eDPSIR with DEMATEL and MCDA techniques for water shortage mitigation in Iran. The study of Hazarika and Nitivattananon²⁷⁴ focuses on a DPSIR model application on groundwater storage and accessibility in India and specify DPSIR factors by using data gathered from 150 household surveys.

Previous studies verify that DPSIR is an explanatory model, which provides simplification for causality and easy feedbacks. In addition, it can be developed with other qualitative and quantitative methods such as Hagerstrand system of nested domains, timeline comparisons, quantitative techniques and surveys.

In this study, DPSIR causal analysis framework is also developed better embracement within the planning and design spheres. DPSIR model contains the steps of the driving forces, pressures, state, impacts and responses, all of which can be analyzed within the sustainability concept that is strongly related to the pastures as the rural-ecological commons. Pastures has ecological, economic and social values affected by the social strategies, power relations, local governments, investors, enclosure movements, legislations, spatial strategies, geography function, climate and topography (Figure 5.2). Content analysis method is used to understand the main conflicts on the pastures and to specify the pasture dimensions for eDPSIR causal network analysis model. By the data gathered from the case study interviews, media analysis, and an expert opinion survey within a group consensus workshop, eDPSIR causal network model is generated (Figure 5.2-5.3-5.4).

In-depth interviews are made with the village headmen of the 50 villages in Aliğa, Bornova and Torbalı districts, which contain several land use conflicts and urban

²⁷¹ Karen Tscherning et al., "Does research applying the DPSIR framework support decision making?," *Land use policy* 29.1 (2012): 102-110.

²⁷² Zhou et.al. "Assessing agricultural sustainable development," 1292-1299.

²⁷³ Ali Azarnivand and Nastaran Chitsaz, "Adaptive policy responses to water shortage mitigation in the arid regions – a systematic approach based on eDPSIR, DEMATEL and MCDA," *Environmental monitoring and assessment* 187.2 (2015): 23.

²⁷⁴ Natasha Hazarika and Vilas Nitivattananon, "Strategic assessment of groundwater resource exploitation using DPSIR framework in Guwahati city, India," *Habitat International* 51 (2016): 79-89.

pressures. The aim for using DPSIR model in this study is organization of the information to communicate with the policy-makers, while supporting the decision-making process.

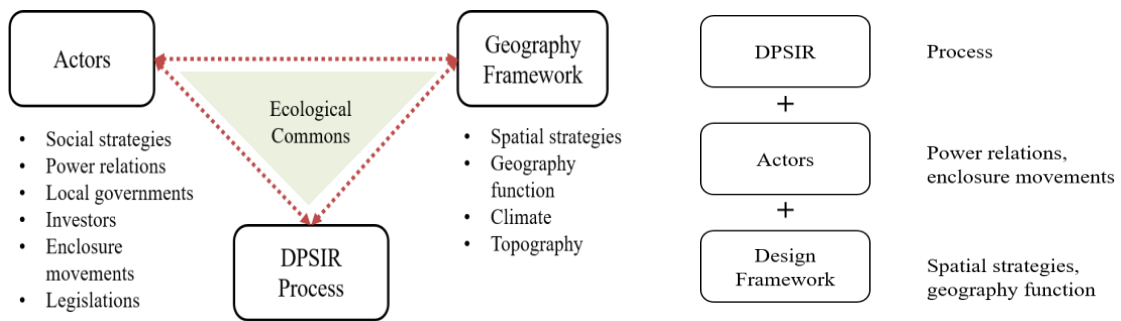


Figure 5.2. DPSIR framework of the commons

DPSIR model provides simplification. It is simple to understand for policy makers, which has a communication value. Theoretically it provides the best insight into causality and it accelerates policy making processes by easy feedbacks. In addition, DPSIR model is available to be developed. However, DPSIR model is mostly criticized by being a mechanistic over-simplification about the parameters and thus, it can be a subjective and it may ambiguate the process. This framework helps to understand the environmental impacts caused by the socio-economical driving forces, while it may not be adequate to grasp all the multi-dimensional relationships.

On the other hand, enhanced DPSIR causal networks model (eDPSIR) may give more insight, rather than DPSIR causal chain model (Figure 5.5). The model is enhanced by using “pressure interface”, an economic sector or human activity that causes a pressure on the environment; and “key nodes”, which are the nodes that have a higher integration with each other.

The term pressure interface means an economic sector or human activity which causes pressure on the environment and natural resources. The key nodes are divided into three by weighting of the incoming and outgoing arcs: (1) the *root nodes* are the reasons of many environmental problems, (2) the *central nodes* are important in terms of the web of causes and effects, and (3) the *end-of-chain nodes* are the nodes in which the effects of the multiple pressures become visible.²⁷⁵

²⁷⁵ Niemeijer and Groot, “From causal chains to causal networks,” 89-106.

For properly gathering and analyzing the data, the interviews, media analysis, workshops and surveys are equally important, as well as the personal observations in order to provide a methodological triangulation.



Figure 5.3. Interview with a village headman.²⁷⁶



Figure 5.4. Group Consensus Workshop, Ege University.²⁷⁷

²⁷⁶ Personal Archive, 2017

²⁷⁷ Personal Archive, 2018.

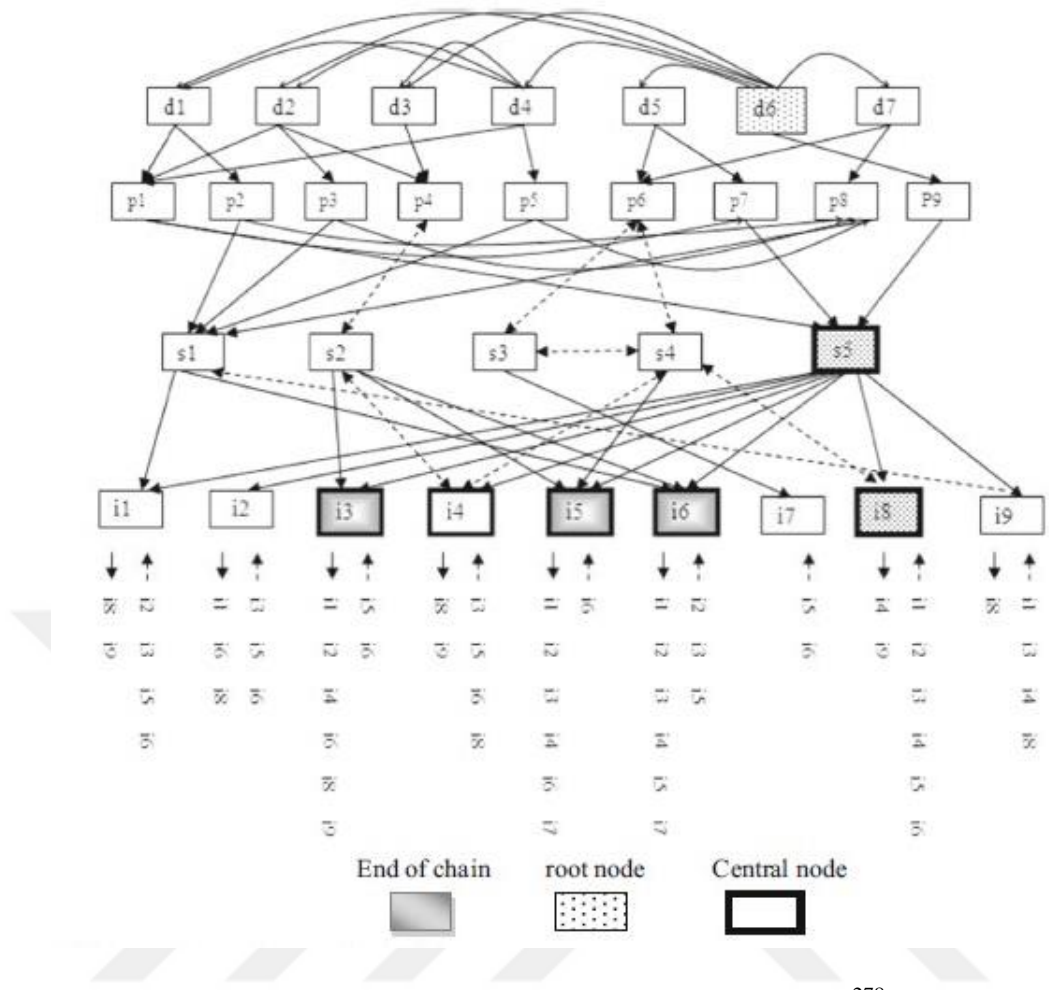


Figure 5.5. eDPSIR Causal Network Analysis.²⁷⁸

Dimensions of DPSIR model generally have an extensive scope containing all types of information within the socio-economic system and the ecosystem. Environmental dimensions of DPSIR are defined as follows:

Driving force: Dimensions reflect the human activities on the pastures that affect the environment, e.g. overgrazing, malpractices, land use, agriculture, forestry and waste. Pressure: Dimensions reflect the environmental stress caused by human activities in the rural area, e.g. desertification, ascending thorn population, degradation. State: Dimensions reflect the current physical, biological and chemical state of the environment, e.g. ecosystem, biodiversity, flora-fauna, water resource problems and invasion. Impact: Dimensions reflect the influences on the ecosystems, pasture quality, animal health, human built environment due to state changes, e.g. declining pasture quality, erosion, biodiversity loss, increasing CO₂ emissions, declining husbandry, less

²⁷⁸ Niemeijer and Groot, "From causal chains to causal networks," 89-106.

healthy animals, unhealthy products, need for forage crops, declining rural economy and the rural-urban migration. Response: Dimensions reflect social responses to the environmental issues, e.g. policies and strategies to improve pastures, litigations, legislations, civil acts.²⁷⁹

Table 5.2. MESA Dimensions.²⁸⁰

| Theme | Dimensions |
|----------------|---|
| Environment | Geography, Natural Resources, Climate, Soils, Water, Energy, Biodiversity |
| Economy | Population, Employment, Supply/Demand, Import/Export, Transportation, Infrastructure, Numbers of farmers (not included) |
| Socio-Cultural | Community, Culture, Public Health, Governance, Policy & Planning |
| Food | Production, Provisioning, Processing, Distribution, Consumption, Waste management, Numbers of animals (not included) |

Another dimension dataset example from Municipality Enabled and Supported Agriculture (MESA), Geographic Bioregion Context is in Table 5.2 includes environmental, economical, socio-cultural and food dimensions.²⁸¹

5.2. Data Sources

In this study, the data sources involve snowball interviews, in-depth interviews, personal observations, and secondary data such as maps, aerial photos, media and statistical data (Table 5.3). The primary data source is interviewing. There are three types of interviews: (1) non-structured snowball interviews to get primary information from the professionals, NGOs and the users of pastures; (2) semi-structured in-depth interviews to get information that is more accurate from professionals in academy, members of Pasture Commission and Research Institutes; and (3) in-depth interviews to get information from village headmen in 50 case study areas. Snowball interviews took approximately 30 minutes while semi-structured and in-depth interviews took approximately one and a half hour. Expert opinion surveys are taken approximately 3 hours. Secondary data are the relevant laws, dissertations, reports, aerial photos, maps and media and social media search. A media scanner company (MTM) searched the pastures in Turkey within annual web-based archives in 2012-2017. The news about the overall pasture lands in Turkey are

²⁷⁹ Zhou et.al. "Assessing agricultural sustainable development," 1292-1299.

²⁸⁰ Ibid.

²⁸¹ Fallick, "Strategies to enhance the integration of agri-culture with urban-culture."

categorized as positive and negative news and the ones, which have locational information, geographically marked on a conceptual map, which is shown in Chapter 6.

Table 5.3. Data Sources.

| METHOD | First Phase | Second Phase | Third Phase |
|------------------------------------|---|---|---|
| Literature Review | Review of articles, laws, reports, thesis and other secondary sources | Review of articles, laws, reports, thesis and other secondary sources | Review of articles, laws, reports, thesis and other secondary sources |
| Case Study | Pilot site visits to Torbalı, Menemen, Tire districts | - | Site visits to Aliğa, Bornova, Torbalı districts |
| Interview | 15 unstructured snowball interviews | 3 in-depth interviews with professionals | 50 in-depth interviews with village headmen |
| Media Analysis | Preliminary media search about conflicts on the pastures | - | Intense press and media search (MTM) for 5-year-period, main conflicts and potentials of pastures in Turkey |
| Observation / Participation | Conferences, symposiums, panels, site visits | Holistic Management training | Case study, panels, discussions, seminars, colloquiums |
| eDPSIR Model Application | - | Content analysis, pasture dimensions, preliminary DPSIR model application | Content analysis, pasture dimensions, group consensus workshop, eDPSIR causal analysis model application |

5.2.1. Interviews

During the early stages of the study, 15 unstructured snowball interviews and 3 semi-structured in-depth interviews are made with the participants of İzmir Provincial Pasture Commission, Universities, Residents, Public Institutions and NGOs. The first phase of the snowball interviews is unstructured and aimed to understand the conflicts by the interviewees' own stories, perceptions and relations to the pastures (APPENDIX A).

The second phase in-depth interviews with professionals, e.g. Academicians, Provincial Agricultural Directorate, and NGOs are semi-structured and aimed to understand the juridical, administrative and scientific processes and conflicts on the pastures (APPENDIX B).

Bornova, Torbalı and Aliğa districts in İzmir are chosen as the case study areas. Case study areas are located at the rural-urban fringe of İzmir, including 54 villages. Due to the time constraint the number of the districts are limited to three (3) and the number of the villages are limited to 50 among 54 due to several limitations. Observations from the pilot studies and the media analysis effected the choice criteria, as well as their locations at the rural-urban fringe, possible urbanization pressure and relevant conflicts.

Interviews with 50 village headmen (APPENDIX C) aim to understand the current situations, pressures and conflicts on the pastures. Information received from the interviewees in the text referenced by the codes at the list in APPENDIX D.

5.2.2. Observations and Participations

In terms of observations and participations, five pilot studies are made in Torbalı, Menemen and Tire districts before the case study areas in Bornova, Torbalı and Aliğa districts and conferences, symposiums, panels, and the first module of Anadolu Meraları Holistic Management training program, an association for the restorative farming and pasture reclamation by holistic management (Table 5.4).²⁸²

Table 5.4. Observations and Participations.

| | Program / Case | Date | Topic |
|------------------------|--|------------------|--|
| Observant | EcoDesign 2014 Conference, İstanbul | 15 April, 2014 | Participatory planning, environmental friendly productions, habitat protection, greenwashing problem and transparency concept as an alternative, sustainability dimensions (environment, economy and society) |
| Observant | Sustainable Development and Planning Symposium, İstanbul | 19 June, 2015 | Regional development in an integrated way as well as in accordance with the principles of sustainability, problems related to development and planning affect rural and urban areas, deterioration of the environment and loss of quality of life, aggravate problems faced by rural areas, resource optimisation, managerial strategies and assessment tools for policy and decision makers |
| Observant | Rural Development and Agricultural Cooperation Panel, İzmir | 14 June, 2016 | Think tanks about the problems and solutions of local rural development, reasons of inadequate cooperative actions and successful cooperation examples (e.g. Tire Milk Cooperative) |
| Pre-Site Visits | Göllüce, Torbalı, Yahşelli & Buruncuk, Menemen, Kireli Ova & Kırtepe, Tire | May-June, 2016 | Snowball interviews, site photographs, personal observations |
| Observant | Global Climate Change and Agriculture Symposium | 12 January, 2017 | Apiculture, insect fauna, holistic management and CO2 absorption, side effects of renewable energy resources on agriculture |
| Participant | Anadolu Meraları, Holistic Management Training, İstanbul | 4-7 March, 2017 | Holistic context and management, ecosystems processes, holistic grazing planning, decision making, holistic financial planning, holistic land planning, ecological observations |
| Case Study | Bornova, Torbalı and Aliğa villages | May-June, 2017 | Site visits, in-depth interviews with village headmans, site photographs |

(cont. on next page)

²⁸² Anadolu Meraları, Holistic Grazing Approach, accessed December 17, 2016, <http://anadolumera.com/yeni-egitimler/>.

Table 5.4 (cont.)

| | Program / Case | Date | Topic |
|-------------|---|---------------------|--|
| Participant | Conservation Symposium: Dialogue Between Past, Present & Future, Ankara | 26-28 October, 2017 | Dialogue within the habitat, natural and cultural assets under threat, ecological crisis, pastures as the ecological commons |
| Participant | World Urbanism Day 41 st Colloquium, Konya | 7-9 November, 2017 | Rural areas and regions in planning |
| Participant | GREDIT2018, Skopje | 22-25 March, 2018 | Sustainable development, renewable energy resources and management of the natural resources |
| Participant | International UnConference, Athens | 31 May-3 June, 2018 | Urban Struggles in Mediterranean Cities: The Right to the City and the Common Space |

5.2.3. Secondary Data

Secondary data contains the laws, reports, books, articles, dissertations, media analysis, social media search, and the statistical data from the relevant institutions (e.g. TURKSTAT).

Legislations include the 4342 numbered Pasture Law, 3402 numbered Cadastral Law, the 3091 numbered Property Law, the 5403 numbered Land Conservation and Land Use Law and Regulations (Savannah Protection Areas), the 6831 numbered Forest Law, the 3573 numbered Olive Grove Law, the 831 numbered Water Law, the 167 numbered Groundwater Law, Ramsar Contract, National Farming Project and 6360 numbered Metropolitan Law may protect pastures in Turkey.

There are also contradictory opinions (e.g. TBMM Commission Reports). Reports include technical reports, national reports and commission reports; statistical data include husbandry, migration and educational statistics. For media search, a media scanner company (MTM) searched annual web-based archives for five (5) years period by the keyword of “pasture land” in İzmir (2017).

5.3. Limitations

Main limitations of the study are the difficulties to the access to accurate information of the pastures. Because of the changing legal regulations, contradictory plans, inadequate mapping and the subjectivity of the interview participants, there is an

information absence. Written and visual data requested from İzmir Provincial Pasture Commission and Governorship of İzmir is rejected (APPENDIX E). Accurate land size and location data of the pastures in the case study areas are therefore unofficially gathered by personal contacts and various data sources.



CHAPTER 6

CASE STUDY

In this study, the techniques of document analysis, media search, snowball and in-depth interviews, personal observations and case study are used for data collection and evaluation. Three districts in İzmir that have several conflicts on pastures are selected for the case study. The research is qualitative and designed including research techniques and sources of data and information for the case study. Data from the relevant Laws, Research Institutes, Universities, NGOs, TURKSTAT and reports from public institutions are collected for the document analysis. Plans from İzmir Metropolitan Municipality, press releases and court decisions, photographs from pastures, and other documents from local institutions are collected.

Unstructured snowball interviews and semi-structured in-depth interviews are the two types of total 68 interviews in the study. Snowball interviews in chatting format approximately took 30 minutes, including several leading questions to grasp the importance, conflicts and scope of the pastures, and the connections between the interviewees. There were two types of in-depth interviews in semi-structured format applied including 14 questions for professionals and 29 questions for village headmen at the case areas (APPENDIX A-B-C).

According to TURKSTAT data (2017), there are approximately 52.000-55.000 ha. pastures in İzmir; however, this can be a misleading information. Total registered pastures and delimited pastures, according to *article 5b* are lesser than the numbers in TURKSTAT information system, because the system also includes other village common entities such as cemeteries, threshing floors into the pasture legend. The mistaken data may be the consequence of erroneous cadastral maps. Table 6.1 shows the General Agriculture Inventory in 2001.

Digitising studies by Provincial Directorate of Food Agriculture and Livestock, Pasture Department continue to have more accurate information of the pastures in İzmir. The results will be revealed in a web-based pasture information system (MERBIS). Pasture reclamation projects continue by Ministry; however, the number of technical staff is not sufficient. Construction, plowing and dibbling activities decrease the quality of

pastures. Provincial Pasture Commission evaluates the land allocation requests according to this quality lost. However, sometimes the most fertile pastures also face to land allocation, especially when it comes to mining (*article 14/a*), national security (*article 14/f*) and energy (*article 14/ğ*) investments.

Table 6.1. 2001 General Agriculture Inventory.²⁸³

| Province | Total number of settlements | Total area of settlements (ha.) | Permenant pasture (ha.) (<i>Daimi çayır</i>) | Pasture land (ha.) (<i>Otlak, mera</i>) |
|----------|-----------------------------|---------------------------------|---|--|
| Turkey | 3.746 | 66.881.992 | 1.449.312 | 13.167.374 |
| İzmir | 70.2 | 1.054.984 | 3.448 | 106.273 |

Especially in Aliğa, 75 allocation requests came from the mining sector, because there is a scarce mining resource (e.g. *basalt* in Aliğa). Eventually, pastures are sacrificed for the sake of national economy. Provincial Pasture Commission claimed that they decide the allocation acts after a careful investigation on a mine's performance and percentage in the country. In terms of land allocation demands, Aliğa is the first in İzmir, for the appropriation requests and acceptences.²⁸⁴

Other appropriation requests come from Bergama, Ödemiş, small plots at Kınık, Urla (4), Bayındır (1), Torbalı, Tire, Foça and Dikili. Main triggers of these allocation demands are wind energy investments (*article 14/ğ*), public investments (e.g. hospital, highway) and mining. Allocation demands are denser on the pastures, which are close to urban development; especially, towards the villages at the places close to the seaside, which has tourism potential and pressure.

After the enactment of the 6360 numbered Metropolitan Law, the 442 numbered Village Law abolished, and the rural development requests increased within the context of the articles *14/c* and *14/d*. Provincial Pasture Commission explicitly supports Municipalities to prepare development plans for rural neighborhoods to eliminate the degenerated pastures and to focus to the fertile ones for the reclamation. Every Municipality should embody "Pasture Agents" and harvest alternate products of each pasture (e.g. olive, pinus pinea products previously seeded by the villagers) and the collected revenues that can spend for the pasture reclamations. However, having benevolent Municipalities is a presupposition here, and until now, only Bergama

²⁸³ TURKSTAT, accessed 2017, <http://www.tuik.gov.tr/>.

²⁸⁴ Interviewee P_1, November 8, 2016.

Municipality took a step to constitute “Pasture Management Associations”. Torbalı, Dikili and Menderes Municipalities are also more sensitive about their pastures.

Technical teams from Pasture Department at İzmir Provincial Directorate of Food Agriculture and Livestock continue suggesting new pastures within the context of *article 5/b*, especially in Karaburun (19 in Bozköy; 32 in Haseki). Following the approval of the Revenue Office, pasture allocation actualize which is still expecting.

Requests for pasture allocation demands for other uses come from relevant Directorates such as Ministry of Energy. The primary requests are coming for the mines and quarries in Aliğa (*article 14/a*) and wind energy and bio-energy in Bergama, Çeşme and Aliğa (*article 14/ğ*). Due to the civil acts against wind energy, Energy Companies, do not prefer to invest there anymore in Karaburun. Provincial Pasture Commission claims that they prefer to approve wind energy projects, because unlike mining, they cover a smaller area without the serious destruction of the land where grazing activities may continue around. Complete recycling of the land after mining and quarry activities is almost impossible; and the recycling of land requires at least three years.²⁸⁵ According to the Table 6.2, total areal distribution of the pastures is 7.269,15 ha. in İzmir, while Bergama, Aliğa and Dikili have respectively the widest pastures in İzmir. Chosen case study fields are Aliğa, Bornova and Torbalı districts.

Table 6.2. Area distribution of pasture lands in İzmir.²⁸⁶

| DISTRICT | Residential (ha.) | Village Development (ha.) | Pasture (ha.) | Pasture – Forest (ha.) | Pasture – Settlement (ha.) |
|----------------|-------------------|---------------------------|-----------------|------------------------|----------------------------|
| Aliğa | 4.698,31 | 90,87 | 1.772,58 | 5,73 | 26,03 |
| Balçova | 517,61 | - | - | - | - |
| Bayındır | 1.333,14 | 273,45 | - | - | - |
| Bayraklı | 1.880,14 | - | - | - | - |
| Bergama | 2.292,62 | 2.043,52 | 2.004,41 | 11,96 | 1,37 |
| Beydağ | 183,18 | 384,88 | - | - | - |
| Bornova | 4.984,25 | - | 716,20 | 39,61 | 0,89 |
| Buca | 2.784,99 | - | - | - | - |
| Çeşme | 4.458,25 | - | 93,28 | 2,27 | - |
| Çiğli | 3.841,42 | 26,93 | 34,58 | - | - |
| Dikili | 2.260,95 | 309,56 | 1.338,75 | 4,77 | 60,81 |
| Foça | 2.289,23 | - | - | - | - |
| Gaziemir | 2.744,41 | - | - | - | - |
| Güzelbahçe | 713,76 | - | - | - | - |
| Karabağlar | 2.147,34 | 92,96 | - | - | - |
| Karaburun | 1.724,96 | - | - | - | - |

(cont. on next page)

²⁸⁵ Interviewee P_1, November 8, 2016.

²⁸⁶ İzmir Land Classification Report, 2013.

Table 6.2 (cont.)

| DISTRICT | Residential (ha.) | Village Development (ha.) | Pasture (ha.) | Pasture – Forest (ha.) | Pasture – Settlement (ha.) |
|----------------|-------------------|---------------------------|-----------------|------------------------|----------------------------|
| Karşıyaka | 1.860,21 | - | 251,08 | 0,45 | - |
| Kemalpaşa | 3.419,23 | - | - | - | - |
| Kınık | 503,49 | 229,02 | 173,76 | - | - |
| Kiraz | 333,41 | 3.329,34 | - | - | - |
| Konak | 2.255,86 | - | - | - | - |
| Menderes | 3.078,73 | - | 393,94 | - | - |
| Menemen | 3.190,31 | - | - | 14,94 | 4,31 |
| Narlıdere | 937,71 | - | - | - | - |
| Ödemiş | 2.635,30 | 1.632,51 | 162,68 | - | 4,31 |
| Seferihisar | 3.561,19 | - | - | - | - |
| Selçuk | 642,65 | 153,27 | - | - | - |
| Tire | 2.497,98 | 1.306,06 | 240,72 | - | - |
| Torbalı | 3.788,81 | - | 15,58 | 24,80 | - |
| Urla | 5.628,15 | 196,50 | 71,59 | 7,05 | 10,90 |
| TOTAL | 73.187,43 | 10.068,87 | 7.269,15 | 111,58 | 108,62 |

Population growth rate in İzmir is 13.4 per thousand in 2015. Population growth rates of districts are below between 2007 and 2005. Accordingly, Aliağa has the highest rate of 5%, following by Seferihisar, Güzelbahçe and Dikili. Torbalı has a moderate rate of 3.68% and Bornova has relatively lower rate of 1.25% among the districts.²⁸⁷

6.1. Case Areas

In this study, case study areas are the villages of Aliağa, Bornova and Torbalı districts in İzmir. Case study villages are chosen due to the possible urbanization pressure and relevant conflicts. Observations from the pilot studies and the media analysis effected the choice criteria, as well as their locations at the rural-urban fringe. Due to the time constraint the number of the districts are limited to three (3) and the number of the villages are limited to 50 among 54 due to several limitations.

There are 50 in-depth interviews with village headmen from 54 total rural neighborhoods (APPENDIX F). There are snowball interviews and semi-structured interviews with the primary agents such as, Provincial Pasture Commission members, agricultural engineers, professors, farmers, village headmen and planners helped to understand the legal and existing situations of the pastures within the case areas. Table 6.3 shows the husbandry statistics at 2017 in the chosen districts.

²⁸⁷ TURKSTAT, accessed 2018, <http://www.tuik.gov.tr/>.

Table 6.3. 2017 Husbandry Statistics²⁸⁸

| DISTRICT | Local Cattle | Water Buffalo | Livestock Cattle | Hybrid Cattle | Merino Sheep | Local Sheep | Hair Goat | Angora Goat | Apiculture (hive) |
|----------|--------------|---------------|------------------|---------------|--------------|-------------|-----------|-------------|-------------------|
| Bornova | 73 | 0 | 2.624 | 260 | 0 | 7.214 | 5.309 | 0 | 3.100 |
| Torbali | 0 | 0 | 25.665 | 585 | 0 | 24.125 | 9.454 | 0 | 11.485 |
| Aliğa | 2.145 | 0 | 2.205 | 2.135 | 0 | 27.810 | 5.924 | 0 | 3.309 |

The sheep and goat farming is one of the primary husbandry sectors in İzmir. In addition, there is a recent increase in the number of hives and apiculture activities. Overgrazing activities continue on several pastures, which reveal that there is an urgent need for pasture reclamation and grazing management. The following part reveals the evaluation of the data gathered from the in-depth interviews in the case study.

6.1.1. Bornova Villages

Bornova is one of the central districts of İzmir, which has 12 case villages among 12 villages with a population of 7.759 in 2017.²⁸⁹ During the case studies, I made in-depth interviews with the village headmen of Kayadibi, Çamiçi, Eğridere, Çiçekli, Yakaköy, Beşyol, Karaçam, Sarnıçköy, Laka, Kurudere, Kavaklıdere and Gökdere villages to understand the current situation and the conflicts on the pastures (Figure 6.1). Interview answers of the village headmen scored according to the frequency analysis.

According to the case studies, grazing activities in Bornova mostly continue on the public and forestry lands, as there are not many registered pastures. Therefore, many of the active pasturelands are not included in the map generated from the İzmir Land Classification Report due to the continuing determination studies by Provincial Directorate of Food Agriculture and Livestock (Figure 6.2).

According to İzmir-Manisa Planning Region 1/100.000 scaled Master Plan (2014) and İzmir Metropolitan Region 1/25000 scaled Master Plan (2012), pasturelands are shown within the “meadow-pasture” legend. Plan notes reveals that the meadow-pasture is the area determined and delimited by the 4342 Pasture Law for the grazing of the

²⁸⁸ TURKSTAT, accessed 2018, <http://www.tuik.gov.tr/>.

²⁸⁹ Ibid.

animals, utilization of the herbs and the areas that are used for these reasons since the ancient times (Figure 6.3-6.4).

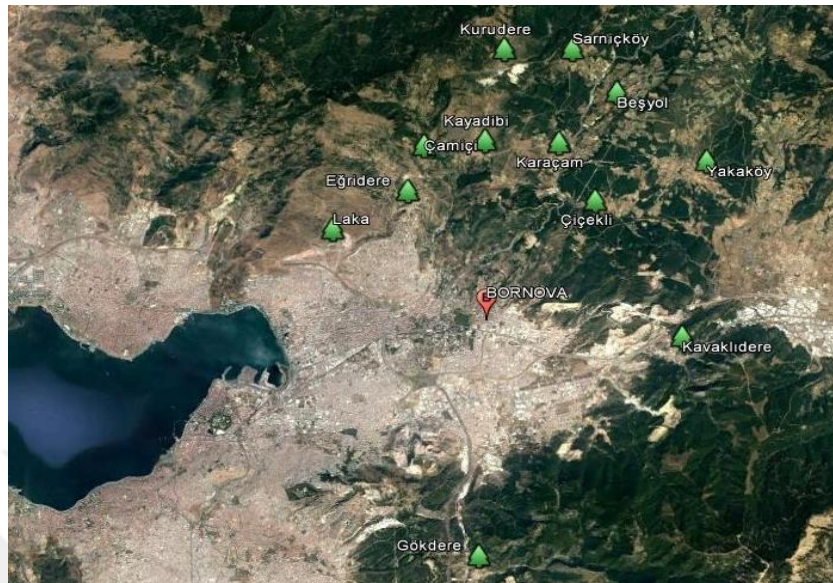


Figure 6.1. Bornova Villages.²⁹⁰

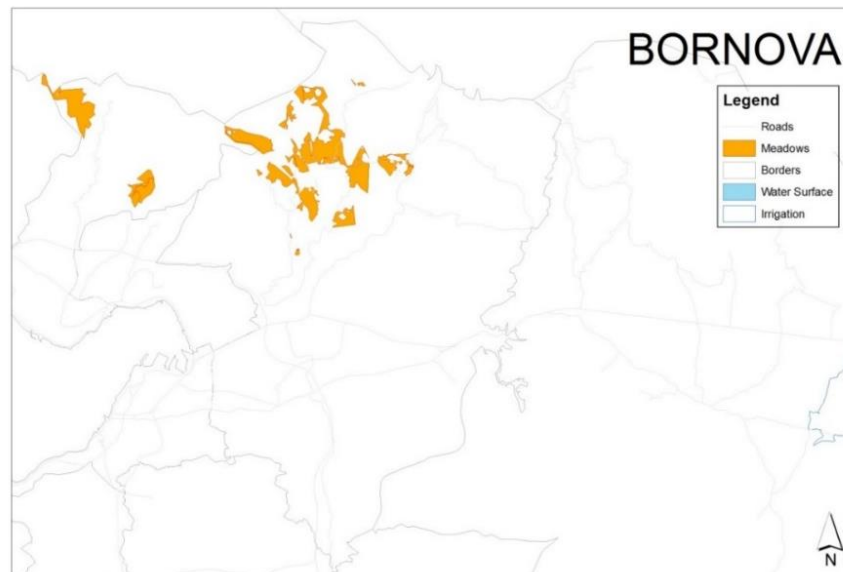


Figure 6.2. Pastures in Bornova.²⁹¹

²⁹⁰ Google Earth, 2017.

²⁹¹ İzmir Land Classification Report, 2013.

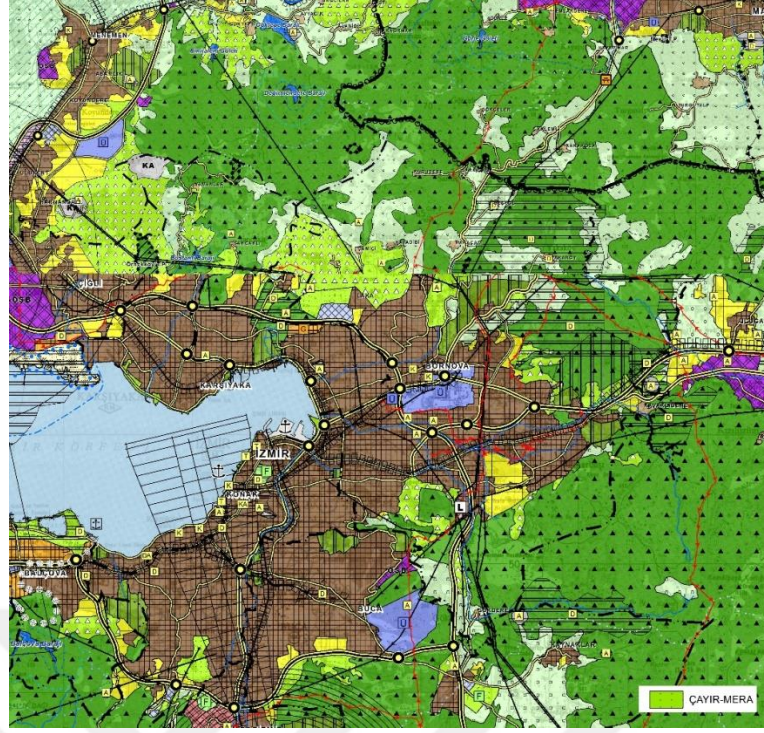


Figure 6.3. Bornova 1/100.000 scaled Master Plan.²⁹²

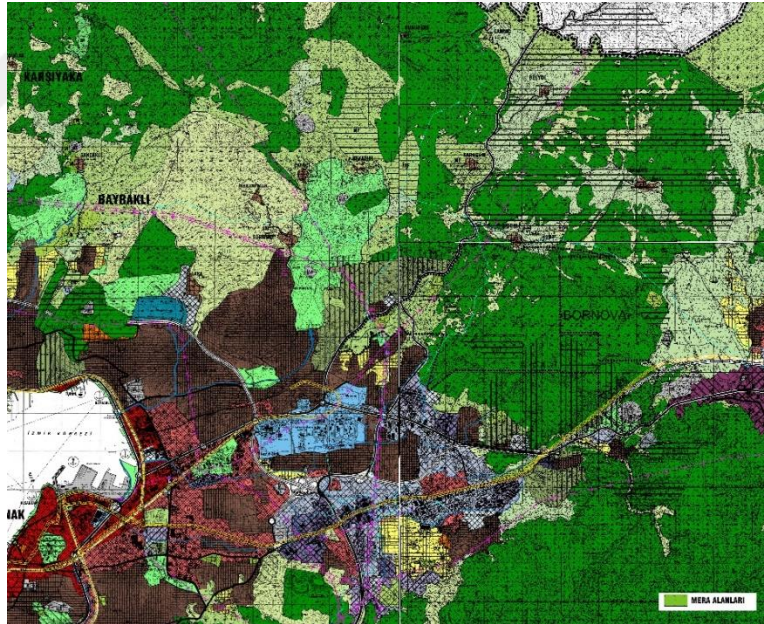


Figure 6.4. Bornova 1/25000 scaled Master Plan.²⁹³

²⁹² İzmir-Manisa Planlama Bölgesi 1/100.000 Ölçekli Çevre Düzeni Planı (2014), accessed July 11, 2018, <http://mpgm.csb.gov.tr/izmir-manisa-planlama-bolgesi-1-100.000-olcekli-cevre-duzeni-plan-i-82265>.

²⁹³ İzmir Metropolitan Municipality, 1/25000 Ölçekli İzmir Büyükşehir Bütünü Çevre Düzeni Planı (2012), accessed July 11, 2018, <http://www.izmir.bel.tr/>.

In Bornova, urbanization pressure and a shift from agriculture to tourism sectors are observed, parallel to the declining grazing activities since the last three decades and rural gentrification in terms of conflicts. In addition, there are quarries on a few grazing public lands of the villages, and recently the residents of Gökdere village, oppose a clay pit proposal, which is also precluded by an EIA report.

Several data from the interviews with the village headmen of Bornova district reveals in Table 6.4. Population loss reveals the dimension of rural-urban migration and the decrease in the agricultural sector. Animal number reveals the approximate number of sheep and goats (sg) and cattles (c) in the village. Pasture condition reveals if the pasture is registered (R), field size of the pastures (TKGM, 2018) and the physical conditions due to the geography and climate. Apiculture activities are also relevant with the fauna of the pasture. Conflicts and threats reveal the occupations and/or the qualification changes on the pastures. There is incoherence in the population of several villages.

One of the most common conflicts on the pastures is the overgrazing problem. The reasons of overgrazing problem are uncontrolled grazing with or without a shepherd, within no specific time limit for the rest of the pastures. None of the villages in Bornova has a grazing order about grazing seasons or periods. 50% of the grazing animals are the goats, 40% of the grazing animals are the sheep, and 10% of the grazing animals are mixed of cattle, sheep and/or goat. Private houses and barns occupy 33% of the pastureland. Animal barns were not forbidden before the enactment of the 4342 numbered Pasture Law in 1998. Husbandry activities are not enough for the economic adequacy of the villagers alone, thus, the 92% of the villagers have second jobs and the 83% of the villages have population loss and residents are moving to another place, while the 17% of the villages have a balanced population or in-migration.

Kayadibi Village is a mountain village, which has dense maquis shrublands and high slope combined by the pastures. According to H_1, olive grove is the main agricultural product in the village. There is no population loss as the out-migrated retirees come back to the village, in addition with the newcomers, who bring urban culture and may cause the rural gentrification. There is an inactive “Rural Development Cooperative” in Bornova. The head of the cooperative has a horse farm in the area, which has a high tourism potential. I observe serious urban invasion by touristic restaurants, horse farms and countryside wedding areas. Although, base economic sectors are still agriculture and

husbandry, tourism and service sectors are rising due to the proximity to the urban center of Bornova and Ege University. There is an inactivated quarry area, which is rehabilitated by Bornova Municipality.

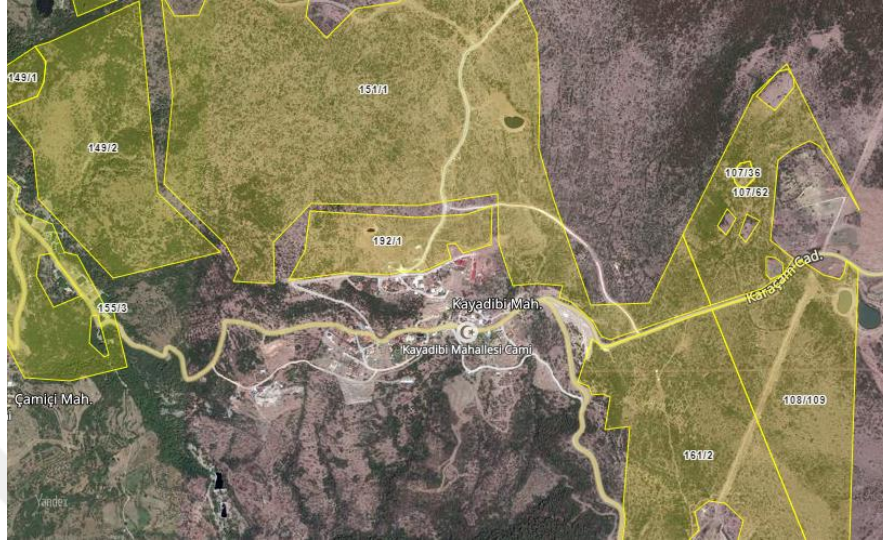


Figure 6.5. Pastures of Kayadibi Village, Bornova²⁹⁴

Çamiçi Village residents used to have sheep and goats up to 15.000-20.000 almost thirty years ago, according H_2. Currently there are approximately 700 sheep and goats and 40 cattles exist in the village. The registered pastures cover 700 ha. land; however, they are not very fruitful due to the mixture of the shrublands, forests and less precipitation. There is no population loss as most of the out-migrated retirees come back. There are few apiculture (honeydew honey) and grazing activities (5 families) because the forage crop is expensive. Most of the residents work as civil servants and workers outside the village. H_2 pointed out to the risks about the loss of pastures by new legislations, he was not hopeful about the agriculture, and husbandry sectors consolidate like 30 years earlier as there is not enough resource and effort in Bornova Rural Development Cooperative. H_2 said that during the crisis period, farmers sold the products to pay their credits; and now, they are hesitant about the subventions. Therefore, animal incentives cannot be enough unless the legislations change. H_2 emphasized that rural neighborhoods have different needs and should be treated

²⁹⁴ TKGM, 2018.

differently. I observed serious urbanization pressure as the area includes Homeros Valley, a touristic attraction center including horse farms, restaurants and wedding gardens.



Figure 6.6. Pastures of Çamiçi Village, Bornova²⁹⁵

Eğridere Village has a superior husbandry potential with approximately 3000 sheep and goats and 1500 cattles. According to H_3, there were 30.000 sheep and goats in 1980s. The pastures cover 104.8 ha. land; however, they are not very fruitful due to the forestry, erosion and less precipitation. There are pastures occupied by the private houses. There is no population loss as out-migrated retirees come back. There are apiculture activities. However, the farmers cannot gain adequate profit through the husbandry sector because the marketing price of the milk is very cheap (one lt goat milk is 2 TL in 2017). Therefore, a second job rather than husbandry is obligatory. There is an in-migration from Eastern regions of Turkey (e.g. Kars, Ağrı, Sivas). According to H_3, the “Rural Development Cooperative” is on paper without any activity. If the producers’ union enlarges, cooperative gains favor; however, there is lack of resource, education and cooperation capacity. The producers are not supported. There is no more services of legal entity and land leasing revenues due to the legislations. Shepherd holiday and hıdırellez used to be celebrated annually on the pastures until the last decade. Pasture users want to enlarge the current artificial pond. Husbandry activities are shrinking due to the input

²⁹⁵ TKGM, 2018.

sheeps and goats and 150 cattles, which used to be much more. There are scarcely any husbandry that support the village economy. There are few apiculture activities. The proximity to the urban center and increasing tourism activities effect the village in addition with the very limited agricultural potential. H_4 applied to Provincial Agricultural Directorate for berry gardens and sericulture on the abandoned pastures. The village is vivacious for tourism and there are many villas, which is an indicator of the rural gentrification. Base economic sector shifts from agriculture to tourism and services. According to H_4, the pasture capacity is inadequate for grazing.

Yakaköy Village used to have husbandry activities up to 20.000 animals, which remained approximately 500 sheeps and goats, and 100 cattles. There is no registered pastures. Forestry and public grazing lands are used for the scarcely any husbandry, which cannot support the village economy. Husbandry is a secondary job. There are lands turned into forestry and special afforestation lands (walnut, almond). H_5 reveals that at the period when the goats were abandoned to pass to the forestry, many farmers sold their animals. There is a quarry on the forestland. There is in-migration mostly from central Bornova, Black Sea and Middle Anatolia regions, especially by the workers of industry in Kemalpaşa, university professors (Ege University) and retirees. There is a transition from agriculture to daily tourism, especially daycation. H_5 reveals that, although, the municipality supports cooperations; collective practice is not familiar for (Turkish) people. According to H_5, the demand for husbandry decreased in the village although there is a University including Faculty of Agriculture in the district. Chamber of Agriculture is recently constituted. Including Ege Yörükleri Derneği, all these institutions have a potential for a collaborative work. H_5 reveals that, we should sustain the unique “Anatolian black goat”; otherwise, we will start to import meat soon.

Beşyol Village has approximately 450 sheeps and goats, and unknown or no cattles according to H_6. There are few registered pastures partly occupied by one private house. Grazing activities continue mostly on the forestry and public lands. Land is not fruitful due to less precipitation. There are population fluctuations between the district center and the village and in-migration from the city center. There are few apiculture activities. According to H_6, agriculture and husbandry activities in the village are disappearing, especially due to the population increase. There is no benefit from any subsidy as there are title-deed problems. If government subsidy the cooperative and the cooperative subsidy the producer, then cooperations may be successful.



Figure 6.9. Pastures of Beşyol Village, Bornova.²⁹⁸

Karaçam Village has 1000 sheep and goats, and 150 cattles, which used to be ten times more in 1980s. There are registered pastures occupied by the private houses. There is approximately 118,2 ha. pasture, which is not fruitful due to the cliffy and rocky land. There is no population loss as the university professors and soldiers settle in the village as it is close to the city center. There is a cooperative for 3 years; however not enough production. According to H_7, there should be local and organic production; however, the villagers and especially younger generations are not willing to produce. There are apiculture activities supported by Bornova Municipality. However, there is lack of animal subsidy as they are usually given to Tire. H_7 claims that he prefers to subsidy nursery garden rather than husbandry.

Sarıçköy Village has 2000 sheep and goats, and 100 cattles. There is no registered pastures, forestry and public land are used for grazing activities. Husbandry is crucial for rural development; however, farmers cannot gain enough profit from it and agricultural lands are not fruitful due to the less precipitation. Husbandry activities are adequate as there is cold chain and goat milk and cheese production. Health and education services in the village are inadequate due to lack of public transportation, which also result in population loss. According to H_8, pasturelands should be prevented from all kinds of enclosure and land rent; as these are the last green lands to be left in İzmir. For a better husbandry, ponds are crucial and they can build an artificial pond by Kurudere stream. I observed that Sarıçköy and its neighbor Kurudere villages are interoperable. Sarıçköy is isolated than the other villages, whereas it has a high integration with Kurudere village.

²⁹⁸ TKGM, 2018.

observations, there are many signboards of sale on the lands between Kurudere and Sarnıçköy, which can be a hint about the rural-urban migration.



Figure 6.11. Pastures of Kurudere Village, Bornova.³⁰⁰



Figure 6.12. Quarry at Kurudere Village, Bornova.³⁰¹

Kavaklıdere Village has approximately 150 sheep and goats, and no cattles. Goats usually graze on the forests. The village is mostly urbanized. There will be a second school in a few months. There is in-migration from East Anatolia and Blacksea regions and Syrian refugees. There are apiculture activities and a quarry on the forestry land. According to H_11, the only successful production in a cooperative is apiculture. Therefore, there is a project for “bee/honey forest”, which the Regional Directorate of

³⁰⁰ TKGM, 2018.

³⁰¹ Personal Archive, 2017.

Forestry did not accepted yet. Husbandry is not adequate for financial income of the residents and there is no registered pasture. The 60% of the grazing lands belongs to forestry and 40% of the grazing lands belong to public treasury. According to my observations, Kavaklıdere is the most urbanized village among the other villages I visited.

Gökdere Village has approximately 300 sheep and goats, and 15 cattles. There is no registered pasture. The grazing activities continue on the forestry and public lands. The lands are fertile; however, the financial profit of the husbandry is not adequate. There is no population loss. The newcomers mostly work around the village. There are apiculture activities. There is a quarry on the forestry land. There is a cadastral study, which can be a hint for a future development plan in the village. According to H_12, there are projects of Rural Development Cooperative such as the olive oil factory in Gökdere, fertilizer facility in Eğridere, cold chain in some common place, which are not applied yet. Acacia (apiculture) and berry (sericulture) trees are planted to improve the rural economy. Kaynaklar and Gökdere residents prevent a clay pit attempt with the help of EIA report. However, the land is still under the risk of allocation. An old quarry land is rehabilitated by Bornova Municipality.

Bornova villages' data gathered from the interviews reveals the population decrease/increase, number of animals, conditions of the pastures, existence of apicultural activities, main conflicts and views from the villages. Population data gathered from the village headmen is crosschecked by TURKSTAT, 2017 population data, which is shown in brackets. H_n (n as the number of the village visited) encodes the name of the village headman (Table 6.4).

One of the most common conflicts on the pastures in Bornova is the qualification change due to the accepted demands for other uses, mostly mining and energy sectors. The reasons of the pasture qualification changes are observed according to the content analysis (Figure 6.13).

Table 6.4. Bornova villages' data gathered from the interviews, 2017.

| No. | Village | Pop. | Pop. Loss | Animal Num. | Pasture (ha.) | Apic. | Conflicts | View From the Village |
|-----|-------------|-------------|-----------|-------------------|---------------|-------|---|---|
| 1 | Kayadibi | 150 (135) | No | - | 307.4 | Yes | Drought, urbanization |  |
| 2 | Çamiçi | 300 (242) | No | 700 sg 40 c | 266.5 | Yes | Shift from agriculture to tourism | |
| 3 | Eğridere | 1004 (1318) | No | 3000 sg 1500 c | 104.8 | Yes | Occupation by village houses |  |
| 4 | Çiçekli | 450 (346) | No | 30 sg 150 c | 2.2 | Yes | Occupation by village house/barn, agricultural use | |
| 5 | Yakaköy | 1300 (1058) | No | 500 sg 100 c | - | Yes | Quarry |  |
| 6 | Beşyol | 500 (278) | No | 450 sg - c | 1.2 | Yes | - | |
| 8 | Sarnıçköy | 45 (42) | Yes | 2000 sg 100 c | - | Yes | Macquis, forestry |  |
| 9 | Laka | 400 (406) | No | 750 sg 0 c | - | Yes | Public investments (highway, hospital) on pastures, urbanization pressure |  |
| 10 | Kurudere | 90 (45) | Yes | 2000 sg 65 c | 22.8 | Yes | Quarry |  |
| 11 | Kavaklıdere | 4000 (2952) | No | 150 sg 0 c | - | Yes | Quarry, forestry |  |
| 12 | Gökdere | 400 (367) | No | 300 sg 15 c | - | Yes | Quarry, Public land, forestry |  |

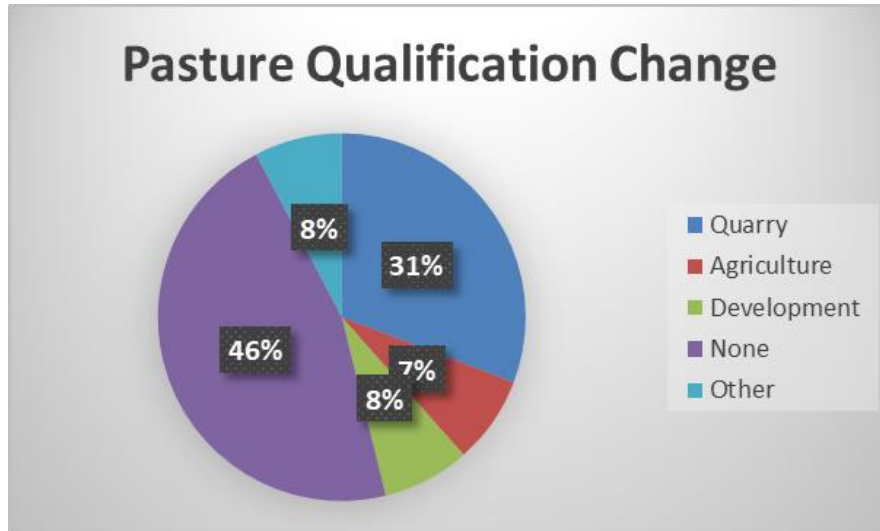


Figure 6.13. Pasture qualification change, Bornova.

According to the frequency of the village headmen's answers, the primary land grabs come from quarries (31%), private houses or barns (8%), other public investments such as highway construction (8%) and agricultural activities (7%). Moreover, the primary conflicts in Bornova villages are the urbanization pressure, housing occupation and the quarries. In addition, daily tourism activities result in a shift from agriculture sector to service sector.

6.1.2. Torbalı Villages

Torbalı district is located at the southeast of İzmir with a population of 10.830 in 2017,³⁰² and has 23 villages (Figure 6.14). During the case study, 21 in-depth interviews are made among the 23 headmen of Yeşilköy, Demirci, Yoğurtçular, Dağtekke, Ormanköy, Karakızlar, Karaot, Çamlıca, Helvacı, Taşkesik, Çakırbeyli, Bozköy, Saipler, Korucuk, Arslanlar, Sağlık, Tulum, Yeniköy, Ahmetli, Göllüce, and Dağkızılca, to understand the current situation and the conflicts on pastures. Unconvenience of the village headmen of Düverlik and Kaplancık was one of the limitations. Interview answers of the village headmen scored according to the frequency of the answers. Due to the continuing determination studies by Provincial Directorate of Food Agriculture and

³⁰² TURKSTAT, accessed 2018, <http://www.tuik.gov.tr/>.

Livestock, many of the active pasturelands are not included in the map generated from the İzmir Land Classification Report (Figure 6.15).

According to İzmir-Manisa Planning Region 1/100.000 scaled Master Plan (2014) and İzmir Metropolitan Region 1/25000 scaled Master Plan (2012), pasturelands are shown within the “meadow-pasture” legend. Plan notes reveals that the meadow-pasture is the area determined and delimited by the 4342 Pasture Law for the grazing of the animals, utilization of the herbs and the areas that are used for these reasons since the ancient times (Figure 6.16-6.17).

Several data from the interviews with the village headmen of Torbalı district reveals in the tables below. Population loss reveals the dimension of rural-urban migration and the decrease in the agricultural sector. Animal number reveals the approximate number of sheep and goats (sg) and cattles (c) in the village. Pasture condition reveals if the pasture is registered (R), field size of the pastures (TKGM, 2018) and the physical conditions due to geography and climate. Apiculture activities are also relevant with the fauna of the pasture. Conflicts and threats reveal the occupations and/or the qualification changes on the pastures. There is incoherence in the population of several villages.

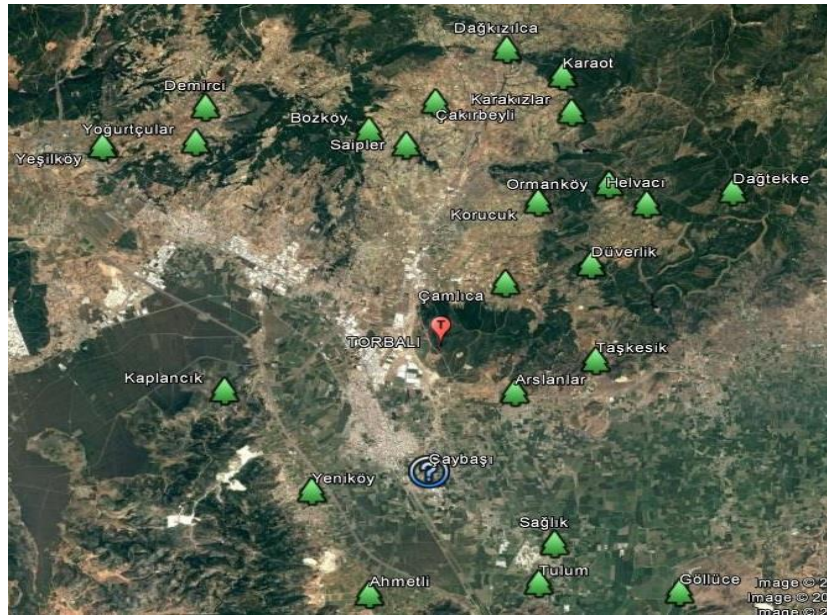


Figure 6.14. Torbalı Villages.³⁰³

³⁰³ Google Earth, 2017.

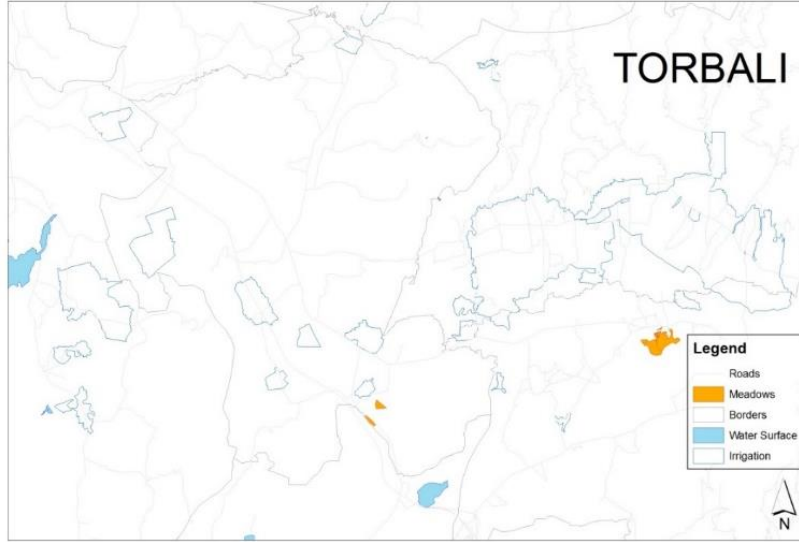


Figure 6.15. Pastures in Torbalı.³⁰⁴

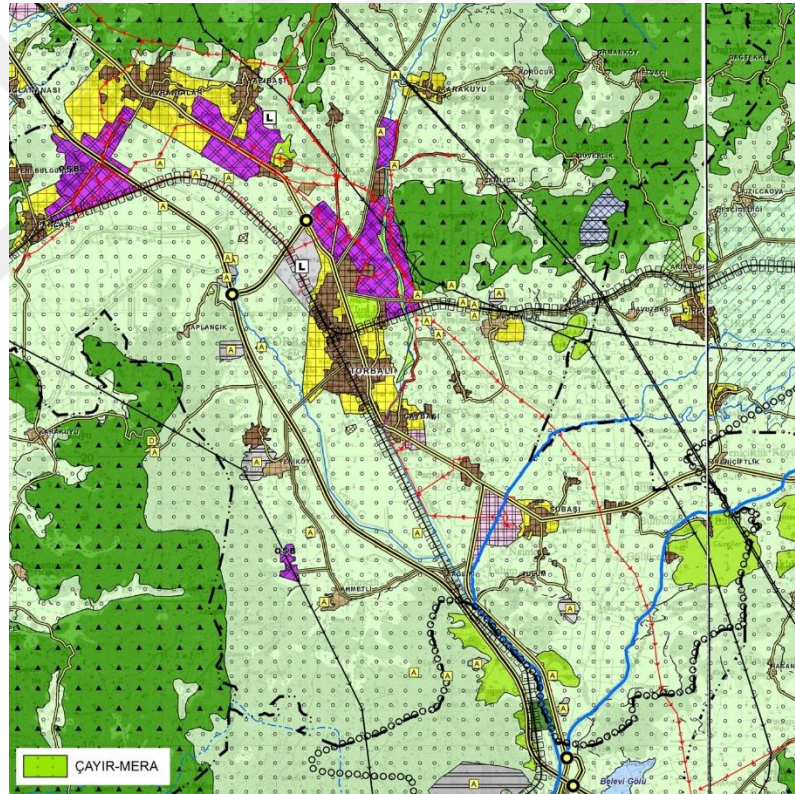


Figure 6.16. Torbalı 1/100.000 scaled Master Plan.³⁰⁵

³⁰⁴ İzmir Land Classification Report, 2013.

³⁰⁵ İzmir-Manisa Planlama Bölgesi 1/100.000 Ölçekli Çevre Düzeni Planı (2014), accessed July 11, 2018, <http://mpgm.csb.gov.tr/izmir-manisa-planlama-bolgesi-1-100.000-olcekli-cevre-duzeni-plan-i-82265>.

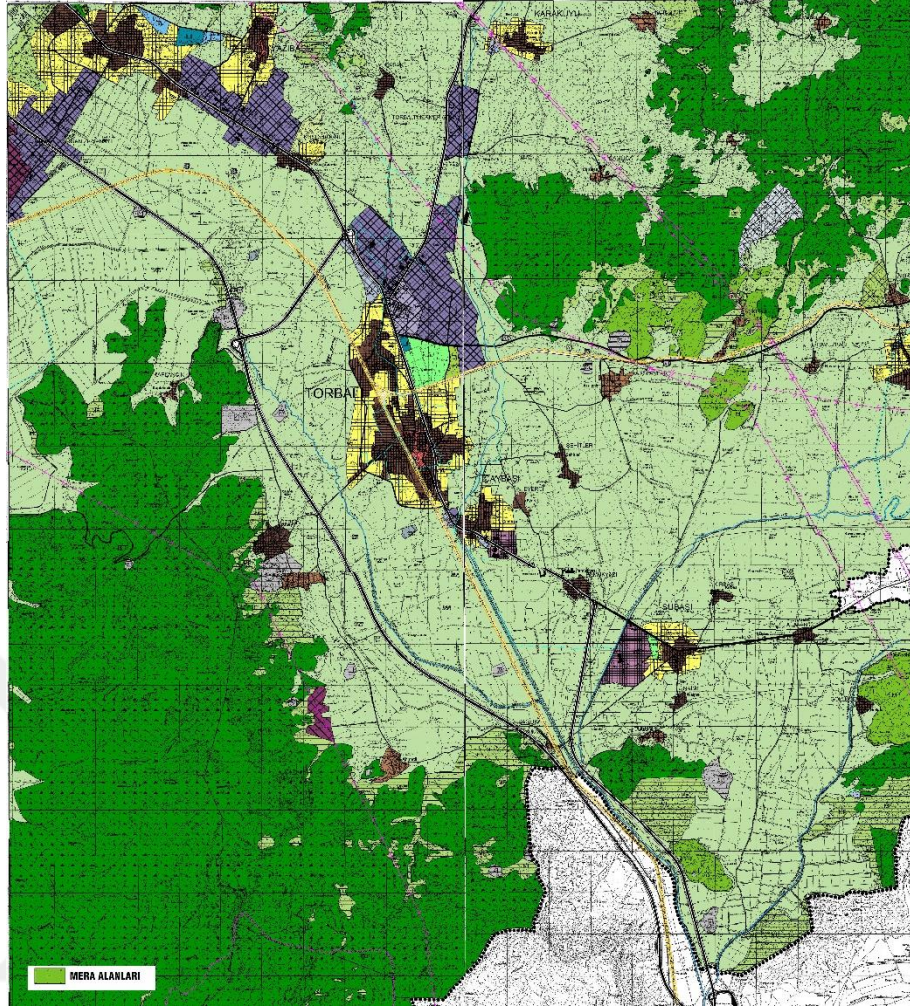


Figure 6.17. Torbalı 1/25000 scaled Master Plan.³⁰⁶

Yeşilköy Village has no registered or active pastures, there are only a few cattles on the barns. There is no population loss; on the contrary, there is an in-migration from İzmir as summerhouses. According to M_13, the residents are not agricultural producers. Most of the residents are retirees or summerhouse vacationists. Some of them are workers at the factories in Yazıbaşı. I observed that there are mostly private lands, summerhouses in the village, enclosed by fences or walls and some of which includes hobby gardens. There is a possible rural gentrification.

Demirci Village has 200 sheep and goats and, which used to be much more before. H_14 sadly admits that the residents have to buy milk from other villages (Karaağaç, Buca). There is no registered or actively used pasture. Private lands and

³⁰⁶ İzmir Metropolitan Municipality, 1/25000 Ölçekli İzmir Büyükşehir Bütünü Çevre Düzeni Planı (2012), accessed July 11, 2018, <http://www.izmir.bel.tr/>.

forestry are used for the grazing activities. Husbandry is not financially adequate for the residents. Population is stable. There is no recent building construction because the village is in the region of İZSU – Tahtalı Dam. H_14 emphasizes the importance of the protect the agricultural and pasturelands. In the future, husbandry may decrease in the area due to privatization and enclosure of the lands. Tobacco and cotton used to be the main products in the last decade; however, the limited active production contains olive, okra and fig. Today agricultural production decreased and Demirci became a village of the retirees. I observed that the integration of the newcomers with the residents is weak. Thus, there is a polarization among the residents in terms of rural gentrification.

Yoğurtçular Village has 140 sheep and no cattles. There are no registered pastures. Threshing field, private lands and forestry lands are used for grazing activities. Husbandry is not financially adequate for the residents. There is no recent building construction because the village is in the region of İZSU – Tahtalı Dam; therefore, younger residents have to move to Ayrancılar. Most of the residents are workers in industry or retirees. There are no much agricultural activities except the olive and fruit. Tobacco used to be the primary agricultural product of the village until “the quota”. Today, the primary agricultural product is olive. The producers are registered to the central rural development cooperative in Ayrancılar to buy cheaper forage crops and fertilizer. Some of the residents sell their land to the newcomers and the agricultural lands slowly shift to summerhouses, which creates a rural gentrification.

Dağtekkke Village is a mountain village, which has 180 goats and 250 cattles. Forestry is used for grazing activities, as there is no registered pasture. The land is cliffy and forestry. Most of the residents sold their animals when legislations prevented the goats into the forestry in a period. There used to be a quarry on the forestry land 10 years ago. Husbandry is not financially adequate for the residents. There is population loss as there is not enough land for new settlements. Younger residents leave to work in industry. The primary agricultural product in the village is olive. Accordint to H_16, thyme tea is also popular in the village and even exported abroad, there are apiculture activities and the bounty for olive oil should be increase, and there should be subsidies for diesel fuel and fertilizer. If rural development increases, these lands can be protected and the younger generations can stay in the village. I observed that the village has an agro-tourism potential. However, H_16 claims that the infrastructure (e.g. car parking area) of the village is not adequate for visiters.

Ormanköy Village has 200 goats and 50 cattles. The land is not fruitful due to undergrazing and less precipitation. There is population loss as the younger residents leave the village for other job opportunities. On the contrary, the summerhouse vacationists come to the village. There are apiculture activities and a “bee/honey pasture” project at a 6 ha. pastures. However, the number of animals diminished due to the lack of profit in husbandry. H_17 admits that residents buy milk from other villages. There is a rural development cooperative, which is in debt. According to H_17, municipalities and government should give more subsidies and other incentives. Some of the residents work in the olive oil factory. I observe that, Ormanköy can also be a retiree village soon, unless there will be crucial improvements in the agriculture sector

Karakızlar Village has 800 goats, which use forestry for grazing. The goats are almost (90%) grassfat animals. However, the financial profit of the husbandry activities is inadequate. The younger residents work in the industry. There are few apiculture activities. Most of the newcomers from İzmir are retirees. The rural development cooperative in the area went bankrupt and according to H_18, the cooperatives are not welcome anymore. Primary agricultural product of Karakızlar is olive.

Karaot Village has 50 goats and 10 cattles. Husbandry is the secondary activity in the village, after the olive and olive oil. The financial profit of the husbandry activities is inadequate. There is a population loss as the younger residents leave the village for jobs with insurance and financial reasons because of the destabilized prizes in agriculture, retiree newcomers come to settle. There are apiculture activities. There is no registered pasture. Most of the grazing activities continue on the private lands. According to H_19, the villagers will not be able to have any agricultural land if agricultural sector continue this way. They sell the agricultural products to clear their agricultural credit debts, which is quite problematic situation. A mining pit on private land is closed three years ago. Most of the residents work at the 26 olive oil factories in the region, between October and March. According to H_19, agriculture sector has two serious risks: climate change and governmental policies.

Çamlıca Village has 110 sheep and goats and 100 cattles. There is not much husbandry activities and not registered pasture, so they use private lands and forestry for grazing. The financial profit of the husbandry activities is inadequate. There is a population loss as the younger residents go to Torbalı, while the retirees come to the village. There are few apiculture activities. According to H_20, there is no fruitful

pastures and public grazing lands for grazing, except for forestry. The primary production is olive. The rural development cooperative in Karakuyu went bankrupt and closed. All husbandry activities rely on the forage crops, which are quite expensive. Therefore, husbandry is shrinking and H_20 is not hopeful for the future of husbandry as the younger residents are not willing to working in the agriculture sector. There are thermal springs, tourism potential and first and second-degree conservation sites at the 1.5 km around the springs in the region.

Helvacı Village has unknown sheeps and goats and 20 cattles. There is no registered pasture, so they use private lands, barns and forage crops. The financial profit of the husbandry activities is inadequate. There is population loss due to the younger residents leave the village, while the retirees come for their summerhouses or hobby gardens. The residents are not happy about the 6360-numbered Metropolitan law, as the services decreased after the village legal entities shut down. There used to be a mining pit in forestry land, which is shut 10 years ago. There are few apiculture activities as the forests are limited and still decreasing. The primary production is olive. There is an artificial pond in the area. H_21 claims that he apply for the green card level for the “Young Farmer Project”³⁰⁷, however his application is not accepted.

Taşkesik Village has 200 sheeps and goats, and unknown number of cattles. There is 64 ha. pasture land and a conflict between two villages Taşkesik and Arslanlar about their grazing activities on pastures. Romanian migrants constituted the village, most of whom moved to İstanbul. Husbandry is crucial for rural development of the village; however, its financial profit is inadequate. According to H_22, Taşkesik is the most underdeveloped village in Torbalı. There is in-migration from Güneydoğu region for the horticulture, husbandry and construction activities. There used to be an apiculture cooperative to export honey. Since the cotton production came to an end a decade ago, apiculture activities diminished too. Primary productions are olive and horticulture. According to H_22, some of the residents give adequate prices to pastures for agricultural activities. However, most of them pay for smaller lands and enclosed larger lands by fences. The government policy is not adequate to protect the pastures. The husbandry potential can increase by grazing management and pasture reclamation. A half-dump area in the village used to be a mining pit, which is closed in 1956. There is a third degree

³⁰⁷ Young Farmer Project, accessed May 25, 2018, <https://genciftci.tarim.gov.tr/Account/Login>.

archeological conservation site and a church in the village. According to H_22 and a resident, who is the head of the apiculture cooperative of the village, pastures are as crucial as forests, which require urgent protection.



Figure 6.18. Pastures at Taşkesik Village, Torbalı.³⁰⁸

Çakırbeyli Village has no registered pasture or husbandry activity. According to H_23, 20 years ago, 10 family used to have sheeps and goats and every family used to have at least one cattle. The younger residents move to the center; also, there is a remigration process. H_23 admints that he also returned to his village at his retirement period. There are also the newcomers. There is no cooperative. Tobacco before “the quota” used to be the primary production, which is now okra, resulted in the ending of the small producers, because of the cheap marketing price of the milk (1 lt = 1.20 tl), which is even cheaper than the tea. According to H_23, Çakırbeyli will be a “retiree village” soon as the 80% of the residents are already retired and selling their lands to citizens. I observed serious number of signboards of sale on the lands, as well as many real estate property offices at the village square, which is a certain dimension for the rural gentrification.

Bozköy Village has no registered pasture and no husbandry activity and H_24 believes that it is hard to a turn back into husbandry. The primary productions are olive and okra today. Tobacco used to be the primaty production, before “the quota”. At that time, the village tried viticulture; however, could not gained profit, then started to produce olive. The younger residents leave to work in factories, as the farming activities are not

³⁰⁸ TKGM, 2018.

economically feasible. There is no cooperative due to the limited number of younger population. There is an urgent need for younger entrepreneurs in agriculture sector as there is an obvious shift from agricultural sector to service and industry sectors. The educated newcomers are advantageous for villagers in terms of commerce and tourism, which may result in the rural gentrification.

Saipler Village has 150 sheeps and goats and 50 cattles, which are fed in the barns, as there is no registered pasture. The primary production in the village is olive. Tobacco used to be the primary production. After the quota in tobacco, like Bozköy village, Saipler village too tried viticulture, and then started to produce olive. There is a serious population loss as the younger residents are leaving the village to work in the industry. There is no cooperative and H_25 is not hopeful for a future cooperative due to the loss of trust between the residents, who are mostly aged and retired. There is also an irrigation problem in the village.

Korucuk (Dirmil) Village has 150 sheeps and 100 cattles. The shepherds or owners graze the sheeps on the pastures and feed them in the barns. Most of the younger residents go to Torbalı to work in factories or after the marriage. Newcomers and retirees usually plants for themselves, e.g. hobby gardens. The 6360-numbered Metropolitan Law is troubled as the newcomers already started to complain about the existence of the animals. According to H_26, the only good thing about the law is that some specific village headmen will no abler to have illegal benefit. There is no cooperative and there will not be according to H_26, as he claims that administrations of the cooperatives as burglars. H_26 is unhappy about the mountain pines are cutting for the timber. There are apiculture activities usually on the forestry. H_26 admits that sometimes beehives are stolen. There is a crowded bee population (300-500 hives). H_26 also claims that there is a project of İzmir Metropolitan Municipality about a water-trench to transport the “healing water” in the region.

Arslanlar Village has 1500 sheeps and 100 cattles. Recently, there are 2-3 herds on 10 ha. pastures; while, there were at least 20 herds almost two decades ago. There is less precipitation and a need to feed forage crops. District Directorate of Agriculture gives education to shepherds. Younger residents move to Torbalı for working. Also, there are people coming from city center for summerhouses. H_27 teases about the newcomers as they state that they have a “farm” when they enclose a 0.1 ha. land for hobby gardening. Many residents sell their land, as there is no herd or shepherd left anymore which creates

rural gentrification. There used to be an irrigation cooperative, which is shut because of its debts. There is a continuing conflict with Taşkesik village about the grazing activities. According to H_27, the agricultural investments in Tire and Ödemiş districts are very successful and the similar subsidies is required for Arslanlar village. There is no apiculture activities. The husbandry is a secondary job following the farming activities. There is a quarry opened on Dededağ/Balıkdağ for a filling area on the reclamation of Fetret stream. According to H_27, a similar project to Porsuk stream made by İzmir Metropolitan Municipality.



Figure 6.19. Pastures in Arslanlar Village, Torbalı.³⁰⁹

Sağlık Village has 450 sheep and goats. There used to be also cattles 15 years ago. There is no registered pastureland, so the animals fed at the private barns. Farming and husbandry activities diminished through time and younger generations move to the city center for the education or work. Families of these younger generations usually buy their houses in Torbalı, in spite of the building new houses at the village. The retirees come back to the village. The İZBAN line passes through the village, which creates a serious urbanization pressure. A few residents sold their land. H_28 thinks that 6360-numbered Metropolitan Law can be a potential in terms of equal services to all villages such as garbage, roads and water supply. There is no cooperative in the village. Two residents are the members of cooperatives from another village. According to H_28, we

³⁰⁹ TKGM, 2018.

are not ready for cooperative activities as a community, because the cooperative administrators should be educated and benevolent with higher qualifications, which can only occur by the improved culture. H_28 reveals that there are successful organization examples in Holland such as “7-year delay of a credit debt for farmers”. If there are similar conveniences for our farmers, the agriculture and husbandry can develop in Turkey. However, today, the banks only give credits to bigger companies, or individuals in other professions, not the small farmers. There are few apiculture activities. There is no forage crop production yet as husbandry is a labor-intensive job, farmers took the easy way out by the mechanization in agriculture.

Tulum Village is one of the largest villages of Torbalı and has 800 sheeps and goats and 1000 cattles. There are 38.7 ha. registered pasture and 10 ha. public land is still a matter for the courts. There are no large and fruitful pastures in the village. Migrants constituted the village. There are many Eastern migrants in the village and other outer demands. The younger residents usually move to Torbalı. H_29 is not hopeful about the 6360-numbered Metropolitan Law in terms of losing the remained pastures. The local decisions will no longer be important or functional for Municipalities and central administrations. However, the farmers continue to plant forage crops to sustain the husbandry. There is an irrigation cooperative recently constituted, which has 12 farms in it. Husbandry is not adequate for economic development and secondary jobs are usually obligatory for living (20% farmers, 80% factory). There are few apiculture activities. The 90% of the apiarists also plant cotton and chasteberry. There used to be a mining pit closed 10-15 years ago due to licence problem. There is hot water and geothermal potential, so the determination studies continue. H_29 told two stories (tales) about Tulum village:

One day, Sultan Abdülhamid went to France and saw the viticulture and turned back to suggest Tulum village for viticulture. At a time, there used to be 32.000 ha. viticulture land in Tulum. Another story is about Atatürk when travelling on a coal train and stayed at Tulum one night. At that time, the sea used to be higher and near to the train lines. There were many ponds, grazing animals and mosquitos. After one night in the village, he claimed for an improvement in the village.

According to H_29, at that time, there were shepherds at every house to graze their 3-4 animals in the pastures. Eventually, agricultural activities increased and husbandry activities decreased in the village. Today, animals raised at the barns get sick from forage crops.



Figure 6.20. Pastures at Tulum Village, Torbalı.³¹⁰

Yeniköy Village has a grid plan layout. Bulgarian and Romanian migrants constituted the village in 1936. H_30 is a retiree who turned back to his village. The village has 300 sheep and goats and 150 cattles. There are no registered pastures and the land is not very fruitful due to the highway-working site. There are 80-100 ha. pastures grabbed for that area in 1990s, which became a garage of İzmir Metropolitan Municipality.

There is in-migration from Azerbaijan, while the local residents usually move to İzmir. There is a “smoke-free” organized industrial site (OSB) in the village. There is no cooperative, as it did not work before. Some people come to the village in weekends for their summerhouses and hobby gardens. There are few apiculture activities. Pesticidies used in the cotton production affected the bees negatively. According to H_30, we should protect the nature. There is a first-degree archeological site area of the ancient city Metropolis at the periphery of Yeniköy. Excavation works continue in the area, however, there is lack of tourist attraction, and no touristic facilities in the village. This may because of the lack of a direct collector road between village and the highway. Therefore, the cultural tourism route of Kuşadası-Efes is not arrived Metropolis yet.

Ahmetli Village triples its population by the seasonal workers in the summer. There are goats in a few families. The primary activity of the village is horticulture. The goats graze on the ruined gardens and forests, as there are no registered pastures. There

³¹⁰ TKGM, 2018.

are apiculture activities and olive production. H_31 is retired from PTT in İzmir and turned back to his village in 2008.



Figure 6.21. Yeniköy Village, Torbalı.³¹¹

H_31 claims that all the residents want to remain as villagers; however, the legislations force them to become an urban neighborhood. There used to be a successful example of professionals and farmers working together, when an agricultural engineer from District Directorate of Agriculture spend much time at the village and teach many things to the farmers in terms of seeding and pesticides and tripled the productivity. However, he left two years ago. With the help of the accurate knowledge, especially tomato and pepper products are now in higher quality. H_31 claims that Ahmetli Village has modern farming techniques among the villages. There is not a cooperative in the village; however, H_31 believes that farmers can gain more profit within the cooperative by branding their products. There used to be a quarry 25 years ago. H_31 points out the negative externalities of factories, quarries and mines on the agricultural and pasturelands. There should be modern agricultural applications, gastro-tourism and recently started apiculture activities, rather than the OSB.

Göllüce Village has 197.1 ha. pastures and 230 ha. public grazing lands. H_32 claims that the land is not adequate for the animals, so there is a conflict between Göllüce and Bülbüldere villages about grazing activities. There is no population loss. There cannot be a cooperative as there is not enough production. There is no apiculture activities. An agricultural company, Defne Tarım, purchased a private pastureland in

³¹¹ Personal Archive, 2017.

Göllüce Village. There became serious protests and civil acts in the village for months, which pressed also in the local media. The main conflict was that the area was a private property and the owner had a right to sell the place to another person or a company. However, the area was an ancient pasture for more than 100 years and the previous owners never interfered in it. Today, Torbalı Municipality expropriated the land for the access of the residents. Snowball interviews with a planner in Torbalı Municipality and the lawyer of the villagers and in-depth interview with H_32 gave more accurate information than the press.



Figure 6.22. Göllüce Village, Torbalı.³¹²



Figure 6.23. Pastures of Göllüce village, Torbalı.³¹³

Dağkızılca Village has 500 sheep and goats and 150 cattles. Most of the animals are fed by forage crops or grazed at the farms. There are approximately 200




³¹² Personal Archive, 2016.

³¹³ TKGM, 2018.

summerhouses. Horticulture and few apiculture activities exist in the village. Similar to Ahmetli Village, there used to be an agricultural engineer from District Directorate of Agriculture staying at the village. He left 6 months ago. There were two cooperatives, one is closed; the other one, irrigation cooperative continue to improve productivity by drip irrigation techniques. According to H_33, the agricultural potential of the area is not very productive. The primary product is olive. Residents sell their lands to citizen newcomers. H_33 also worked in İzmir for a year (out-migration) and turned back to the village. There are excavations of a “maiden’s castle” and a church by “Nif Mountain Excavation Project”. I observed agro-tourism, archeological tourism potential and possible rural gentrification.






Torbalı villages’ data gathered from the interviews reveals the population decrease/increase, number of animals, conditions of the pastures, existence of apicultural activities, main conflicts and the views from the villages. Population data gathered from the village headmen is crosschecked by TURKSTAT, 2017 population data, which is shown in the brackets. H_n (n as the number of the village visited) encodes the name of the village headman (Table 6.5).

Table 6.5. Torbalı villages’ data gathered from the interviews, 2017.

| No. | Village | Pop. | Pop. Loss | Animal Num. | Pasture (ha) | Apic. | Conflicts | View From the Village |
|-----|-------------|-----------|-----------|----------------|--------------|-------|--|---|
| 13 | Yeşilköy | 770 (531) | No | A few cattles | - | Yes | - |  |
| 14 | Demirci | 500 (475) | No | 200 sg 0 c | - | Yes | Retiree village, rural gentrific., private lands, forestry | |
| 15 | Yoğurtçular | 400 (332) | No | 140 sg 0 c | - | Yes | Private lands, forestry | |
| 16 | Dağtekke | 169 (161) | Yes | 250 sg 0 c | - | Yes | Quarry, forestry |  |
| 17 | Ormanköy | 230 (208) | Yes | 200 sg 50 c | 0.26 | Yes | Retiree village, rural gentrification |  |


(cont. on next page)

Table 6.5 (cont.)

| No. | Village | Pop. | Pop. Loss | Animal Num. | Pasture (ha) | Apic. | Conflicts | View From the Village |
|-----|------------------|----------------|-----------|------------------|--------------|-------|---|---|
| 18 | Karakızlar | 460 (389) | Yes | 800 sg 0 c | - | Few | Forestry | |
| 19 | Karaot | 300 (280) | Yes | 50 sg 10 c | - | Yes | Mine (old), Private land | |
| 20 | Çamlıca | 240 (194) | Yes | 110 sg 100 c | - | Yes | Geothermal tourism, Private land, forestry | |
| 21 | Helvacı | 350 (249) | Yes | ? sg 20 c | - | Yes | Mine, Private land, forestry | |
| 22 | Taşkesik | 500 (477) | Yes | 200 sg ? c | 217.9 | Yes | Mine |  |
| 23 | Çakırbeyli | 550 (532) | Yes | - | - | No | Retiree village, rural gentrification (real estate offices) | |
| 24 | Bozköy | 400 (390) | Yes | 2 sg 0 c | - | No | Shift from agriculture to tourism, Forestry | |
| 25 | Saipler | 290 (249) | Yes | 150 sg 50 c | - | No | Rural-urban migration, No pasture, barns | |
| 26 | Korucuk (Dirmil) | 1000 (749) | Yes | 150 sg 100 c | - | Yes | - | |
| 27 | Arslanlar | 800 (805) | Yes | 1500 sg 100 c | 76.9 | No | Quarry, Barns | |
| 28 | Sağlık | 150 (140) | Yes | 450 sg 0 c | - | Yes | Rural gentrification, Public land and forestry | |
| 29 | Tulum | 700 (407) | No | 700 sg 1000 c | 38.7 | Yes | Forage crop deficit |  |
| 30 | Yeniköy | 1520 (1401) | No | 300 sg 150 c | - | Yes | Public investments (highway) |  |
| 31 | Ahmetli | 1032 (1049) | No | - | - | Yes | Quarry, mine, Horticulture |  |
| 32 | Göllüce | 614 (637) | Yes | 3000 sg 100 c | 197.1 | No | Private property |  |

(cont. on next page)

Table 6.5 (cont.)

| No. | Village | Pop. | Pop. Loss | Animal Num. | Pasture (ha) | Apic. | Conflicts | View From the Village |
|-----|------------|------------------|-----------|-----------------|--------------|-------|------------------------------------|---|
| 33 | Dağkızılca | 847 + 1000 (793) | No | 500 sg 150 c | - | Yes | Rural gentrification, Public lands |  |

One of the most common conflicts on pastures in Torbalı is the qualification change due to accepted requests from other uses, mostly mining and energy sectors. The reasons of the pasture qualification changes are observed according to the content analysis (Figure 6.24).

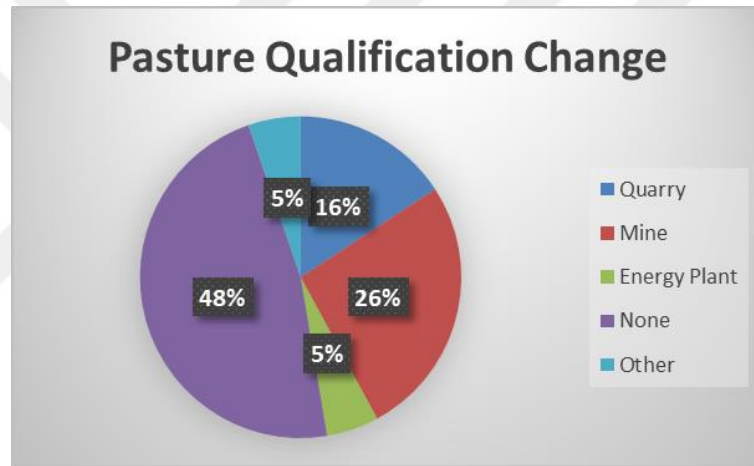


Figure 6.24. Pasture qualification change, Torbalı.

Accordingly, the primary land grabs come from mines (26%), quarries (16%), energy plants (5%) and other public investments such as highway construction or geothermal energy (5%). Primary conflicts in Torbalı villages are the quarries and mines, suburban railway construction (IZBAN), hospital and other public investments such as highway construction and natural gas lines.

6.1.3. Aliğa Villages

Aliğa district, which locates at the northwest of İzmir is one of the most important and rapid developing districts with a village population of 21.998 people in 2017,³¹⁴ and has 19 villages. I made 17 case interviews among 19 village headmen of Çakmaklı, Horozgediği, Çaltılıdere, Çıtak, Şehitkemal, Samurlu, Hacıömerli, Çoraklar, Karaköy, Kalabak Aşağışakran, Bahçedere, Yenişakran, Kapukaya, Uzunhasanlar, Güzelhisar and Karakuzu to understand the current situations and the conflicts on the pastures (Figure 6.25). Due to the continuing determination studies by Provincial Directorate of Food Agriculture and Livestock, many of the active pasturelands are not included in the map (Figure 6.26).

According to İzmir-Manisa Planning Region 1/100.000 scaled Master Plan (2014) and İzmir Metropolitan Region 1/25000 scaled Master Plan (2012), pasturelands are shown within the “meadow-pasture” legend. Plan notes reveals that the meadow-pasture is the area determined and delimited by the 4342 Pasture Law for the grazing of the animals, utilization of the herbs and the areas that are used for these reasons since the ancient times (Figure 6.27-6.28).

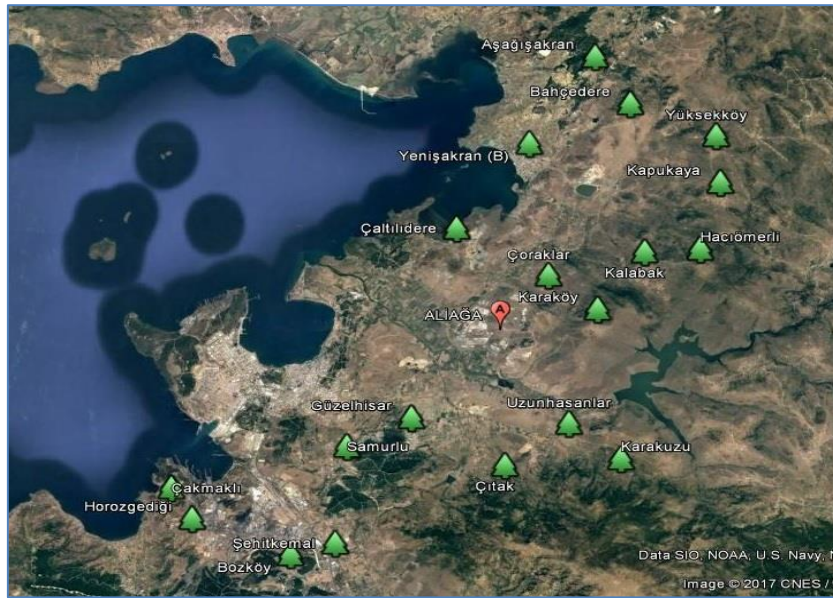


Figure 6.25. Aliğa Villages.³¹⁵

³¹⁴ TURKSTAT, accessed 2018, <http://www.tuik.gov.tr/>.

³¹⁵ Google Earth, 2017.

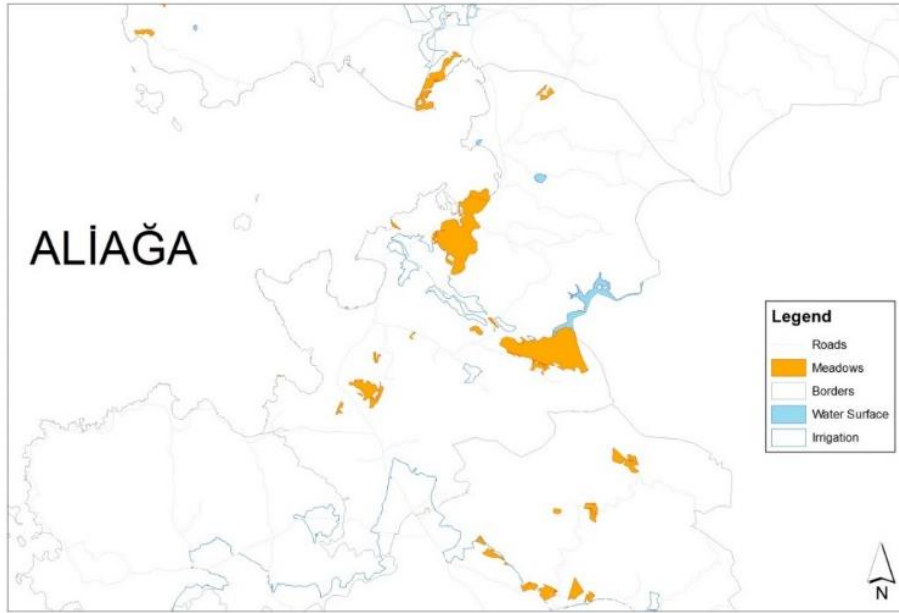


Figure 6.26. Pastures in Aliğa, 2017.³¹⁶

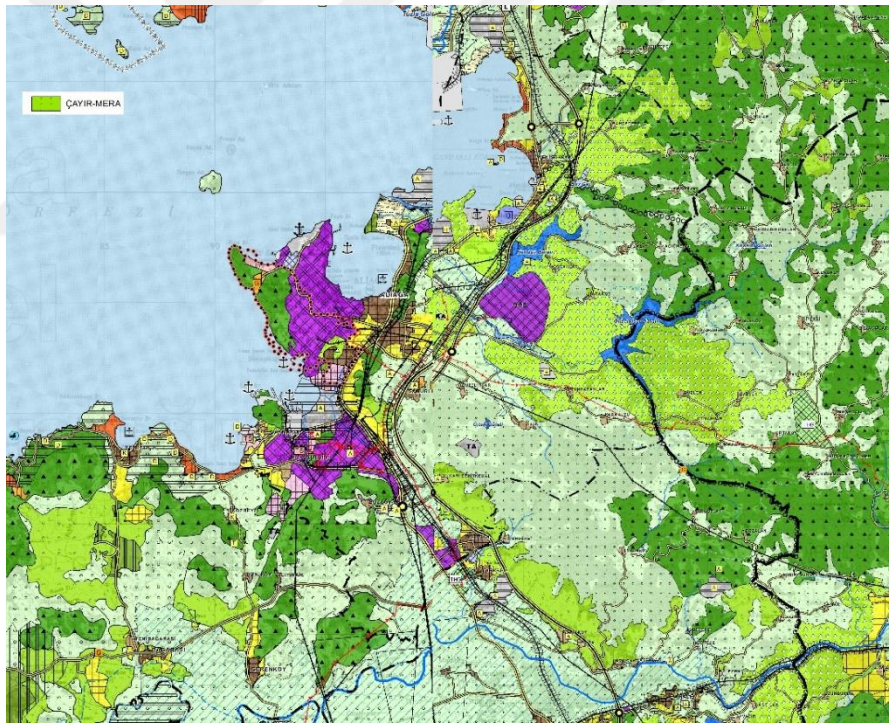


Figure 6.27. Aliğa 1/100.000 scaled Master Plan.³¹⁷

³¹⁶ İzmir Land Classification Report, 2013.

³¹⁷ İzmir-Manisa Planlama Bölgesi 1/100.000 Ölçekli Çevre Düzeni Planı (2014), accessed July 11, 2018, <http://mpgm.csb.gov.tr/izmir-manisa-planlama-bolgesi-1-100.000-olcekli-cevre-duzeni-plan-i-82265>.

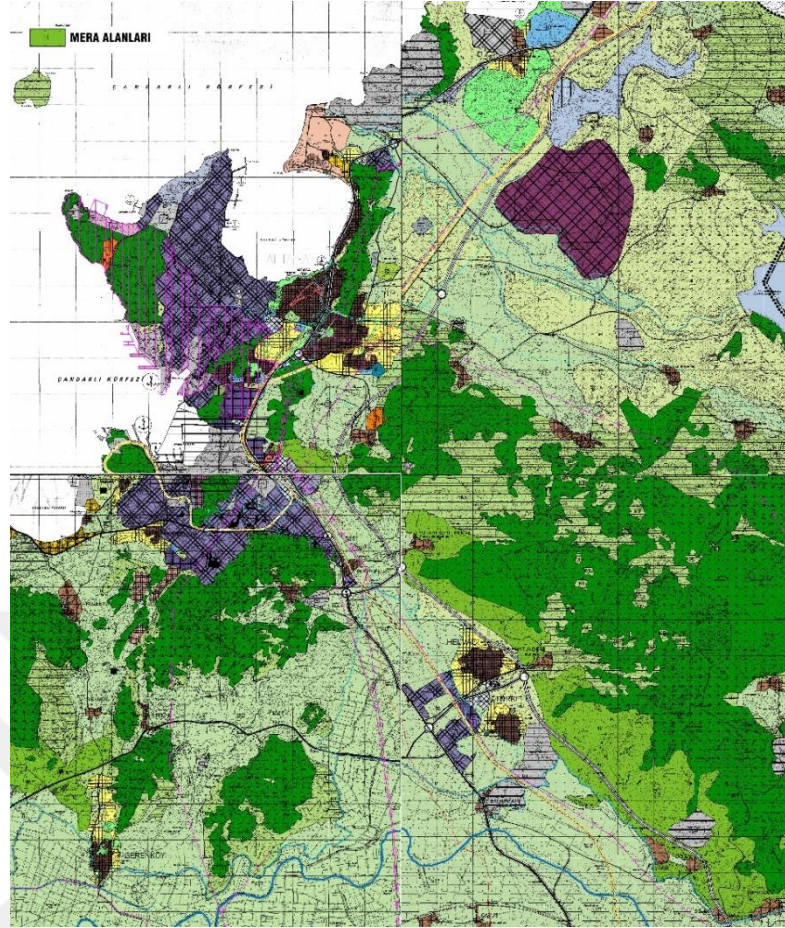


Figure 6.28. Aliğa 1/25000 scaled Master Plan.³¹⁸

Several data from the interviews with the village headmen of Aliğa district reveals in the tables below. Population loss reveals the dimension of rural-urban migration and the decrease in the agricultural sector. Animal number reveals the approximate number of sheep and goats (sg) and cattles (c) in the village. Pasture condition reveals if the pasture is registered (R), field size of the pastures (TKGM, 2018) and the physical conditions due to geography and climate. Apiculture activities are also relevant with the fauna of the pasture. Conflicts and threats reveal the occupations and/or the qualification changes on the pastures. There is incoherence in the population of several villages.

Çakmaklı Village has 250 sheep and goats and 100 cattles. There is currently 36 ha. pastures (5.1 ha. of the pastures opened into development 20 years ago). The population is balanced; there are also residents for summerhouses. Bosnian migrants

³¹⁸ İzmir Metropolitan Municipality, 1/25000 Ölçekli İzmir Büyükşehir Bütünü Çevre Düzeni Planı (2012), accessed July 11, 2018, <http://www.izmir.bel.tr/>.

constituted the village in 1983 and they have still strong links to their traditions. There are not many immigrants. The village is self-enclosed. There is not air pollution; however, there are many pasture qualification change demands that Provincial Pasture Commission evaluated. There are limited number of people continue husbandry activities. There is an angler cooperative in the village; and marine and port projects prevented by residents as the village residents are insurgents. H_34 claimed that they are opposed to the recent legislative attempts on olive and pasture laws. The base sector of the village is industry; however, horticulture activities continue too. There used to be apiculture activities, which are not continue.



Figure 6.29. Pastures at Çakmaklı Village, Aliğa.³¹⁹

Horozgediği Village has 100 sheeps and goats and 200 cattles. There is a serious population loss due to the air pollution of the industry. Residents move to Aliğa, Foça, Menemen and İzmir. There are 0.5 ha. registered pastures in a bad condition due to the coaldusts. Trucking and transport business are common around the villagers. The village road goes through the factories. The highway project, which will be completed in 2018, occupied mostly on the pastures. There is a transportation cooperative. There is not a successful agricultural production due to the pollution. In addition, the animals grazed on the polluted pastures cannot be healthy too. The primary production was pea when farming and husbandry activities were successful 40 years ago. The health of the villagers is bad due to pesticides (ammoniac) smell, “acids of Ege Gübre” and coaldust. There is an active quarry, which is working for 5 years. There are many industries and warehouses

³¹⁹ TKGM, 2018.

around the village, all of which somehow got a positive EIA report. When the residents complain about the situation to District Directorate of Agriculture, they direct them to İzmir Provincial Directorate of Food Agriculture and Livestock. H_35 believes that “*they only service for the ones who has the power and the power is money*”. H_35 claims that it is almost impossible to turn back into agriculture and husbandry activities in the future. The residents want to move somewhere else, as they believe that this situation will be worsened. They said they applied to İzmir Metropolitan Municipality and the Ministry of Environment and Urbanization with a last ditch effort, waiting for a response.

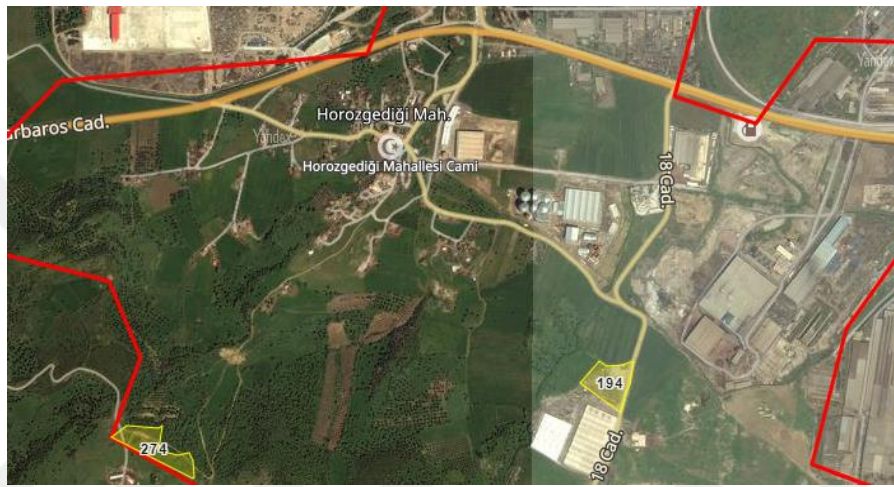


Figure 6.30. Pastures at Horozgediği Village, Aliğa.³²⁰

Çaltılıdere Village has 1500 sheeps and goats and 20 cattles. Forage crops are required to increase productivity (two lambs in a year). The pastures (500 ha.) are fruitful, however the number of animals are much less than the potential (undergrazing). According to H_36, pasture leasing was not forbidden before 2004, which supported the village budget. He believes that if the husbandry activities shrinks, the pastures can be lost to qualification changes. The village requires more demand for pasture reclamation. There are consumption and irrigation cooperatives. Primary agricultural products are forage crops, corn, cotton and olive. There are four active quarries (basalt mine pit) since 1990s and there is a work-site of a highway construction on the common pasturelands. 70 ha. land will be open to development. The pastures are under the common use of Çaltılıdere and Kalabak villages. Husbandry activities continue mostly by ageing

³²⁰ TKGM, 2018.

population (50-60 years old farmers). Chasteberry honey is famous in the area for migratory beekeeping. The village is close to the sea and Foça and has a tourism and summerhouse potential. It is also crucial that 20-ha. area expelled from the wetland status in favor of a port project.



Figure 6.31. Pastures at Çaltılıdere Village, Aliğa.³²¹



Figure 6.32. Quarry at Çaltılıdere Village, Aliğa.³²²

Çıtak Village has 600 sheeps and goats and 500 cattles. There used to be much more animals within family husbandry; however, most of the residents sold their animals. Forage crops are required to increase productivity. According to H_37, pastures should be protected and added: “*Now, our name is neighborhood, but our surname is still village*”. There is an irrigation cooperative and a pond with 160 ha. irrigation potential.

³²¹ TKGM, 2018.

³²² Personal Archive, 2017.

Aliğa Yörük Association is constituted in the district and H_37 is planning to organize of pasture festivals and a recreation area in the forestry. There are 25.5 ha. artificial pasture land, which used as hobby gardens close to the irrigation pond before the 4342-numbered Pasture Law. Today, it is forbidden to plant there. There are few apiculture activities. Chasteberry honey is famous in the area by migratory beekeeping. There is a “bee/honey pasture” in Çıtak. There is a quarry between Uzunhasan and Çıtak at the forestry, which opened 5 years ago. Residents who continue husbandry activities are ageing. According to H_37, the 4342-numbered Pasture Law should be responsive to the villagers and local cooperatives. H_37 is retired from DSİ and wish to have a recreational facility next to the pond, which is not accepted due to the legislations. H_37 gives a remarkable example of the farce and insensitivity of the legislations: *“The bees used to be forbidden into forestry as they consider as “animals” due to the law, at a time. After the application, they add an article to the legislations and “bees became free” to go into the forestry.”*



Figure 6.33. Pastures at Çıtak Village, Aliğa.³²³

Şehitkema1 Village has 400 sheep and goats. There is no registered pasture, so the scarce husbandry activities continue mostly at forestry with supplement of forage crops. There is in-migration from Eastern Turkey for being industrial workers. The primary sectors are farming and industry in the village. Government subsidized tree planting (almond). In addition, there used to be a quarry (stone chips for Petkim) on the

³²³ TKGM, 2018.

forestry which is closed. H_38 applied for an irrigation cooperative; however, it is not accepted yet. There are conflicts between Çıtak and Şehitkema1 villages about grazing activities. H_38 claims that if legislations and applications continue this way, pastures and forests will be lost in near future.

Samurlu Village has 2000 sheeps and goats and 50 cattles. There is less precipitation and animals graze with supplement of forage crops. The population is balanced. Husbandry is a secondary job at the village. Primary activities are forage crops, horticulture and olive. Pastures are adequate for animals; however, they are under the risk of enclosure, e.g. “waste oil storage” request by a private company is now being evaluated by Provincial Pasture Commission. It is dangerous and as residents, they are oppose to it. However, the decision makers do not listen the opinions of the residents at these times. According to H_39, their pastures are not as fruitful and irriguous as the pastures in Bergama. The number of animals are decreasing and the production is not enough. Aliğa is becoming an industrial zone and there will be no land left for husbandry, as they occupy the pastures by waste collectors and industrial usages. There is serious industrial pressure on the village. There are also hot water wells and greenhouse projects, which will be implemented this year. The wells are leased since 2009 (15 ha. land from private pasture and public land). In addition, lands expropriated for high-tension and natural gas lines, which prevent agricultural activities under it. Highway construction (200 m) and metro line have also resulted in the cut of the olive trees. According to H_39, it could pass over Dumanlıdağ; however, they refused and rather passed over Zeytindağ. In addition, the highway has three collector roads to Petkim, which is a disaster for agricultural lands and pasturelands. Due to the industrial waste, the agricultural productions lost their productivity. Agriculture and husbandry activities are slowly ending because there is not a straight agriculture and husbandry policy. The technical staff in District Directorate of Agriculture is not adequate; therefore, residents call the professionals from Menemen and Şakran. According to H_39, the central government does not want farming activities.



Figure 6.34. Pastures at Samurlu Village, Aliğa.³²⁴

Hacıömerli Village has 2000 sheep and goats and 700 cattles. There used to be much more animals when they could lease the pastures. There are 165 ha. registered common pastures, 150 ha. pastures in court, 500 ha. public grazing lands and forestry lands that are used for grazing. The pasture productivity depends on the annual precipitation. The residents moved their village 9 km closer to the industry in 1970s to be workers in the industry. Most of the residents are retired today. H_40 claims that there is no air pollution. Village is close to Şakran. The primary activities are clover, agriculture, irrigation and olive cultivation. Only 5 to 10 people depend solely on husbandry, which is mostly a secondary job in the village.

Rural development cooperative was constituted 40 years ago, shut down. There is an irrigation cooperative for Hacıömerli and Kapukaya villages. There are 12 ha. common olive and clove land. H_40 is not happy about the 6360-numbered Metropolitan Law, which is still ambiguous, without the regulations. The village common pastures need to be protected. According to H_40, the family ties are strong and traditions continue in the village. There is a quarry on the pasture, which is engaged in a lawsuit for 20 years due to wrong cadastral maps. H_40 also had a request about solar power energy on the pastures and waiting for a response.

³²⁴ TKGM, 2018.



Figure 6.35. Pastures at Hacıömerli Village, Aliğa.³²⁵

Çoraklar Village has 500 sheep and goats and 20 cattles, which used to be 5000 sheep and goats and 150 cattles and rapidly fell due to the OSB opened in 2001. There are 189 ha. pastures. The main conflicts on the village are less precipitation, OSB and quarry. Most of the villagers work in the industry in Aliğa. H_41 admints that he cannot see the future if another quarry will be opening. H_41 reproaches about impositionary changes in their lands and lack of informing to the residents. He has projects about artificial pastures on the public grazing lands. They turned an old pearlite pit into a pond. A new quarry (basalt pit) is on the way on a grazing land, which remained unregistered because of the forestry for two oak trees on the land. There is no agricultural lands and no possibility to plant forage crops, which are too much expensive. There is in-migration from İzmir permanently or for summerhouses. Several retirees feding 1-2 goats and hobby gardening. There is also itinerant apiculture activities on the village.

Karaköy Village used to have 10.000-15.000 sheep and goats on the public grazing land, which diminished to 1000 sheep and goats on poorer pastures due to less precipitation and overgrazing activities. There are 12 ha. pastures. Younger residents go to Aliğa for other jobs, rather than agriculture and husbandry, which are not profitable for living. H_42 is not hopeful about the protection of pastures and the future of husbandry without governmental subsidies or new solutions such as organized husbandry zones. He is also not happy about the 6360-numbered Metropolitan Law. There is no apiculture. There are many quarries on forestry and public lands. One of the quarries

³²⁵ TKGM, 2018.

Cooperations should be encouraged and not being treated as companies in terms of taxes. Pastures can be given to cooperatives for improvement rather than quarries. Permanent barns may help to increase the conservancy of the farmers. Pastures need to be improved, not to be given to companies. Producer subsidies and loans are given to doctors, lawyers, the people who do not know agriculture at all, rather than farmers. There is no apiculture. There is an artificial pond in the village on pastures, again fort he use of animals and irrigation.

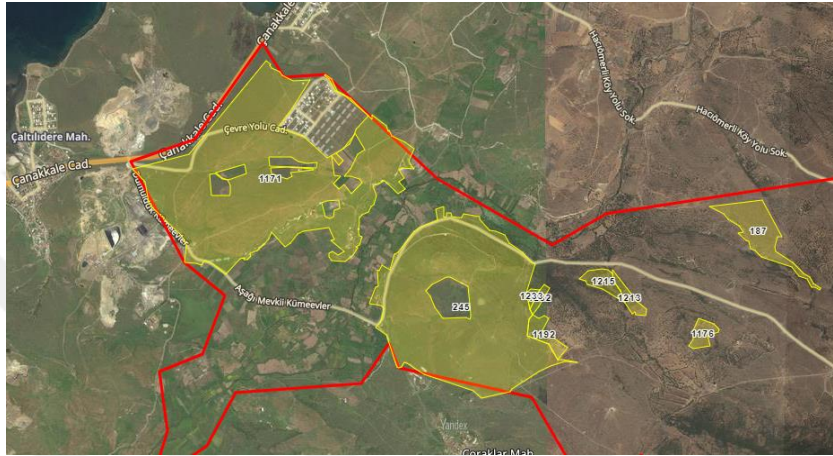


Figure 6.38. Pastures at Kalabak Village, Aliğa.³²⁸

Aşağışakran Village has 150 sheep and goats and 2 cattles. There is only one herd in the 26.7 ha. pastures, which are diminishing due to inadequate support in husbandry. Most of the farmers remain unregistered to “farmer register system” for not paying taxes. According to H_44, the 6360-numbered Metropolitan Municipality law is ambiguous. For example, when an animal harms a field, no institution takes responsibility to decide the penalty of the harm and nobody knows what to do. We hardly gather 7 founder members for Irrigation Cooperative and could not find even 7 founder members to establish Olive Cooperative. Nobody wants to pay subscription fees and nobody trusts each other. Trainings given by technical engineers, artificial ponds and efficient control of us emay help to improve the condition of pastures. However, there are much to do for local governments. In İzmir, pilot areas for husbandry investments are Dikili, Bergama, Kiraz and Ödemiş. There are many olive trees in the vilalge, therefore farmers cannot plant forage crops. There are apiculture activities; however, there is not adequate water

³²⁸ TKGM, 2018.

for the chastebarries. There will be a perlite mine on pastures and forestry land, in addition with highway and izban lines on enacted private lands.



Figure 6.39. Pastures at Aşağışakran Village, Aliğa.³²⁹

Bahçedere Village has 2000 sheeps and goats and 60 cattles. There is 293 ha. pastures. According to H_45, pastures became poorer due to less precipitation, conurbation and a prison as a public investment locates on the public grazing lands. The prison took a large part of the pastures (110 ha.). The amount of lost will increase with the highway construction. The prison opened in 2011 on the common pastures and put 8000 more populations in the village. There used to be a grazing seasons before the 4342-numbered Pasture Law. After the law, farmers grazed for 12 months of the year, as the disctirct directorates of agriculture or pasture commissions are not successful to make an adequate grazing management. Younger residents move to Şakran because there are not adequate water and roads in the village. Husbandry is not adequate for living. A common pond can be constituted for artificial pastures, plants, and irrigation and forage crops; however, there is not an initiative for that right now. There is a conflict between Bahçedere and Hacıömerli villages in terms of grazing lands. There is one person dealing with apiculture. H_45 admits to use common irrigation systems among villages but rejects to use each other's pastures, as animals do not need strolling much.

³²⁹ TKGM, 2018.

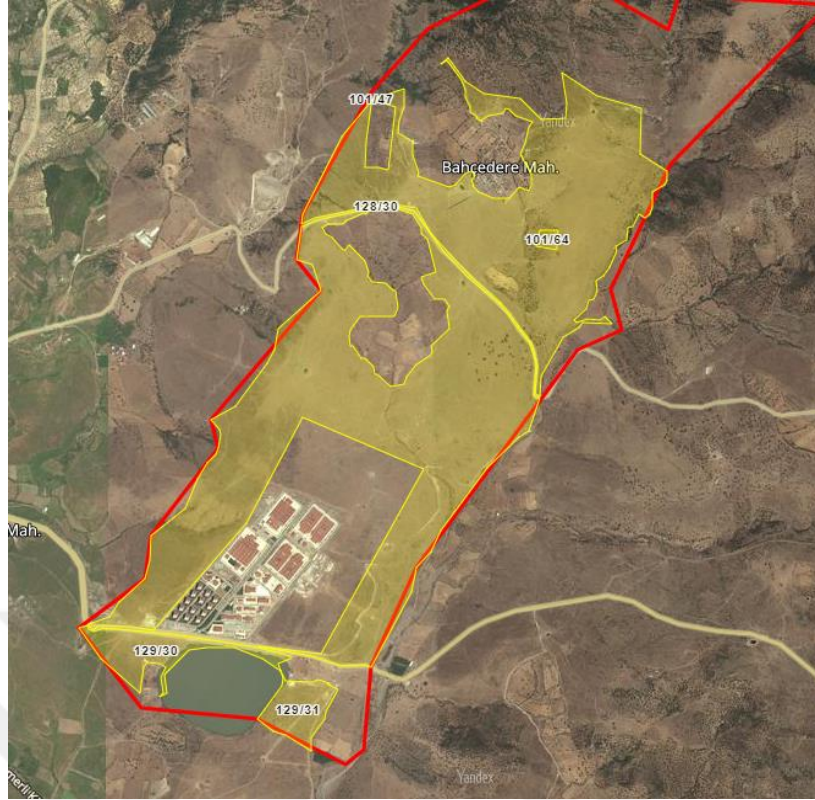


Figure 6.40. Pastures at Bahçedere Village, Aliğa.³³⁰



Figure 6.41. Prison at Bahçedere Village, Aliğa.³³¹

Yenişakran (Yukarışakran) Village has little amount of livestock and pastures and husbandry activities continue unprofessionally. There are 1189 ha. pastures. The existence of the prison and immigrated industrial workers or technicians from other cities (e.g. Gümüşhane) increased the village population. Husbandry is a secondary job and

³³⁰ TKGM, 2018.

³³¹ Personal Archive, 2017.

there are few apiculture activities. H_46 reveals that there is a quarry, which harms the settlement and in court. The village has a coast but the water quality is low.



Figure 6.42. Pastures at Yenişakran (Yukarışakran) Village, Aliğa.³³²

Kapukaya Village has 1800 sheep and goats and 350 cattles. There are 400 ha. pastures. The quality of pastures decreased due to the increase in the thorn (*geren*) population. I observed that this increase may be the result of the decreasing number of goats among the sheep in the village. H_47 is not hopeful about the future of the pastures if industrialization in Aliğa will continue this way. The pasture reclamation is necessary by technical engineers to get rid of the thorn plants and cooperations are necessary for the sake of agricultural activities. There is not a current quarry, but the village is under investigation for a future quarry. Forage crops are expensive while marketing prices of meat and milk is cheaper.

³³² TKGM, 2018.



Figure 6.43. Pastures at Kapukaya Village, Aliğa.³³³

Uzunhasanlar Village has 2000 sheeps and goats and 6000 cattles. There are 410 ha. pastures, which are usually barren, rocky and covered by thorn plants. The younger residents move to Aliğa for working. The governmental policy for Aliğa towards industry abolished the future of agriculture and husbandry in the region. H_48 applied to Provincial Directorate of Food Agriculture and Livestock to prevent the quarry but could not have a priority due to barren pastues. H_48 believes that cooperatives are crucial for conscious farming and grazing activities and pasture reclamation. There are two active and one inactive quarries at the village. There are few apiculture activities. There should be government subsidies. The government sacrificed the pastures by giving infinite opportunities to industrialists of Aliğa and by not restored the barren pastures.

Güzelhisar Village has 64.4 ha. pastures among 100 ha. public grazing lands. However, husbandry activities continue as a secondary job for retirees, who were industrial workers in 1985. Today, younger residents continue to move to Aliğa for working. The pastures are barren due to less precipitation. There used to be Milk Cooperative, which is shut due to bad administration. According to H_49, “Rural Development Cooperative” is necessary. However, establishing a cooperative requires at least 10 younger volunteers. H_49 also has plans about establishing an olive oil factory again within a cooperative. Due to changing climate conditions, H_49 suggests to create artificial pastures supported by irrigation systems and forage crop planting. According to

³³³ TKGM, 2018.

an information, there is a quarry proposal, which has a positive EIA by the experts in Ege University, on the condition that there is controlled blasting. H_49 is definitely not sure about the controlling of the activities of the quarry and complains about the authorization and supervision conflicts.

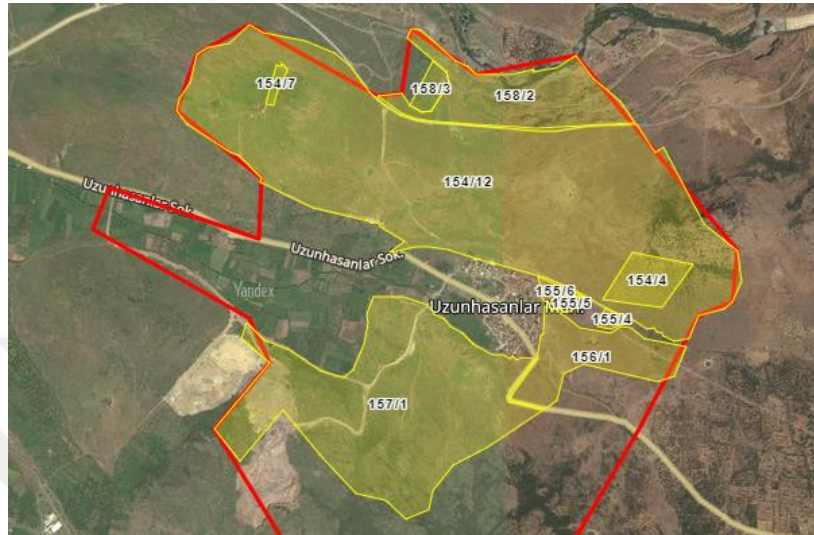


Figure 6.44. Pastures at Uzunhasanlar Village, Aliğa.³³⁴



Figure 6.45. Pastures at Güzelhisar Village, Aliğa.³³⁵

Karakuzu Village is a mountain village, which has large and relatively more fruitful pastures and approximately 4000 sheeps and goats, and 900 cattles. There are 54.8

³³⁴ TKGM, 2018.

³³⁵ Ibid.

ha. pastures. Although there is less precipitation and a support by forage crops, 30 farmers earn their living by solely husbandry, while the others working in husbandry are retirees and elders. Younger generations moved to Aliğa for working or marriage. The vacant houses are usually replaced by the newcomers, who come 50% for summerhouses and 50% for hobby gardening and small-scale husbandry. According to H_50, there is authorization conflicts among institutions. H_50 underlines that if the commission continue to ask the residents' remarks, no quarry will be in the village. There is no cooperative due to noncohesive people, so farmers give their products to the cooperatives around, e.g. Kalabak. There is a dam in the middle of three villages; however, the villagers cannot use the water, which directly goes to Petkim and the plain. If there would be irrigation systems, the pastures would be fruitful. H_50 claims that while afforestation or promoting "bee/honey pasture" develops apiculture activities, they eventually result in the enclosure of the pastures, as the herds cannot pass there anymore. There is a waterfall in the pastures, which is a touristic attraction spot for trekking activities. After the 6360-numbered Metropolitan law, the grazing practices among villages changed and although the current situation of the pastures is adequate for the herds with the help of planted forage crops, the future of the pastures is uncertain due to the legislations. H_50 hopes their pastures and grazing activities to be remained.








Figure 6.46. Pastures at Karakuzu Village, Aliğa.³³⁶

³³⁶ TKGM, 2018.







Aliğa villages' data gathered from the interviews reveals the population decrease/increase, number of animals, conditions of the pastures, existence of apicultural activities, main conflicts and views from the villages. Population data gathered from the village headmen is crosschecked by TURKSTAT, 2017 population data, which is shown in brackets. H_n (n as the number of the village visited) encodes the name of the village headman (Table 6.6). One of the most common conflicts on pastures in Aliğa is the qualification change due to accepted requests from other uses, mostly mining and energy sectors. The reasons of the pasture qualification changes are observed according to the content analysis (Figure 6.41).

Table 6.6. Aliğa villages' data from the interviews, 2017

| No. | Village | Pop. | Pop. Loss | Animal Num. | Pasture (ha) | Api. | Conflicts | View From the Village |
|-----|-------------|-------------------|-----------|------------------|--------------|------|---|---|
| 34 | Çakmaklı | 1500 - 3500 (665) | No | 250 sg 100 c | 36 | No | Quarry, housing, industry, barns |  |
| 35 | Horozgediği | 450 - 510 (310) | Yes | 1000 sg 200 c | 0.5 | No | Quarry, heavy industry, health problems |  |
| 36 | Çaltılıdere | 925 (661) | Yes | 1500 sg 20 c | 500 | Yes | Quarry, housing development, highway to Çandarlı port, shipyard project |  |
| 37 | Çıtak | 600 (538) | Yes | 600 sg 500 c | 130 | Yes | Quarry, private houses/barns |  |
| 38 | Şehitkema1 | 900 (882) | No | 440 sg | - | Yes | Quarry, Public land, forestry |  |

(cont. on next page)

Table 6.6 (cont.)

| No . | Village | Pop. | Pop . Loss | Anima l Num. | Pastur e (ha) | Api . | Conflicts | View From the Village |
|------|----------------------------------|--------------------|---------------|----------------------|--------------------------|----------|--|---|
| 39 | Samurlu | 500 (700) | No | 2000 sg 50 c | 1560 | Yes | Greenhouse project, public investments, private houses/barns | |
| 40 | Hacıömerli | 1100 (759) | No | 2000 sg 700 c | 165 & 150 in court | Yes | Quarry, private houses/barns | |
| 41 | Çoraklar | 57 (44) | Yes | 500 sg 20 c | 189 | Yes | Quarry, private houses/barns |  |
| 42 | Karaköy | 276 (205) | Yes | 1000 sg 0 c | 12 | No | Quarry, private houses/barns |  |
| 43 | Kalabak | 500 (413) | No | 1500 sg 0 c | 370 | No | Highway, railway, natural gas & energy line, housing development | |
| 44 | Aşağışakran | 263 (253) | Yes | 150 sg 2 c | 26.7 | Yes | Mine, housing development, highway, railway | |
| 45 | Bahçedere | 8000 (9315) | Yes | 2000 sg 60 c | 293 | No | Prison, housing development , conurbation |  |
| 46 | Yenişakran (Yukarışakran) | 5300 (4478) | No | 0 sg 5 c | 1189 | Yes | Quarry, industry, highway, railway, wastewater treatment fac. | |
| 47 | Kapukaya | 220 (187) | Yes | 1800 sg 350 c | 400 | No | Quarry potential, thornbushes, industry |  |
| 48 | Uzunhasanlar | 315 (271) | Yes | 2000 sg 6000 c | 410 | Yes | Quarry, thornbushes, barren, rocky, out- migration, industry | |
| 49 | Güzelhisar | 1030 (959) | Yes | 300 sg 8 c | 64.4 | Yes | Quarry, drought, private houses/barns , retiree village |  |
| 50 | Karakuzu | 900 (609) | No | 4000 sg 900 c | 548 | Yes | Petkim dam, industry |  |

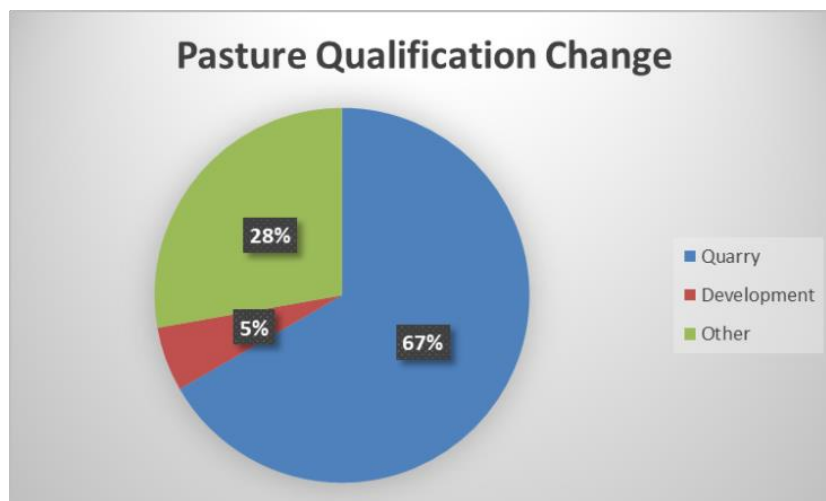


Figure 6.47. Pasture qualification change, Aliğa.

Accordingly, the primary land grabs in Aliğa come from quarries (67%), development (5%) and other public investments such as highway construction and prison (28%). Primary conflicts on the pastures of Aliğa villages are the housing occupations and the quarries. Additionally, there are public investments on pastures such as highway and prison constructions.

6.2. Evaluation of Case Studies

The frequency of the answers of chosen close-ended questions are analyzed by using content analysis, after 50 site visits and interviews with the village headmen of Bornova, Torbalı and Aliğa villages. The graph of the population changes in 2007-2017 reveals that, in 2017, the village population of the 12 villages in Bornova is 7.759, village population of the 23 villages in Torbalı is 10.830, and the village population of the 19 villages in Aliğa is 13.998 (unrevised number is 21.998 due to the prison in Bahçedere).

It is observed from the graph that Aliğa and Bornova villages have an increase in the population, while Torbalı villages have a slight decrease in the population in 2007-2016.³³⁷ A readjustment is made due to sudden the population increase in Aliğa in 2012 (5000 people capacity prison establishment in Bahçedere). Bornova villages have a population increase due to urban-rural migration (or rural gentrification). Torbalı villages have a population decrease due to migration, usually to the center of Torbalı district.

³³⁷ Ibid.

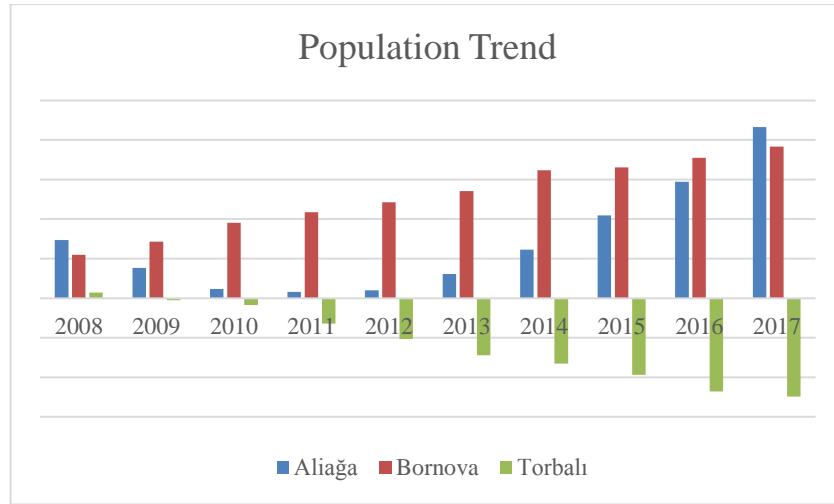


Figure 6.48. Population trend.³³⁸

In Bornova 10 among 12 village headmen claimed that there is no population decrease, on the contrary the villages of Bornova, which are very close to city center have newcomers mostly from the workers in İzmir and the retirees. There are two villages, which have a population decrease due to transportation and infrastructure problems. In Torbalı, 14 among 21 village headmen approved that there is a population decrease due to the younger residents go to the Torbalı center for better job opportunities. In Aliğa, 10 among 17 village headmen approved that there is a population decrease in terms of rural-urban migration of the younger residents, usually for working or for marriage. On the contrary, there are newcomers to the village, consist of retirees or urban residents, who want summerhouses at the villages (Figure 6.49).

The approximate number of animals is asked to the village headmen in terms of sheep and goats and cattles. The proximate number of animals in Aliğa villages are 17.000 sheep and goats and 8.015 cattles; the proximate number of animals in Bornova villages are 10.880 sheep and goats and 2.120 cattles; the proximate number of animals in Torbalı villages are 8.692 sheep and goats and 1.837 cattles. Especially Çamiçi and Eğridere village headmen in Bornova claimed that they used to have 20.00-30.000 sheep and goats 30 years ago; however, due to changing legislations and unstable marketing prices, many farmers sold their animals and the number of sheep and goats per village decreased around 3000 (Figure 6.50).

³³⁸ TURKSTAT, accessed 2018, <http://www.tuik.gov.tr/>.

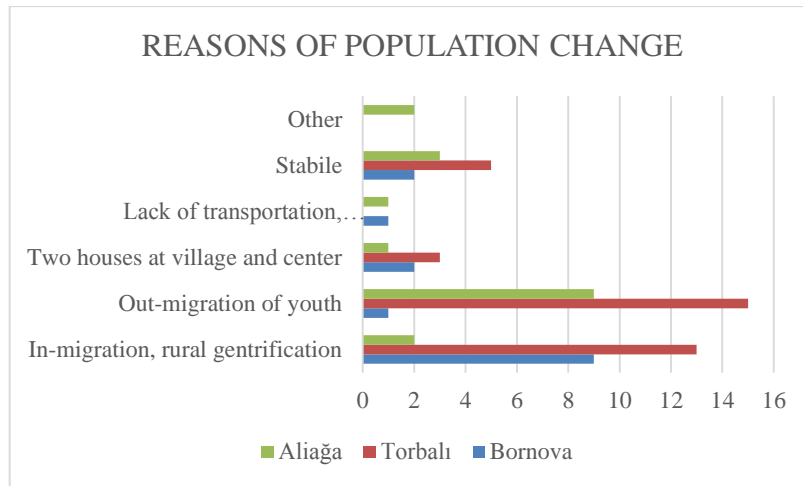


Figure 6.49. Reasons of the population change.

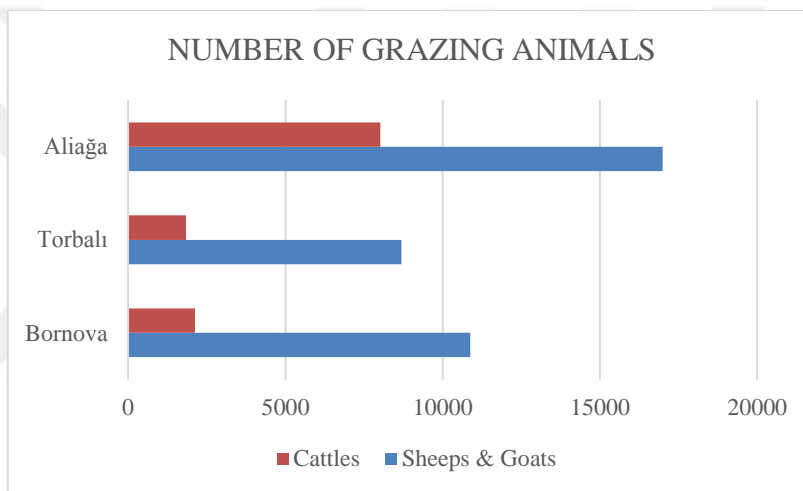


Figure 6.50. Number of grazing animals in the villages.

The primary land use conflicts on pastures in Aliğa are occupations and quarries, in addition with the public investments on the pastures such as highway construction and prison. The negative externalities of their proximity to industrial areas reflect in their air and soil quality. The primary land use conflicts on pastures in Bornova are urbanization and quarries, as well as a shift from agriculture sector to tourism and service sector. The primary land use conflicts on pastures in Torbalı are quarries and mines. The “other” category of the conflicts contains highway, roads, izban, hospital and similar public investments, natural gas line, greenhouse projects, artificial pond and prison (Figure 6.51).

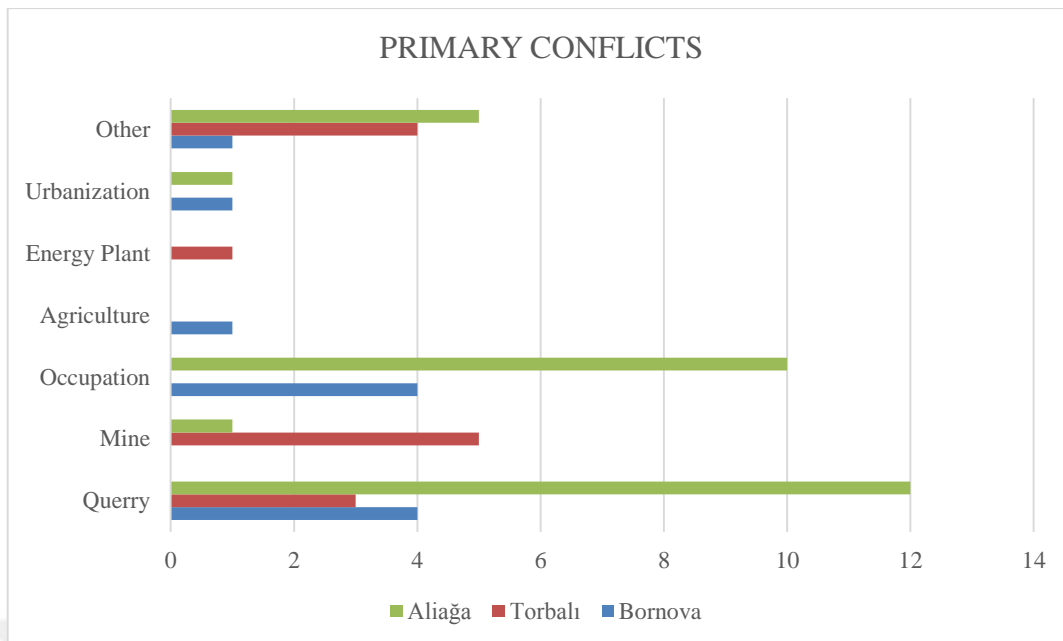


Figure 6.51. Primary conflicts in the villages.

The reasons of the declining pasture quality are answered as drought, unregistered pastures (most of them are public grazing lands), maquis and shrublands, forestry, rocky and barren lands, high thorn population, air pollution, proximity to organized industrial zones, quarries, mines, conurbation, highway construction and prison on the pastures, limited number of animals (undergrazing) and limited or none husbandry (Figure 6.52). The villages that are not counted in the reasons of pasture inefficiency has no registered pasture, mostly use forestry and private lands and/or barns for grazing or there is no grazing at all. One village (Karakuzu, Aliğa) claimed that their pastures are already efficient and only can be greener if there is more precipitation.

Most of the village headmen are disturbed by the lack of technical information, training and reclamation acts by relevant institutions and the ambiguity of the 6360-numbered Metropolitan Law. They are not hopeful in terms of the future of the pastures as their participation in the decision-making processes totally disappeared.

Almost half of the village headmen (26 among 50) claim that they have several cooperatives and unions; however, most of them are shot or inactive. They think the cooperative administrations fail and farmers do not trust in them anymore. The rural-urban migration of younger residents and ageing population of farmers is another reason to prevent establishing new cooperatives.

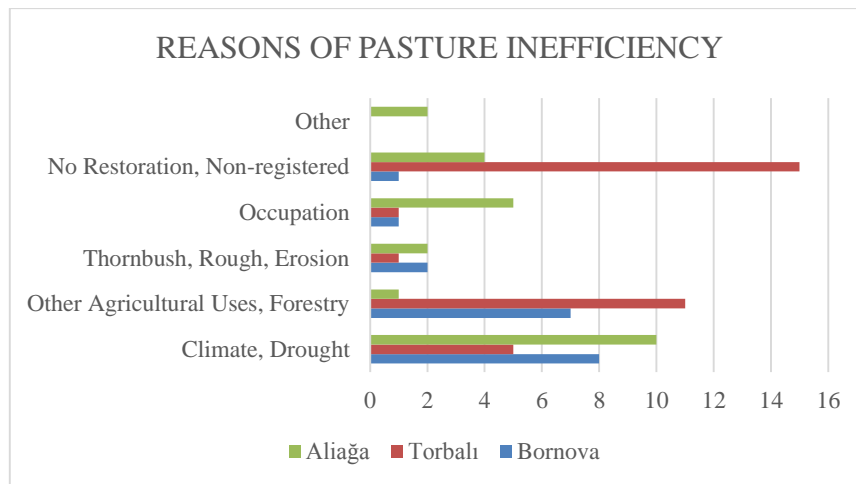


Figure 6.52. Reasons of the pasture inefficiency in the villages.

When they are asked about their opinions to improve the quality of pastures, they firstly request the reclamation of the pastures, stabilization of the market prices for their products, increasing the government subsidies to small farmers. Establishing artificial pastures, irrigation systems and ponds on the barren pasturelands, forage crop subsidies, registration of the pastures to be protected by the 4342-numbered Pasture Law against allocation acts to quarries and other uses, education and supervision by technical engineers, prevention stubble burning and promotion the cooperatives are the other answers. In a few villages where the pasturelands are barren and/or not effective for the economic activity, village headmen suggest turning them into picnic areas, fruit orchards, or even development plots (Figure 6.53).

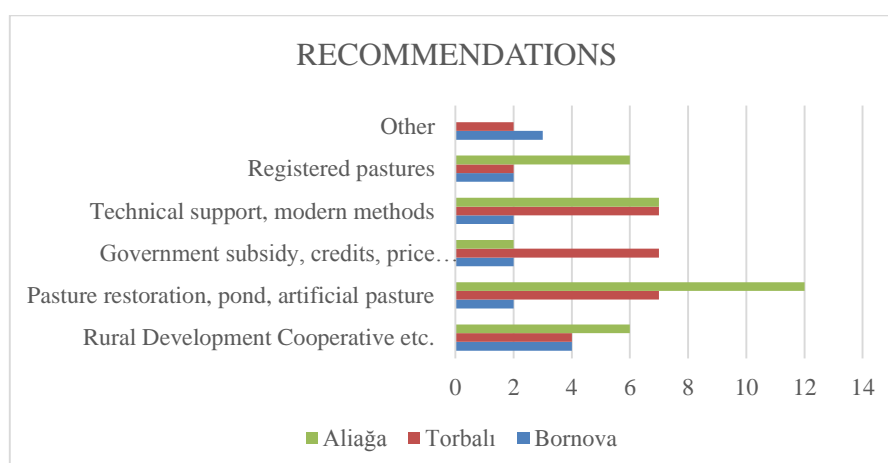


Figure 6.53. Recommendations for pasture improvement.

The following part presents the evaluation of the data gathered from the preliminary studies, snowball and in-depth interviews with professionals and media analysis.

6.3. Evaluation of Preliminary Studies

The main conflicts, potentials, predictions and recommendations about the pastures in İzmir are determined within the insights from the snowball and in-depth interviews during the first and second phases of the study. Unstructured snowball interviews and semi-structured in-depth interviews with professionals are made before the case areas are determined in order to understand the general scope of the pastures in Turkey and in İzmir.

During the interviews, 21 conflicts, 14 potentials and 12 recommendations are determined, coded and calculated according to their frequencies. The inferences of the preliminary studies are evaluated by the frequency analysis. According to the frequency among 21 answers of the interviewees, main conflicts on pastures are determined. Conflicts, potentials, recommendations and predictions on pastures from the preliminary interviews can be seen in Table 6.7 and Table 6.8. List of the interviews can be seen in APPENDIX D.

In terms of conflicts, firstly, occupation by the developments, breaking the 4342 numbered Pasture Law, administrative gaps and the lack of coordination among institutions are mentioned.

Secondly, malpractices including the activities of overgrazing, undergrazing, unseasonable and unconscious practices which eventually result in the pasture quality degradation; false mapping and conflicting plans and forestation, which refers to the conflicts and continuing litigations between Ministry of Food, Agriculture and Livestock, and Ministry of Forestry in terms of the ambiguous pasture-forest borders are mentioned.

Thirdly, wind energy developments (RES), weak regulations against the malpractices, land grabs, inefficient agricultural policies, limited number of sheep and goat farming, renting/allocation to other uses, mining activities, the 6360 numbered Metropolitan Law and its ambiguities and property conflicts are mentioned. And finally, conflicting land uses such as industry and activities such as agrotourism, poor ecological

conditions, and inefficiency of the vegetation, litigations, lack of cooperatives, high reclamation costs and disinfection by the agricultural pesticides are mentioned as the primary conflicts on the pastures.

Table 6.7. In-depth interviews with professionals: potentials and recommendations

| Interviewee | Potentials | Code | Recommendations | Code |
|-------------|--|------|--|------|
| P_1 | Biodiversity, flora, fauna | P3 | Raising awareness of the public and bureaucrats | R1 |
| | Husbandry | P4 | Cooperations, pasture specialization zones | R2 |
| | Uniqueness | P9 | Education of farmers, shepherds | R3 |
| | Savannah Law, agglomeration economies | P10 | Right implementations of 4342 numbered Pasture Law | R4 |
| | Forage crop production | P11 | - | - |
| P_2 | Provincial Pasture Commission | P12 | Right implementations of 4342 numbered Pasture Law | R4 |
| | - | - | Pasture Specialization Zones | R5 |
| | - | - | Watershed Management | R6 |
| | Consultancy from Universities | P13 | Regulation enhancements | R7 |
| P_3 | - | - | Penalty enhancements | R8 |
| | Digitizing maps, more accurate information | P14 | Imitating the worldwide reclamation examples of similar climates, e.g. California – Hereford Association (Url-8) | R9 |
| | - | - | Larger operations (e.g. min. 50 ha. in the world) | R10 |
| | - | - | Pasture Fund reclamation | R11 |
| | - | - | Private sector, professional operations (forage crop production - medicago sativa , investment) | R12 |

There are strong relations between the inadequate regulations, administrative gaps and pasture occupancies.

In terms of potentials, the frequencies among **14** answers of the interviewees reveal that the rich biodiversity of flora and fauna is the main potential of the pastures. There are many endangered floristic species and degrading nutritive forage crops in the pastures. Fauna is as crucial as flora, especially for the insect population. Obviously, the basic function of the pastures is the sustainability of the biodiversity, which eventually improve the rural development as being a potential for the husbandry and apiculture activities. Accelerating the pasture reclamation projects may improve the quality of pastures before serious losses in the biodiversity.

In terms of recommendations, the frequency among 12 answers of the interviewees, reveal that the accurate implementations of the 4342 numbered Pasture Law to prevent malpractices is the main recommendation for the pastures.

Table 6.8. Snowball interviews: conflicts and potentials

| Interviewee | Conflicts | Code | Potentials | Code |
|--------------------|--|-------------|----------------------------|-------------|
| S_2 | Property | C1 | Rural development | P1 |
| | - | - | Expropriation | P2 |
| S_3 | Property | C1 | - | - |
| | Politics | C2 | - | - |
| S_4 | Disinfection, chemical use | C3 | Biodiversity, flora, genes | P3 |
| | Forestation | C4 | Husbandry | P4 |
| | False mapping, conflicting plans | C5 | Apiculture | P5 |
| | - | - | Culture | P6 |
| S_5 | Malpractices, quality degradation | C6 | Husbandry | P4 |
| | Occupation by development | C7 | Erosion prevention | P7 |
| | Forestation | C4 | CO2 absorbtion | P8 |
| | 6360 Metropolitan Law | C8 | Biodiversity, flora, fauna | P3 |
| | Reclamation costs | C9 | - | - |
| S_7 | Occupation by development | C7 | - | - |
| | Forestation | C4 | - | - |
| S_8 | Occupation by development | C7 | Biodiversity, flora, fauna | P3 |
| | Mining | C10 | Uniqueness | P9 |
| | False mapping, conflicting plans | C5 | - | - |
| S_9 | Undercharge/overcharge renting | C11 | - | - |
| | Politics | C2 | - | - |
| S_10 | Administrative gaps, lack of coordination | C12 | - | - |
| | Occupation by development | C7 | - | - |
| | Weak regulations | C13 | - | - |
| | Mining | C10 | - | - |
| | RES | C14 | - | - |
| S_11 | False mapping, conflicting plans | C5 | - | - |
| | Weak regulations | C13 | - | - |
| | Occupation by development | C7 | - | - |
| | Administrative gaps, lack of coordination | C12 | - | - |
| S_12 | Lack of cooperatives and associations | C15 | - | - |
| | Weak regulations | C13 | - | - |
| | Malpractices, quality degradation | C6 | - | - |
| | Limited sheap & goat farming | C16 | - | - |
| | 6360 Metropolitan Law | C8 | - | - |
| | Administrative gaps, lack of coordination | C12 | - | - |
| | Occupation by development | C7 | - | - |
| | False mapping, conflicting plans | C5 | - | - |
| S_14 | Lack of cooperatives and associations | C15 | - | - |
| | Administrative gaps, lack of coordination | C12 | - | - |
| | Weak regulations | C13 | - | - |
| | Politics | C2 | - | - |
| S_15 | Occupation by development | C7 | - | - |
| | Malpractices, quality degradation | C6 | - | - |
| | Administrative gaps, lack of coordination | C12 | - | - |
| | Undercharge/overcharge renting | C11 | - | - |
| | Litigations | C17 | - | - |
| S_16 | Low efficiency of vegetation | C18 | - | - |
| | Malpractices, quality degradation | C6 | - | - |
| | Ecologic, climatic conditions (e.g. limited precipitation) | C19 | - | - |
| | Forestation | C4 | - | - |
| | Agrotourism | C20 | - | - |
| | Industry | C21 | - | - |

Enhancements in regulations and penalty fees, raising awareness by education, promoting cooperatives, watershed management and readjusted Pasture Fund are the following recommendations from the interviewees. The readjusting of Pasture Fund is a necessary recommendation to accelerate the reclamation projects. Furthermore, a Media Search Company (MTM) analyzed the news about the pastures in Turkey in 2012-2016 as another preliminary study. Most of the news concern about the whole country rather than a specific location, such as the comments and critics of professionals about the bag laws and legislative regulations (e.g. 6360 numbered Metropolitan Law) and their future negative externalities about the pastures. The news that has locational information such as village or city name is shown in a conceptual map within the tendencies (positive tendencies: green points, negative tendencies: red points).

In 2012, most of the news is about the 6360 numbered Metropolitan Law, its ambiguities about the future of the village common properties, including pastures. The predictions from the professionals focus on the possible shrinkage of the forests, agriculture lands and pastures, parallel to the disappearance of the village legal entities. There are huge reactions against the bag law proposal. The risks of the urbanization threat on the pastures (TOKİ), and qualification changes to other uses in spite of reclamation are obvious.

Allocation of the pastures to other uses is a problematic while there is a threat of foreign source dependency and increasing meat prices. There are statements similar to “*plunder of the pastures in favor of the state*” frequently used in the press because of the bag law proposal in 2012, which brings amnesty for the unlicensed constructions at the coasts and add *article 14/ı* in the 4342 numbered Pasture Law on behalf of the 6306 numbered Urban Renewal Law.

Recently, Turkey import fodder for husbandry, convert degenerated pastures into fruit gardens, promote apiculture, certification programs and regional subsidies. The 70% of the husbandry costs are the forage crops, which are highly expensive and the government promote to plant forage crops on the agricultural lands more; rather than promote the sustainable pasture reclamation practices.

In 2012, the news from East is mostly about the “peace process” and its positive externalities in terms of governmental subsidies and reclamations on the agricultural lands and pastures, which used to be the mined terrains. The news that has positive and negative tendencies in 2012 is shown in Table 6.9.

In 2013, the news is mostly about the critics against the 6360 numbered and the 4342 numbered Laws, searching solutions for the husbandry sector which is running out, workshops and seminars, urbanized villages, suffered producers, forage crop subsidies, though life conditions of the graziers, civil acts against hydroelectric power plants (HES), apiculture congress and the project trips for husbandry (Belgium). The news that has positive and negative tendencies in 2013 is shown in Table 6.10.

Table 6.9. Positive and negative news about pastures in 2012.³³⁹

| POSITIVE NEWS | NEGATIVE NEWS |
|---|---|
| <ol style="list-style-type: none"> 1. Reclamation acts 2. Erosion prevention acts 3. Husbandry subsidies 4. Common milkweed subsidies 5. Ankara goat subsidies 6. Workshops | <ol style="list-style-type: none"> 1. Critics on legislations (6360 numbered Metropolitan Law, 4342 numbered Pasture Law) 2. Urban Renewal 3. Occupation 4. Malpractices 5. Unproductivity 6. Agricultural and forestry use 7. Foreign source dependency and importation 8. Quarry, mine, thermal power plant, wind power plant, organized stock industry zone 9. Government mass housing projects (TOKİ) 10. Less precipitation 11. Chemical use and agricultural pesticides 12. Food insecurity 13. Inadequate reclamation |

Table 6.10. Positive and negative news about pastures in 2013.³⁴⁰

| POSITIVE NEWS | NEGATIVE NEWS |
|---|--|
| <ol style="list-style-type: none"> 1. Apiculture 2. Congress, workshops and seminars 3. Solution process and revitalization of the eastern pasturelands 4. Artificial wetlands for water buffalo incentives 5. Forage crop subsidies | <ol style="list-style-type: none"> 1. Civil acts against HES projects 2. Unproductiveness of the Pastures 3. 6360-numbered Metropolitan Law and the End of Village Legal Entities 4. 3rd İstanbul Bridge and Airport Project 5. Wind Energy Developments (RES) 6. Quarries 7. Uneven Development 8. Urbanization Risk on the Highlands 9. Erosion Risk |

In 2014, the news is mostly about the civil acts against wind power plants (RES) in Karaburun and Çeşme, bag laws and the development risk on the pastures. A statement even claimed that: “*cattles in barns, people in pastures*”. Mines, quarries and fires on pastures (Ezine, Çanakkale), TZOB, ZMO and Veterinariaon Union reports, concretion

³³⁹ MTM, 2016.

³⁴⁰ Ibid.

risk on pastures, goat permission in the forestry, villagers forced to be mineworkers (Soma), and shepherd certification programs (Göksun) are the other news. The news that has positive and negative tendencies in 2014 is shown in Table 6.11.

In 2015, the general news is about the pasture qualification losses, importance of the pastures and meadows, problems of the farmers, land rent on the pastures, pastures on sale, civil acts, urgent expropriation acts (RES, Karaburun), and pasture loss for highway projects. The news that has positive and negative tendencies in 2015 is shown in Table 6.12.

Table 6.11. Positive and negative news about in 2014.³⁴¹

| POSITIVE NEWS | NEGATIVE NEWS |
|---|---|
| 1. Shepherd Certification | 1. Quarries |
| 2. Pasture Subsidies | 2. Pasture Qualification Change |
| 3. Foreign Investors | 3. Occupations |
| 4. Solar Energy Projects | 4. Bag law |
| 5. Cooperatives | 5. Prefab Houses on Pastures after the Earthquake |
| 6. Higher Production Potential in Husbandry | 6. Pasture Leasing |
| 7. Forage Crop Subsidies | 7. Diminishing Meat and Milk Quality |
| 8. Pasture Reclamations | 8. HES, RES |
| 9. Afforestation | 9. Fires |
| | 10. Instability in the Prices |
| | 11. Farmers Becoming Miners |
| | 12. Forestation of the Pastures |
| | 13. 3 rd İstanbul Bridge and Future Negative Externalities |
| | 14. Agricultural Pesticides |

Table 6.12. Positive and negative news about pastures in 2015.³⁴²

| POSITIVE NEWS | NEGATIVE NEWS |
|--|---|
| 1. "Transparent" Contracts | 1. Drought |
| 2. Afforestation | 2. Civil Acts against Private Agriculture Company (Göllüce) |
| 3. Forage Crop Subsidies (Karaman) | 3. Urgent Expropriation Acts (Karaburun) |
| 4. Pasture Reclamations (Çorum) | 4. Highway Construction (İzmir-Ödemiş) |
| 5. Climate Friendly Projects (Sarayönü) | 5. 3 rd Airport in İstanbul |
| 6. Animal Watery Subsidies | 6. Pastureland Selling (Antalya, Samsun) |
| 7. Increasing Apiculture Activities and Honey Production (Giresun) | 7. Lake Flood (Bursa-Ulubat) |
| | 8. Pastures Lost Qualification (Ankara) |

In 2016, the news is about diminishing pastures and agricultural lands, recent regulations, Savannah Status and the protection of several regions, potential quarry-booms after the recent legislations, shrinking pastures, forest plunders and husbandry

³⁴¹ MTM, 2016.

³⁴² Ibid.

workshops. There are statements such as “*pastures are sacrificed for land rent and partizans*”. There are wrong agricultural policies, import, land selling, expensive forage crops and the possible negative externalities of the legislation changes. The news that has positive and negative tendencies in 2016 is shown in Table 6.13.

Table 6.13. Positive and negative news about pastures in 2016.³⁴³

| POSITIVE NEWS | NEGATIVE NEWS |
|---|---|
| 1. Grazing Management in Several Regions (Saray, Tekirdağ) | 1. Development Acts on Villages |
| 2. Forage Crop Subsidies (Kastamonu) | 2. Pasture Leasing to Agriculture (Sivas, Mahmudiye, Eskişehir) |
| 3. Pasture Reclamation (Kütahya) | 3. Cement Factory on Pastures |
| 4. Savannah Project (Samsun, Çukurova, Adana, Osmaniye, Mersin) | 4. Thermal Power Plants |
| 5. Animal Watery Subsidies (Gümüşhane) | 5. Plunder of Forests (Silifke, Mersin) |
| 6. Goat Farming Subsidies (Burdur) | 6. Waste Storage on Pastures (Gerenkova, Aydın) |
| 7. Pasture Reclamation by Solar Panels and Irrigation Systems (Gaziantep) | 7. RES (karaburun) |
| 8. Afforestation | 8. Selling of Highlands (Gazipaşa, Antalya) |
| | 9. Pasture Qualification Changes (Şanlıurfa) |
| | 10. Shrinkage of the Pastures (Balıkesir) |

Additionally, there was a new bag law about olives, coasts and pastures discussed in June 2017 and there was a civil act of village women in Kütahya against a construction act on their pastures. Fortunately, public opinion against the bag law helped to block it, until now.

To sum, the overall positive news, which have locational information in 2012-2016 are the pasture reclamation projects, animal watery subsidies, artificial ponds, husbandry subsidies, forage crop subsidies, solar energy irrigation systems, workshops, congress and seminars on husbandry and apiculture and honey production subsidies.

The overall negative news, which have locational information in 2012-2016 are the (1) occupations (forestation, housing etc.), (2) energy investments, (3) quarries, (4) mines, (5) barren pastures, (6) less precipitation, (7) allocation acts, (8) agricultural uses, (9) agricultural pesticides, (10) bag laws, (11) legal gaps, (12) ambiguity of the Laws, (13) organized stock industry zones, (14) urbanization risks on the rural areas, (15) food insecurity and (16) inadequate pasture managements. Positive news is shown with green points, while negative news is shown with red points (Figure 6.54).

The data combined from the case studies and preliminary studies including interviews and media analysis specify the pasture dimensions, which are used in the

³⁴³ MTM, 2016.

pasture dimension set for eDPSIR causal analysis model along with the dimensions gathered from the case studies.

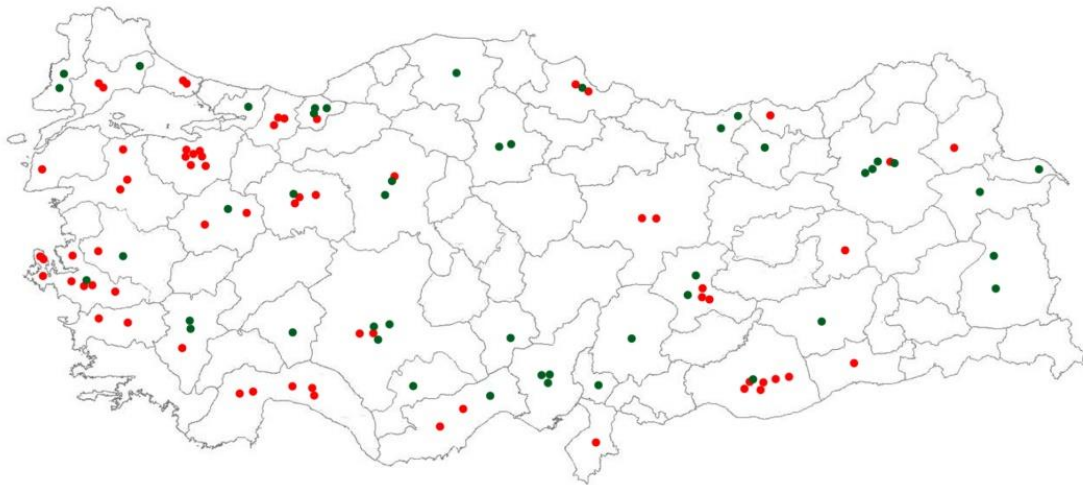


Figure 6.54. 2012-2016 pasture lands on press.³⁴⁴

6.4. DPSIR Causal Chain Framework of Pastures

There are three actor levels of the conceptual DPSIR chain framework applied on the pastures according to snowball interviews with professionals, media search and in-depth interviews from the case study villages generate: (1) professional actor level, (2) national level, and (3) local level.

In professional actor level the pasture dimensions are generated from the answers of the interviews in APPENDIX A and APPENDIX B. List of the interviews can be seen in APPENDIX D. There are 8 driving forces, 6 pressures, 7 states, 6 impacts and 10 responses determined from the snowball and in-depth interviews with professionals (Figure 6.55).

³⁴⁴ MTM, 2016.

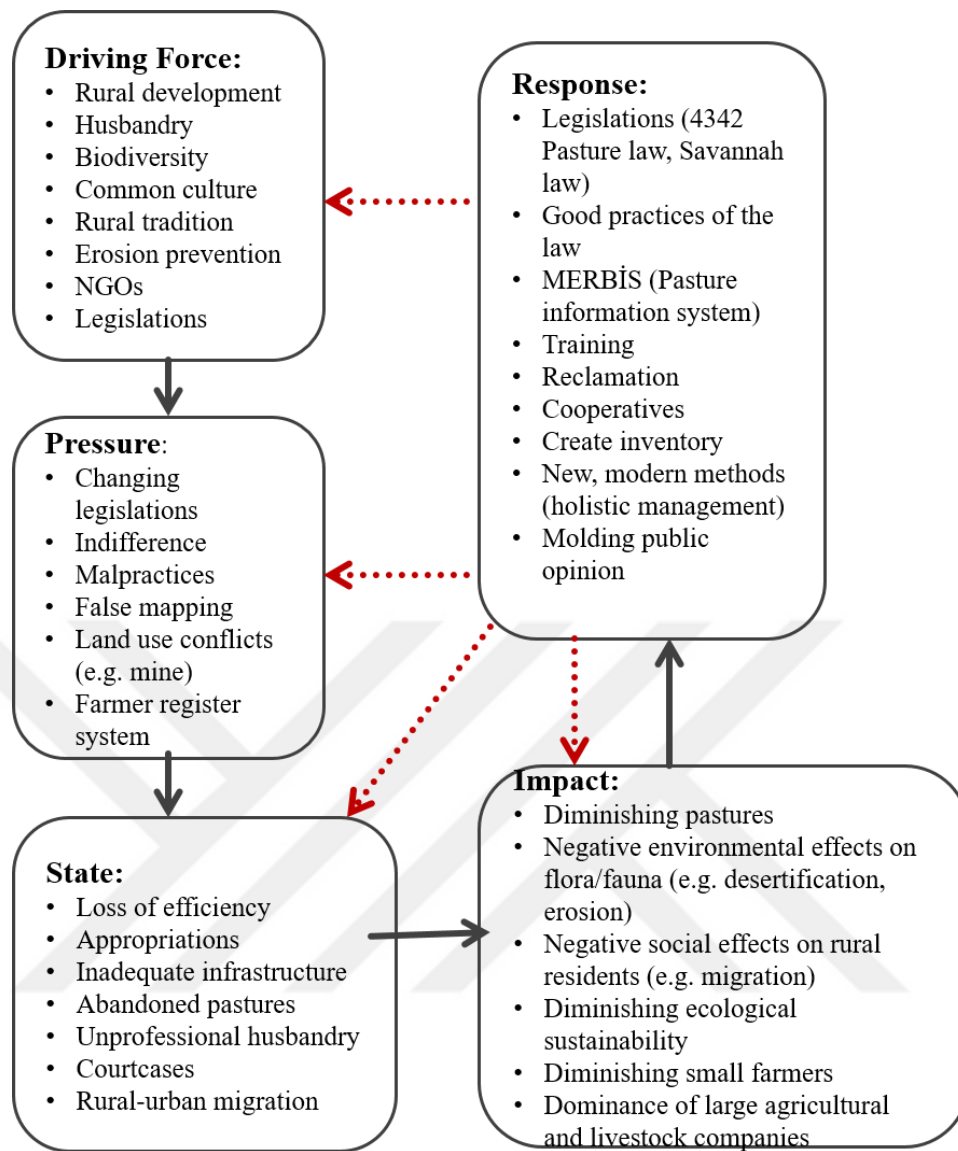


Figure 6.55. Professional actor level preliminary DPSIR model, 2017.

In national actor level (Figure 6.56), the pasture dimensions are generated from the positive and negative news that gathered from the media analysis, which is evaluated in the preliminary studies. There are 5 driving forces, 7 pressures, 9 states, 8 impacts and 10 responses are determined from the media analysis.

In local actor level (Figure 6.57), pasture dimensions are generated from the case study interviews with the village headmen (APPENDIX C). The list of the interviews can be seen in APPENDIX D.

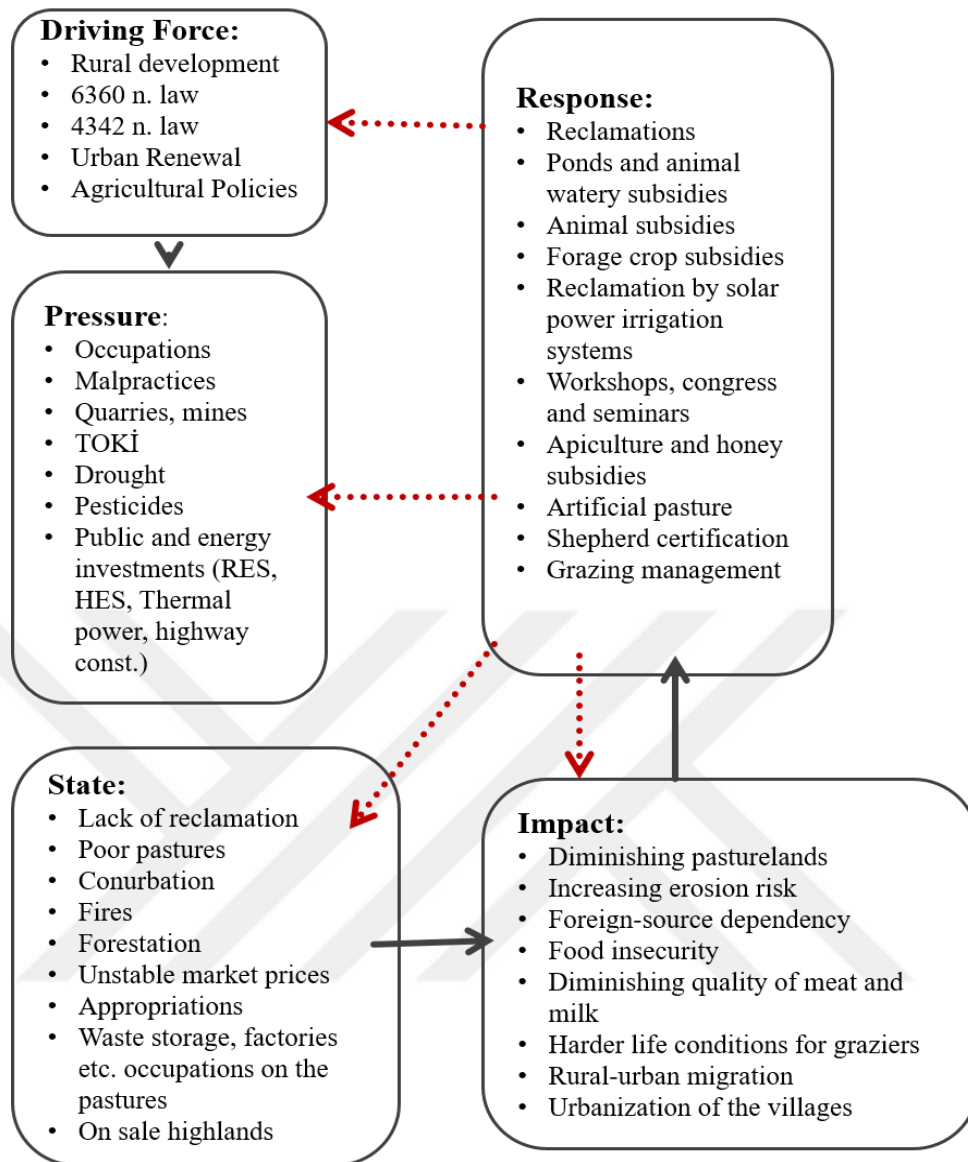


Figure 6.56. National actor level preliminary DPSIR model, 2017.

There are 5 driving forces, 9 pressures, 6 states, 5 impacts and 11 responses are determined from the case study. Apart from these three levels, all determined pasture dimensions in the study generated an integrated DPSIR causal chain framework.

There are two approaches to the DPSIR framework: (1) state/impact oriented and (2) pressure-based, driver-oriented. While, the first focuses on the societal responses to the environmental state and impacts; the second focuses on to monitor pressures caused by the socio-economic driving forces. To eliminate the root causes of

the conflicts, “pressure-based, driver-oriented” approach is more favored for being proactive rather than reactive (Table 6.14).³⁴⁵

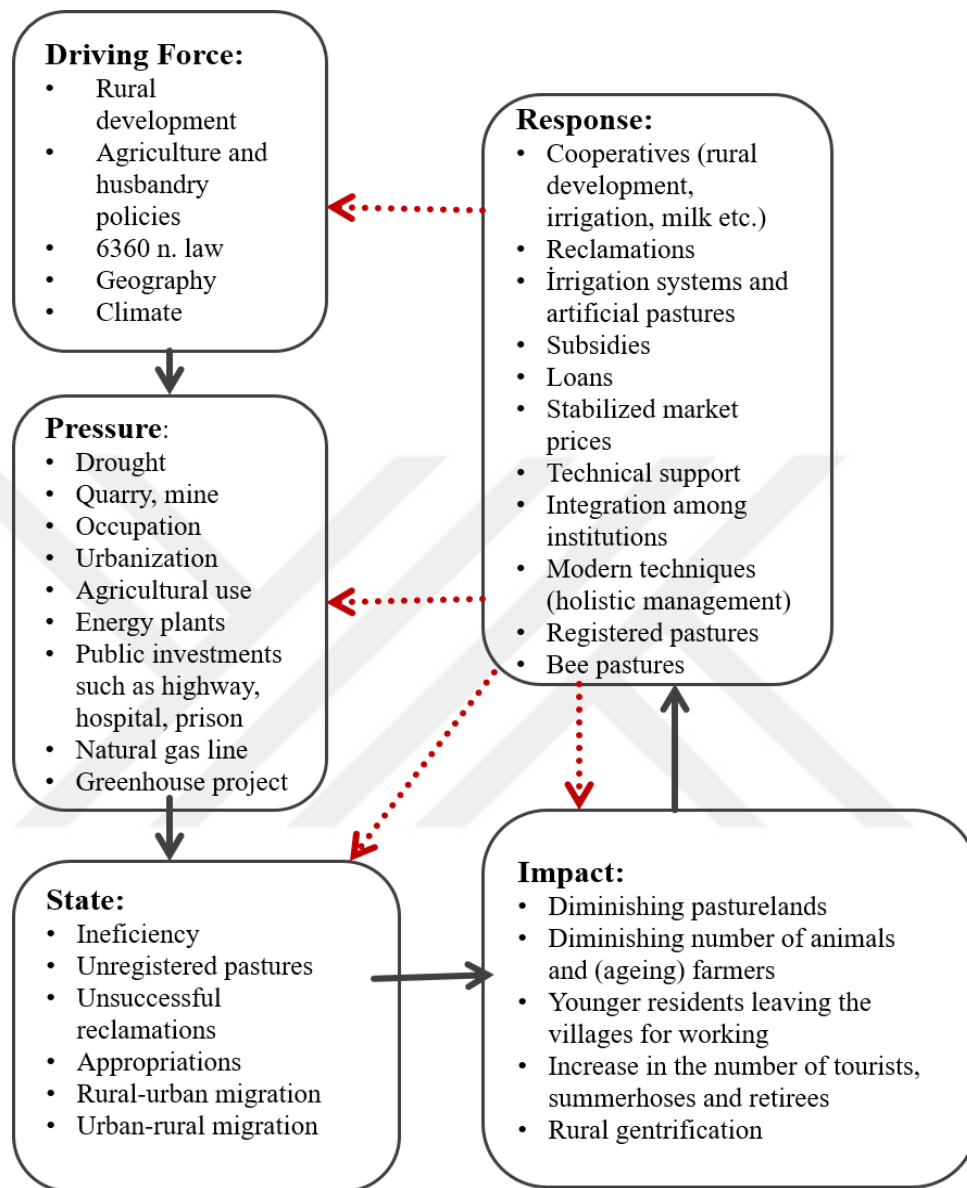
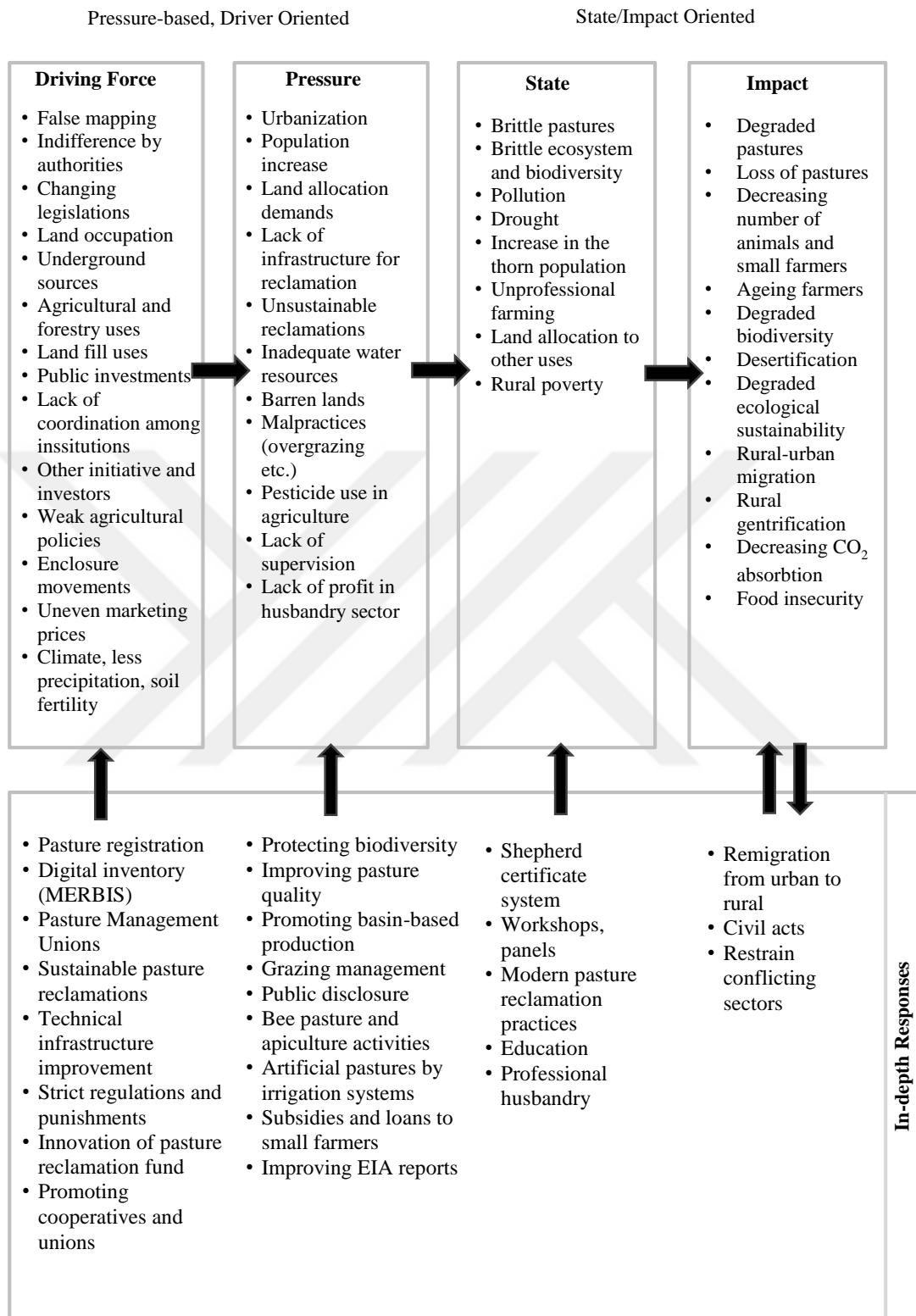


Figure 6.57. Local actor level preliminary DPSIR model, 2017.

Summarizing, grouping or separating some of the dimensions within three levels above finalize as the pasture dimension set in the eDPSIR causal network. Accordingly, there are 14 driving forces, 11 pressures, 8 states, 11 impacts and 25 responses, which is adapted manually to the model (Table 6.15-6.16).

³⁴⁵ Zhou et.al. "Assessing agricultural sustainable development," 1292-1299.

Table 6.14. DPSIR pasture dimensions for pastures.³⁴⁶



³⁴⁶ Adapted from Zhou et.al. "Assessing agricultural sustainable development," 1292-1299.

In order to increase the validity and to minimize the subjectivity, a group consensus workshop and expert opinion surveys are made at the last stage of the case study. The causal relationships among the categorized pasture dimensions are determined by the DPSIR model's self-prioritization by the nodes.

The pasture dimension set is stationary due to the limited time during the data gathering of the study; however, the interrelations of the pasture dimensions can be developed through the time comparisons and changing conditions, such as the new cases, changing legislations, increasing the number of surveys and additive quantitative methods.

Table 6.15. DPSI Pasture Dimensions

| Driving Force | Pressure | State | Impact |
|---|--|--|--|
| (d1): False / inadequate mapping | (p1): Urbanization | (s1): Brittle pastures | (i1): Degraded pastures |
| (d2): Indifference of authorities | (p2): Population increase | (s2): Brittle ecosystem and biodiversity | (i2): Loss of pastures |
| (d3) Changing legislations | (p3): Land allocation demands | (s3): Pollution | (i3): Decreasing number of animals and small farmers |
| (d4): Land occupation | (p4): Lack of infrastructure for pasture reclamation | (s4): Drought | (i4): Ageing farmers |
| (d5): Underground resources | (p5): Unsustainable reclamations | (s5): Increase in the thorn plant population | (i5): Degraded biodiversity |
| (d6): Agricultural and forestry uses | (p6): Inadequate water resources | (s6): Unprofessional farming | (i6): Desertification |
| (d7): Land fill uses | (p7): Barren lands | (s7): Land allocation to other uses | (i7): Degraded ecological sustainability |
| (d8): Public investments | (p8): Malpractices (overgrazing etc.) | (s8): Rural poverty | (i8): Rural-urban migration |
| (d9): Lack of coordination among institutions | (p9): Pesticide use in agriculture | | (i9): Rural gentrification |
| (d10): Other initiative and investors | (p10): Lack of supervision | | (i10): Decreasing CO ₂ absorption |
| (d11): Weak agricultural policies | (p11): Lack of profit in husbandry sector | | (i11): Food insecurity |
| (d12): Enclosure movements | | | |
| (d13): Uneven marketing prices | | | |
| (d14): Climate, precipitation, soil fertility | | | |

Table 6.16. “R” Pasture Dimensions

| Responses | |
|--|--|
| (r1): Pasture registration | (r14): Bee pasture and apiculture activities |
| (r2): Digital inventory | (r15): Artificial pastures by irrigation systems |
| (r3): Pasture Management Unions | (r16): Subsidies and loans to small farmers |
| (r4): Sustainable pasture reclamations | (r17): Improving EIA reports |
| (r5): Technical infrastructure improvement | (r18): Shepherd certificate system |
| (r6): Strict regulations and punishments | (r19): Workshops, panels |
| (r7): Innovation of pasture reclamation fund | (r20): Modern pasture reclamation practices |
| (r8): Promoting cooperatives and unions | (r21): Education |
| (r9): Protecting biodiversity | (r22): Professional husbandry |
| (r10): Improving pasture quality | (r23): Remigration from urban to rural |
| (r11): Promoting basin-based production | (r24): Civil acts |
| (r12): Grazing management | (r25): Restrain conflicting sectors |
| (r13): Public disclosure | |

6.5. eDPSIR Causal Network Model of Pastures

According to the eDPSIR model, the pressure interface is an economic sector or a human activity that exerts a pressure on the environment and the key nodes are determined according to prioritization by the multiple incoming and outgoing arcs. The *pressure interface* of the eDPSIR model of pastures in the study is determined as the malpractices such as overgrazing, appropriation to other uses and the indifference of the authorities; and the *key nodes* are determined as follows:

Root Nodes, which are mostly the root causes of several environmental problems, are Land occupation (d4), Public investments (d8), Lack of coordination among institutions (d9).

Central Nodes, which are crucial for the web of cause and effects, are Urbanization (p1), Land allocation demands (p3), Malpractices (p8), Lack of profit in husbandry sector (p11), Brittle pastures (s1), Brittle ecosystem and biodiversity (s2), Land allocation to other uses (s7), Rural poverty (s8). End of Chain Nodes, which are the visible problems at the end of the process are Degraded pastures (i1), Loss of pastures (i2), Decreasing number of animals and small farmers (i3), Degraded biodiversity (i5), Degraded ecological sustainability (i7).

Expert opinion surveys suggested several more pasture dimensions. Accordingly, additive *driving forces* are: (1) importance of the pastures in order to sustain the groundwater resources, and (2) property of the pastures and property relations. Additive *pressures* are: (1) lack of alternative job opportunities in the rural, (2) investors, and (3) global, supra-national and political contexts. Additive *states* are: (1) dispossession, and (2) shrinkage in the grazing based husbandry sector. Additive *responses* are: (1) rural land planning and management, (2) agricultural communication and publication, (3) new employment opportunities at the rural, (3) improvement of the life quality at the rural, and (4) new property relations.

All cause and effect relation network of the DPSI dimensions are seen in the eDPSIR model. There is relationality among almost all dimensions; however, the relationality above the average (50%) is shown in the model (Figure 6.55).

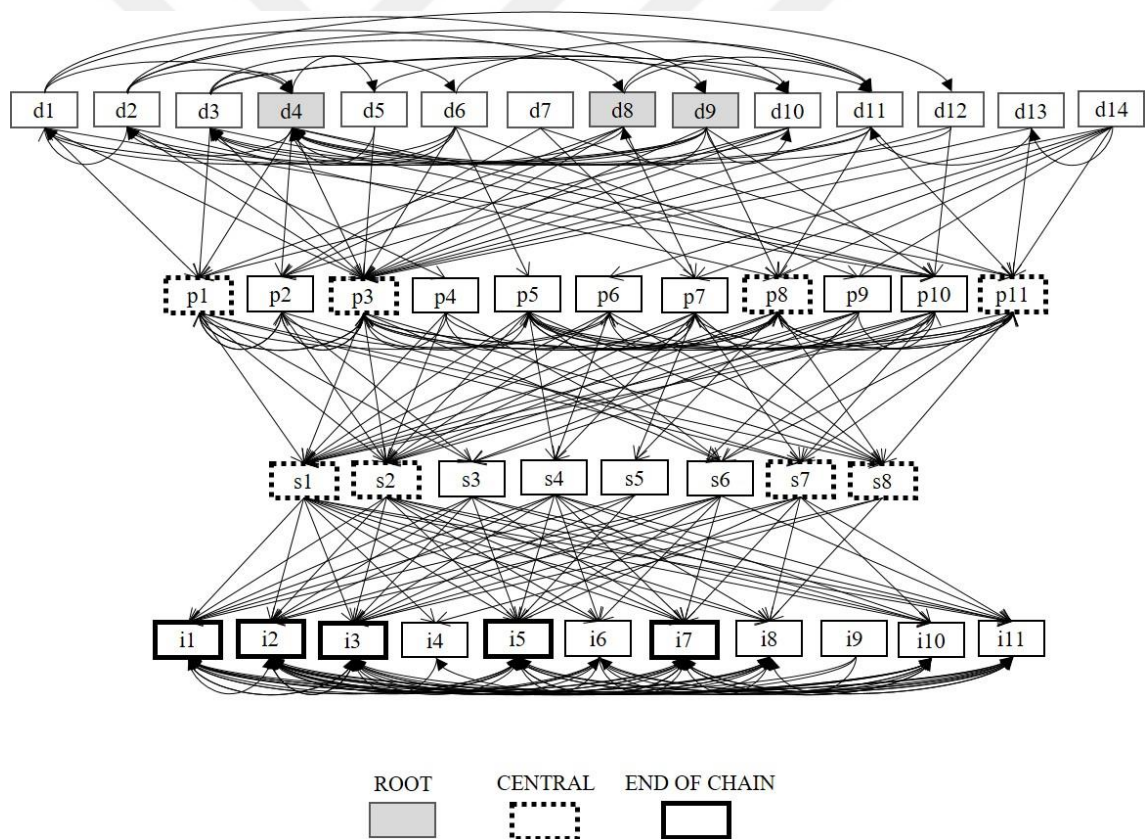


Figure 6.58. eDPSIR Causal Network Model of Pastures

Response dimensions positively affect the DPSI dimensions, in which the “pressure-based, driver-oriented” responses are prior in order to eliminate the conflicts

before they emerge. Table 6.17 shows the relationality between R and DPSI dimensions, which are above the average.

Table 6.17. Responses to DPSI Dimensions

| Responses | Dimensions |
|-------------------------------------|---|
| (r1): Pasture registration | d1-d4-d5-d6-d7-d8-p3-s1-s2-s7-i2 |
| (r2): Digital inventory | d1-d4-d6-d9-d12-p1-p3-p10-s7-i2 |
| (r3): Pasture Management Unions | d2-d4-d6-p3-p4-p5-p8-p10-p11-s1-s6-s7-i1-i2-i3-i5 |
| (r4): Sustainable reclamations | d3-d4-d6-p3-p4-p5-p6-p7-p8-p11-s1-s2-s4-s5-s6-i1-i2-i5-i7 |
| (r5): Technical infrastructure | d1-p3-p4-p8-s1-i1 |
| (r6): Strict regulations | d3-d4-p3-p5-p10-s3-s6-s7-i2 |
| (r7): Innovation of pasture fund | p3-p4-p11-s1-i1-i2 |
| (r8): Cooperatives and unions | d11-d13-p3-p8-p10-s6-i3-i8 |
| (r9): Protection of biodiversity | d4-d6-d14-p2-p3-p5-p7-p8-p9-s1-s2-s5-i2-i5-i6-i7-i10 |
| (r10): Improving pasture quality | d14-p3-p4-p5-p7-p8-p11-s1-s2-s5-s6-s7-i1-i2-i3-i5-i6-i7-i10-i11 |
| (r11): Basin-based production | d2-d3-d6-d10-d11-d13-p3-p11-s1-s2-s7-i1-i2-i5-i7 |
| (r12): Grazing management | p3-p4-p5-p7-p8-p11-s1-s2-s5-s6-i1-i2-i3-i5-i10 |
| (r13): Public disclosure | d2-d3-d4-d7-d10-d11-p3-p5-p8-p9-s6-s7 |
| (r14): Bee pasture and apiculture | p3-p5-p9-s2-s3-s5-s7-s8-i5-i7 |
| (r15): Artificial pastures | p3-p4-i1 |
| (r16): Subsidies and loans | d11-p11-s8-i3-i4-i8 |
| (r17): Improving EIA reports | d1-d2-d3-d4-d5-d6-d7-d8-d9-d10-p3-p10-s7-i1-i2-i5 |
| (r18): Shepherd certificate system | d11-p8-s1-s2-s6-i3 |
| (r19): Workshops, panels | d2-p4-p5-p8-p9-s1-s6-i1-i2-i5-i6 |
| (r20): Modern pasture reclamations | p3-p4-p5-p8-p9-s1-s2-s4-s5-s6-i1-i2-i3-i5-i6-i7 |
| (r21): Education | d1-d2-d6-d10-d11-p3-p5-p8-p9-s3-s6-s7-i1-i2-i4-i6 |
| (r22): Professional husbandry | d11-d13-p5-p11-s6 |
| (r23): Remigration to rural | d4-d11-p3-s7-s8-i4 |
| (r24): Civil acts | d2-d3-d4-d5-d6-d10-d11-d12-p3-p10-s1-s3-s7-i2-i5 |
| (r25): Restrain conflicting sectors | d1-d2-d3-d4-d5-d6-d7-d8-d9-d10-d11-d12-p1-p3-p10-s1-s2-s6-s7-i1-i2-i5 |

Accordingly, the prior responses to the “pressure-based, driver-oriented” dimensions are:

Pasture registration (r1) as a response against the false/inadequate mapping (d1), land occupation (d4), underground resources (d5), agricultural and forestry uses (d6), land fill uses (d7), public investments (d8), and land allocation demands (p3).

Digital inventory (e.g. MERBIS) (r2) as a response against the false/inadequate mapping (d1), land occupation (d4), agricultural and forestry uses (d6), lack of coordination among institutions (d9), enclosure movements (d12), urbanization (p1), land allocation demands (p3), and lack of supervision (p10).

Pasture Management Unions (r3) as a response against the indifference of authorities (d2), land occupation (d4), agricultural and forestry uses (d6), land allocation demands (p3), unsustainable reclamations (p5), malpractices (p8), lack of supervision (p10), and lack of profit in husbandry sector (p11).

Sustainable pasture reclamations (r4) as a response against the changing legislations, land occupation (d4), agricultural and forestry uses (d6), land allocation demands (p3), lack of infrastructure for pasture reclamation (p4), unsustainable reclamations (p5), inadequate water resources (p6), barren lands (p7), malpractices (p8), and lack of profit in husbandry sector (p11).

Technical infrastructure improvement (r5) as a response against the false/inadequate mapping (d1), land allocation demands (p3), lack of infrastructure for pasture reclamation (p4), malpractices (p8), and brittle pastures (s1).

Strict regulations and punishments (r6) as a response against the changing legislations (d3), land occupation (d4), land allocation demands (p3), unsustainable reclamations (p5), and lack of supervision (p10).

Innovation of pasture reclamation fund (r7) as a response against the land allocation demands (p3), lack of infrastructure for pasture reclamation (p4), and lack of profit in husbandry sector (p11).

Promoting cooperatives and unions (r8) as a response against the weak agricultural policies (d11), uneven marketing prices (d13), land allocation demands (p3), malpractices (p8), and lack of supervision (p10).

Protection of biodiversity (r9) as a response against the land occupation (d4), agricultural and forestry uses (d6), climatic conditions (d14), population increase (p2), land allocation demands (p3), unsustainable reclamations (p5), barren lands (p7), malpractices (p8), and pesticide use in agriculture (p9).

Improving pasture quality (r10) as a response against the climatic conditions (d14), land allocation demands (p3), lack of infrastructure for pasture reclamation (p4), unsustainable reclamations (p5), barren lands (p7), malpractices (p8), and lack of profit in husbandry sector (p11).

Promoting basin-based production (r11) as a response against the indifference of authorities (d2), changing legislations (d3), agricultural and forestry uses (d6), other initiative and investors (d10), weak agricultural policies (d11), uneven marketing prices (d13), land allocation demands (p3), and lack of profit in husbandry sector (p11).

Grazing management (r12) as a response against the land allocation demands (p3), lack of infrastructure for pasture reclamation (p4), unsustainable reclamations (p5), barren lands (p7), malpractices (p8), and lack of profit in husbandry sector (p11).

Public disclosure (r13) as a response against the indifference of authorities (d2), changing legislations (d3), land occupation (d4), land fill uses (d7), other initiative and investors (d10), weak agricultural policies (d11), land allocation demands (p3), unsustainable reclamations (p5), malpractices (p8), and pesticide use in agriculture (p9).

Bee pasture and apiculture activities (r14) as a response against the land allocation demands (p3), unsustainable reclamations (p5), and pesticide use in agriculture (p9).

Artificial pastures by irrigation systems (r15) as a response against the land allocation demands (p3), and lack of infrastructure for pasture reclamation (p4).

Subsidies and loans to small farmers (r16) as a response against the weak agricultural policies (d11), and lack of profit in husbandry sector (p11).

Improving EIA reports (r17) as a response against the false/inadequate mapping (d1), indifference of authorities (d2), changing legislations (d3), land occupation (d4), underground resources (d5), agricultural and forestry uses (d6), land fill uses (d7), public investments (d8), lack of coordination among institutions (d9), other initiative and investors (d10), land allocation demands (p3) and lack of supervision (p10).

Shepherd certificate system (r18) as a response against the weak agricultural policies (d11), and malpractices (p8).

Workshops, panels (r19) as a response against the indifference of authorities (d2), lack of infrastructure for pasture reclamation (p4), unsustainable reclamations (p5), malpractices (p8), and pesticide use in agriculture.

Modern pasture reclamation practices (r20) as a response against the land allocation demands (p3), lack of infrastructure for pasture reclamation (p4), unsustainable reclamations (p5), malpractices (p8), and pesticide use in agriculture (p9).

Education (r21) as a response against the false/inadequate mapping (d1), indifference of authorities (d2), inadequate water resources (d6), other initiative and investors (d10), weak agricultural policies (d11), land allocation demands (p3), unsustainable reclamations (p5), malpractices (p8), and pesticide use in agriculture (p9).

Professional husbandry (r22) as a response against the weak agricultural policies (d11), uneven marketing prices (d13), unsustainable reclamations (p5), malpractices (p8), and lack of profit in husbandry sector (p11).

Remigration from urban to rural (r23) as a response against the underground resources (d4), weak agricultural policies (d11), and land allocation demands (p3).

Civil acts (r24) as a response against the indifference of authorities (d2), changing legislations (d3), Land occupation (d4), underground resources (d5), agricultural and forestry uses (d6), other initiative and investors (d10), weak agricultural policies (d11), enclosure movements (d12), land allocation demands (p3), and lack of supervision (p10).

Restrain conflicting sectors (r25) as a response against the false/inadequate mapping (d1), indifference of authorities (d2), changing legislations (d3), land occupation (d4), underground resources (d5), agricultural and forestry uses (d6), land fill uses (d7), public investments (d8), other initiative and investors (d10), weak agricultural policies (d11), enclosure movements (d12), urbanization (p1), population increase (p2), land allocation demands (p3), and lack of supervision (p10).

6.6. Evaluation and Discussion

In order to determine the main conflicts and generate the pasture dimension set for eDPSIR causal network model in this study, data is gathered from the snowball interviews, in-depth interviews with professionals and village headmen, personal observations, commission reports and media analysis are evaluated by the content analysis. DPSIR is a facilitative organization tool, which aims to understand the cause and effect relationships in environmental and social issues to eliminate the socio-environmental conflicts and simplify the data transmission for better communication with the decision-makers. Therefore, a pasture dimension set within an eDPSIR causal analysis model is constituted for the re-position and re-evaluation of pastures in the planning and design literatures.

Pastures are the rural-ecological commons, which have use value over exchange value and crucial for the ecological sustainability, biodiversity, flora and fauna, erosion prevention, CO₂ absorption, apiculture and the rural development. However, the common pastures in Turkey are degrading and shrinking due to several conflicts and threats such as ecological constraints, enclosure movements, allocation to other uses and malpractices such as false mapping, overgrazing and undergrazing. Forestation, agricultural use and the development risk on the pastures by the new legislations and bag laws also create serious conflicts.

Administration gaps and lack of coordination between the institutions and lack of accurate cadastral maps to specify the current land use conditions are the two main conflicts determined in the preliminary studies. Because of these conditions, determination, delimitation and allocation (3T) processes of the pastures are mostly incomplete and many pastures that are still not registered, which increase their vulnerability against these conflicts.

The 6360 numbered Metropolitan Law transformed the villages into neighborhoods, which resulted in an ambiguity in terms of rural definition. In addition, the control and supervision of the pastures, which used to belong to the village common lands transferred to Municipalities and Public Treasury. This centralization by Law created an ambiguity and lead to weaker local governments and serious implementation flaws due to the lack of integration between the institutions. In addition, bylaws and bag laws in several legislations may create possible future development pressures on these areas. Therefore, the evaluations and adjustments in the legislations are essential to prevent the malpractices and ambiguities on the pastures, which are crucial to achieve the ecological sustainability.

The lot and block numbers and the sizes of pastures at the case study areas gathered from District Directorates of Land Registry and Cadastrate and searched by Plot Questioning System (TKGM). Digitizing studies may help to achieve the accurate locational information of the pastures; however, the lines of the pasture plots are interesting because there is no ecological integrity among the plots. While adjacent plots look ecologically similar, they are not registered as the pastures in the map. In addition, some plot lines are so sharp and artificial that they look absurd within the natural thresholds.

Especially in Aliğa district, parts of the several pasture plots are fragmentary, which reveals that they might be allocated to other land uses (Figure 6.53-6.55). Rural-ecological commons and pastures in particular need to be mapped and protected according to expanse of their biological aspects, in spite of their ownership status.

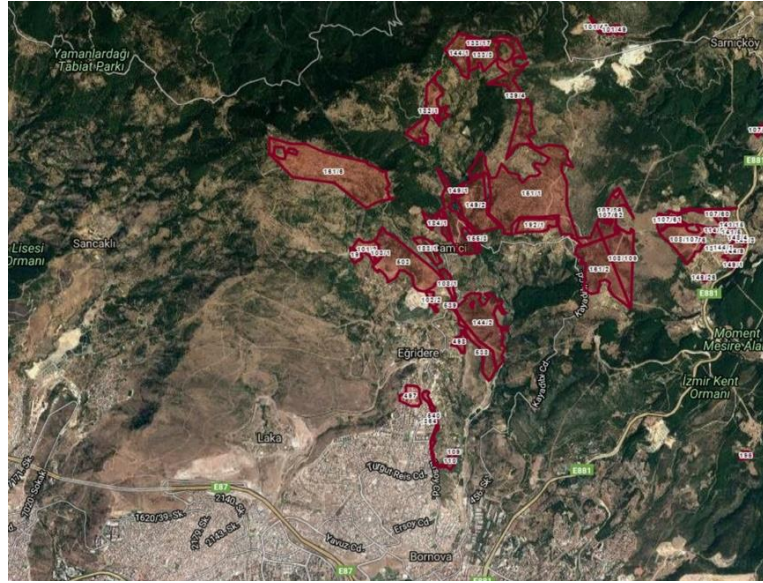


Figure 6.59. Total Pastures of Bornova.³⁴⁷

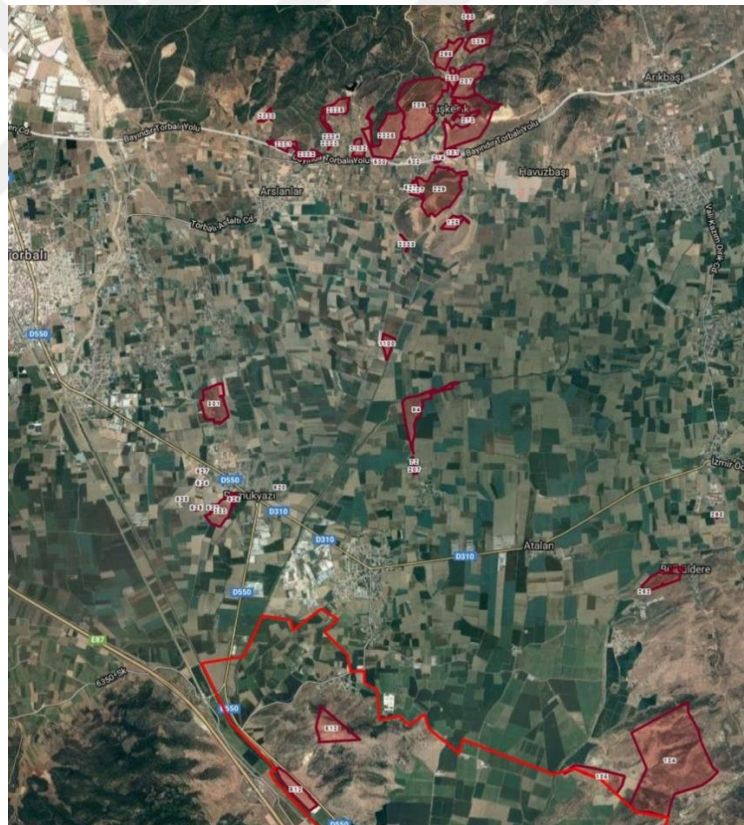


Figure 6.60. Total Pastures of Torbalı.³⁴⁸

³⁴⁷ TKGM, 2018.

³⁴⁸ Ibid.



Figure 6.61. Total Pastures of Aliaga.³⁴⁹

In this study, the rural-urban migration and the decreasing number of the younger villagers are taken as the problems relevant to the pasture loss. In order to reverse this situation, holistic agricultural and husbandry policies should be developed, because the agricultural land use planning specifications require a holistic view for the collaborated land management and planning processes.

Pastures need to be well defined within the planning processes, which may result in better land use decisions relevant to the geographical, biological and physical characteristics of the pastures, which have a multidimensional importance in terms of the biodiversity, rural development, erosion prevention and rural tradition. However, husbandry mostly leans on the cattle fed by forage crops in the barns, recently. This tendency to intense husbandry results in a decrease in the significance of the pastures from the view of administrators, who obligate the farmers to plant forage crops on their farmlands while empty pastures have free forage crop potential, which constitutes approximately 70% of the husbandry costs and water deficit. Eventually, these policies result in the foreign source dependency in the husbandry and land allocation of pastures to other uses (e.g. development). Effective conservation and planning policies may help to achieve the ecological, economic and social sustainability and the pastures can be a part of a green belt as being alternative recreational areas to continue the common rural

³⁴⁹ TKGM, 2018.

traditions by activities such as “shearing festivals”. Understanding of their ecological value is crucial to prevent the allocation and appropriation acts.

Improved pasture reclamations, grazing management, rural development cooperatives and holistic land use planning policies may help to conserve these significant lands. Additionally, high CO₂ absorption capacity of the pastures may help to create resilience against the climate change; therefore, promoting sheep and goat farming to improve the significance of pastures is reasonable in the future. Restorative farming methods and grazing management should be followed and applied by the relevant institutions. Anadolu Meraları, a cell NGO of Savory Institute, has a training program for the restorative farming called “holistic grazing management”. Similar restorative farming methods should be well analyzed and adapted to our geography.³⁵⁰

Primary suggestions from the data gathered from the interviews of the study are the cooperatives, professional methods, implementation of the 4342 numbered Pasture Law, training, increased public opinion, basin management, improved strict regulations, persuader punishments, pasture reclamations, holistic management, consultancies from the universities and refunding of the Pasture Fund, which is defined by the 4342 numbered Law. Moreover, a continuing digitizing study called “Pasture Information System” (MERBIS) may help to ease the determination, delimitation and allocation (3T) processes. It is crucial to know that cadastral mapping according to the property- rights is artificial and dangerous especially when it comes to the loss of the rural-ecological commons and pastures in particular. Mapping of pastures should be holistic, which primarily considers the geographical, ecological and social thresholds.

In this study, the primary conflicts according to the eDPSIR model correspond to the conflicts evaluated in the preliminary studies, which provides the verification of the data. The model is proposed to be a legal and administrative analytical tool to help communicating with the policy makers in the pasture management process. In addition, this model can be applied to different cases and has a potential of self-evaluation by easy feedbacks. Moreover, the model can be included in the rural development and design directories, rural land use planning, Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA) processes and reports; and included in the rural design directories, especially at the constitution processes of the rural land-use planning

³⁵⁰ Anadolu Meraları, Holistic Grazing Approach, accessed December 17, 2016, <http://anadolumeram.com/yeni-egitimler/>.

specifications. In addition, the plan legends and the content of the plan reports of the rural areas should be carefully developed in the rural land use planning processes. The conflicts on the pastures also directly affect to the food security. Grassfed animals are healthier than the animals fed by forage crops and corn silages, which usually contain GMOs that cause serious health issues. There are several initiatives to expand awareness about the issue. “Food Sovereignty” is one of the relevant concepts (1990), which aims to prevent the ecological destruction by the neoliberal agricultural policies and to protect the small farmers.³⁵¹

Another relevant concept is “Bioregional Food Systems”, which aims to strengthen the agriculture systems and the biodiversity of the farmlands in relation with the communities, farmers and consumers is one of the most complicated actors that planners have to deal with. Today, the global/industrial agricultural model dominates the agricultural practice and leads to the undescribed local/regional food systems. Thus, the concept of “bioregional food systems” emerged to correlate economic, ecologic and social sustainability. Local governments can use bioregional concept by the tools of sustainable production system, such as, community trust farming, farm schools and greenhouse strategies. Bioregional concept aims to create a food system that is ecologically, economically and socially resilient to provide food security.³⁵² Overall, the pastures should be evaluated within the bioregional food systems and agrarian urbanism concepts for food sovereignty and security.

Actors and stakeholders are prior within the decision-making process on the pastures due to the international, national and local power relations. Social strategies, central and local governments, villagers, users, newcomers, investors, agricultural policies, husbandry activities, enclosure movements, rural gentrification, changing legislations and spatial strategies, plans and policies; as well as the geography function such as ecological thresholds, climate and topography. All actors are interrelated with each other. Stakeholder analysis of pastures at the different stages can be seen in Table 6.18. Protecting the pastures by an ecological sensitive view during the planning and decision-making processes is possible, as soon as the lack of communication among the institutions and the relevant stakeholders is disappeared.

³⁵¹ Heinrich Böll Stiftung Association, “Food Sovereignty,” accessed May 11, 2018, <https://tr.boell.org/tr/2015/11/06/turkiyede-gida-guvenligi-saglanabiliyor-mu>.

³⁵² Silbernager, “Bio-regional patterns and spatial narratives for integrative landscape research and design,” 107-118.

Table 6.18. Stakeholder analysis.

| | |
|----------------------------------|---|
| International Conventions | Transnational networks, sister towns/cities, international legislations (e.g. Ramsar), satellite imaging, international funds and projects (e.g. EU), investors, courts |
| Central Governments | Legislations (4342 num. Pasture Law, 6360 num. Metropolitan Law, bag laws, Development Amnesty), digitizing studies (MERBIS), EIA & SIA reports, national agricultural policies, master plans (1/100.000), legislations, monitoring (e.g. Ministry of Food Agriculture and Livestock, Ministry of Environment and Urbanization, Public Treasury), investors, courts |
| Local Governments | Provincial Pasture Commissions, District Directorates of Agriculture, master plans (1/25000), plans, monitoring, decision making, participation among different actors, Mayors, Municipality Parliaments, Pasture Management Unions (e.g. Bergama), technical teams, restoration, monitoring, investors, courts |
| NGOs | Savory Institute, TEMA, Anadolu Meralari, relevant Chambers (e.g. Chamber of Agriculture), Rural Development Cooperatives, Producer Cooperatives, neighborhood associations, Yuruks associations, civil acts, courts |
| Users | Villagers, village headmen, farmers, shepherds, civil acts, newcomers (rural gentrification), public disclosure, intrinsic knowledge, traditions, malpractices, rural-urban migration, husbandry activities |
| Professionals | Universities, projects, technical teams, articles, dissertations, case studies, professional associations |
| Geography Function | Ecological thresholds, e.g. climate change, drought, less/more precipitation |

For further research, a more comprehensive study on the pastures of İzmir is necessary. This study is limited within three districts due to the time constraint and qualitative research, which requires longer time. Moreover, the pasture dimensions can be evolved into variables and indicators by additive quantitative and statistical methods within an algorithm to increase the efficiency and reliability of the model. A quantitative method is required especially for the studies, which have larger number of dimensions and variables dataset. However, eDPSIR model already provides a self-priorization among the data, which take the qualitative research a step further. The model is helpful to increase the reliability of the case study, especially when it is hard to gather data due to the limitations. In addition, adequate mapping of all registered and/or delimited pastures in İzmir is required, by using technical analysis tools such as GIS and Remote Sensing. Accurate mapping of the pastures is not completed due to limitations of the data gathering from several institutions. Overall, the specification of the primary areas for urgent registration, protection zoning regardless of the legal status, management and reclamation, time interval comparisons, pilot studies, plans and detailed technical reports from the relevant institutions are necessary for the studies on the pastures.

CHAPTER 7

CONCLUSION

In this study, the pastures are discussed within the context of the rural-ecological commons from a planetary/ecological point of view. Commons are the things and/or spaces of the public use and collective ownership, which belongs to the society as a whole with a free access and can be categorized as: (1) ecological commons, and (2) civic commons or the public goods. Use right of the commons may be restraint to a group of people by the legislations (e.g. villagers); however, their planetary ecological value of the rural-ecological commons interests all people; even if some of them are negligibly semi-commons because of the access and/or use constraints apart from several groups, classes or cooperations.

The main research interest of the study is to determine and prevent the conflicts on the rural-ecological commons, specifically the transformative impacts of the enclosure and commodification processes. Rural-ecological commons are crucial for biodiversity and ecological sustainability. There are several inferences from the responses in the study, which are the solution proposals to prevent the conflicts. These responses specifically compared with Ostrom's eight design principles for the commons: (1) clearly defined boundaries; (2) congruence; (3) collective-choice arrangements; (4) monitoring; (5) graduated sanctions; (6) conflict-resolution mechanisms; (7) minimal recognition of rights to organize; and (8) nested enterprises.

“Clearly defined boundaries” are related to the strict regulations and punishments, accurate cadastral mapping by digital inventory (e.g. MERBIS), pasture registration and the use right of the pasture for a specific group or communion (e.g. a village). “Congruence” and “collective-choice arrangements” are both related to the participation and interrelation among different actors (e.g. institutions, users) by grazing management, Pasture Management Unions, public disclosure and promoting cooperatives and unions. “Monitoring” is related to Pasture Management Unions, cooperatives and unions who control the grazing management, education, professional husbandry and shepherd certificate system. “Graduated sanctions” are related to strict regulations and punishments, restrain conflicting sectors and grazing management for

sustainable pasture reclamations and protected biodiversity. “Conflict-resolution mechanisms” are related to Pasture Management Unions, digital inventory, sustainable pasture reclamations, technical infrastructure improvement, grazing management, artificial pastures by irrigation system, bee pasture and apiculture activities, subsidies and loans to small farmers, improved EIA and SIA reports, modern pasture reclamation practices, innovation of pasture reclamation fund, remigration from urban to rural and restrain conflicting sectors. “Minimal recognition of rights to organize” is related to autonomy of a specific group, e.g. cooperatives from the other authorities during the use and management processes of the commons, civil acts, increased local power by self-governed cooperatives and unions, public disclosure, professional husbandry, shepherd certificate system and education. “Nested enterprises” are related to the combination of different actors, such as institutions (public), village residents and investors (private), especially within the greater systems, Pasture Management Unions, cooperatives and unions, workshops and panels. Overall, Ostrom’s design principles are mostly coherent with the responses in the study, which create validation between theory and practice.

However, Ostrom’s principles are criticized within the commons literature in terms of promoting communions within a merely economical perspective, and the suspended definition of the users and community. First criticism is about the possible inequalities during the administration process of the commons as there cannot be a homogeneous community where everyone is equal (e.g. men may oppress women). Secondly, enclosure movements are the internal dynamics of capitalism and commons are enclosed by wider political economic context. Thus, without the considerations of the systemic problem, commons or commonization process cannot be critical to neoliberal policies while the global market pressure prevents the sustainable administration processes. To sum, none of the commonization practices can be independent from the political economy context.

Commons literature is still interrogating the commons whether they are a toolbox to create new common/public spaces by the commonization processes against the enclosure processes of the neoliberal policies. Commonization embraces collective action. Each country and/or geography can constitute a unique common-set by its political, religious and national identities. Today, discussions on the commons in Turkey mainly focus on the issues such as protection and access to the common/public

spaces (e.g. urban parks), food crisis/security and alternative food systems, changing agricultural structure and agricultural policies, and the public voice, the freedom of speech.

Collective action and communions are being encouraged in the commons literature; however, the critics claim that the commons should not be restrained within a community, as it should belong to everybody. In addition, the communion agents should be the direct participators within the self-governmental, autonomic systems.

Enclosure movements of the neoliberal policies on the commons do not differ in urban or rural areas. Therefore, commonization processes may help to construct a floor of the struggles for both. Problematic property relations result in the economical destruction because of the ecological crisis, and ecological destruction because of the economical crisis. The pressures on the natural resources, human relations, and different habitats create financial and ecological crisis (e.g. loss in husbandry sector and biodiversity loss on the pastures). In this process, commons may be the inventions and/or tools for defense against the neoliberal policies. Commons may help to making holes in the current neoliberal system by promoting community-based agriculture, seed banks, libraries, new production areas, and the shelter centers, which create the acquisition of the sense of place by establishing bonds, belonging, protecting and compathy.

In urban areas, urban parks, urban green spaces and seashores (e.g. İzmir gulf) are some of the urban-ecological commons, which positively effect the quality of life, in addition with the sustainability of the urban ecology, biodiversity (flora and fauna), CO₂ absorption, heat island effect abatement, as well as the physical and mental health improvement and the welfare of the residents. On the other hand, the rural areas include pastures, village squares, village fountains, village coffeehouses, traditional clothes, cemeteries, animal wateries, streets, threshing fields, public treasury lands, uncultivated lands, mountains and forests other tangible/intangible commons within the rural commons. Streets are also the common/public spaces as they create the opportunity to encounter and get to know each other.

In terms of ecological sustainability, the ecological commons are equivalently important for CO₂ absorption, elimination of the heat island effect, and biodiversity of the rural and urban areas. Especially, after the 6360 numbered Metropolitan Law, bag laws and law drafts (e.g. recent development amnesty), there is no strict borders

between the rural and urban because of the similar enclosure attempts and development pressures. Throughout the history in Turkey, planning permissions by the development amnesties resulted in the permanency of the illegal housing problems and the occupation on the natural commons, which means a permanent enclosure and the loss of the commons.

The conception of the urban commons is marked by the conflicts and contradictions, which make them a focus point for the *right to the city* movements. Right to the city can be labeled as a utopian project, which targets the creation of a less alienated and alternative urban life that ensures human emancipation, social justice and happiness. Rural commons and villagers too experience the similar conflicts of the enclosure and rural gentrification, which can promote *right to the village* movements.

In addition, *ecological society approach* criticisms of centralization, hierarchy and current production and consumption patterns, governing structures and the domination of nature by human beings are generated by the hierarchical structure in the social organization are crucial. In this context, Bookchin (1996) does not separate the human domination on nature and on human (e.g. man over woman, old over young, colonist over colonies) and claims that as long as dominance continues, hierarchical society will shape our perceptions and actions and its negative reflections on nature will continue. Ecological society approach suggests more decentralized and small scale production patterns that are formed by the cooperations. Yet, the ecological movements may have a possibility to create a more equal and coherent society without the domination over people and nature.

The resistance against the dominance of the capital, within the context of the global equity and justice, commonization attempts can be taken as a complete resistance against the neoliberal capitalism practices. Therefore, the commons and the commonization movements are one of the most crucial debates of the present day. Today, the rural-urban dichotomy is disappearing and there is an urgent need for a more holistic planning and/or management approach to the rural and urban areas in terms of culture, biodiversity, agriculture and the commons. The *role of planning* in this process is crucial and it can be related with the generation of the utopias (e.g. right to the city, right to the village), which is capable of developing collective actions and new processes of reappropriation by human beings from the perspectives of the urban transition to a more just and democratic living environments.

Planner as an agent should be an active participator within both planning and commonization processes by technical, scientific, organizational and ethical consciousness within the debates and struggles. Public interest and/or common good is the most crucial ethic in the planning discipline. However, planning discipline and practice are constituted within a formal and anthropocentric point of view, which mostly ignore the other living entities and the planet itself, by being merely reactive to the problems, rather than proactive. This tendency in planning eventually brings many problems, which eventually affect the human health, e.g. air pollution, heat island effect, drought, biodiversity, food security, desertification and inequality among people, and several other human-driven conflicts, all of which threaten the sustainability of the planet.

Nevertheless, the planning discipline is intrinsically proactive because it requires long-term comprehensive plans, including SWOT analysis and strategic plans. Improving the traditional planning practice within a more biocentric view to constitute bio-sensitive urban areas by using new methods (e.g. new technologies, mapping tools, mobile applications) is both necessary and obligatory for the future cities and for achieving the triple bottom line of sustainability.

Planning the development axis regard to specifically ecological commons is crucial. Planning regulations, practice and training should take commons as a part of the common good and/or public interest. Planning discipline and planners should be explicit participants to the communions about the urban and rural areas. Recent debates on the commons, bioregionalism, planetary urbanism, post-human/imminent cities, holistic planning and management are a few of the examples of the concepts concerning to eliminate the conflicts and problems on nature related with the neoliberal policies.

The commons, especially the rural-ecological commons and the pastures in this study are crucial areas to be protected for a superior common good. Therefore, the attitude of planning institution and discipline at this stage is determinant, which seeks the common good and/or the public interest. It is crucial to know that, despite all the arguments and criticisms on the 6360 numbered Metropolitan Law, local centralization by the stronger Metropolitan Municipalities may be beneficial for the planning and monitoring processes and for better services in the villages and/or rural neighborhoods. Disappearance of the village legal entities may help to eliminate the individual malpractices and occupations at the local scale by a superior monitoring system. The mechanisms to orient the local scale master plans (1/25.000) should be familiar with the commons and ecological commons

concepts in order to mark these areas as the conservation areas and explain these conservation/protection decisions in plan notes in detail. However, benevolent municipalities are a precondition for this circumstance and the spreading of the 6360 numbered Metropolitan Law countrywide is interrogable due to the different scales and socio-ecological conditions. In addition, the 6360 numbered Metropolitan Law should be developed, as it is inadequate in terms of the definition of the “rural neighborhoods” and their distinctive priorities.

Eco-sensitive planning view and decisions of the protection of the commons and pastures should also be discussed within the planning education by integrating the natural processes within the strategic and spatial planning processes. Pastures should not only be perceived as a second-degree threshold for the development as the current Master Plans mentioned before. Improving the rural life conditions by the planning projections and the decision-making processes may help to prevent the rural-urban migration and the degradation of the assets, which may also eliminate the root causes of the conflicts on the pastures and the commons.

District plans and actors are curical in terms of participation in the local planning processes. Plan decisions should be superior, more comprehensive and protective than the questionable borders specified in the cadastral maps. Unregistered ancient pastures should also be included within the conservation zones. For accurate mapping and planning, digitized national-spatial data (e.g. MERBIS) is necessary. Plans should include the unregistered and delimited pastures, as well as the registered pastures. The plan notes and more diversified legends can develop plans, which may increase the monitoring and protection. Schematic specifications of the areas to be protected in the 1/25000 scaled Master Plan can be helpful to remain the current land use characteristics on the pastures and the commons. Gradual protection systems (e.g. first and second-degree protection zones) and expropriation of the unregistered pastures by the Municipalities can be useful to protect the pastures even if they are private property.

Zoning of the husbandry areas may help to prevent the rural gentrification by the newcomers, who eventually become uncomfortable by the animals (e.g. smell) and may create a more “right to the village” attitude among the villagers. One of the most significant problems is the rural-urban migration of the younger villages, which radically change the resident pattern on the villages with the help of the newcomers. In order to keep the younger villagers at their villages, primarily the infrastructure (e.g.

transportation), social (e.g. education, entertainment) and employment deficiencies should be overcome and rural life quality, alternative job opportunities among the agriculture and husbandry should be enhanced.

In order to gather the spatial data from the fields and to produce a dataset for the pastures, District Municipalities and Metropolitan Municipalities should work in an collaborated manner. It is crucial to eliminate the inter-institution and in-institution lack of coordinations. Eco-sensitive approach during the planning and monitoring processes should be integrated within the planning consciousness. Village legal entities should be reactivated as an integral part of the local governments and the planning dimension should be enhanced. There is an authorization complexity among the institutions during the implementation processes due to the ambiguity of the current 6360 numbered Metropolitan Law. Responsible institutions should be well specified in order to eliminate the conflicts and the root causes of the conflicts.

The perception of the commons is different within the urban and rural areas due to its being “*no man’s land*” by being free from the property concerns. Surprisingly, urban commons such as urban parks and urban green areas are more significant for the urban residents in terms of civil acts against the enclosure movements; however, the rural commons such as pastures are not as significant as the urban commons, despite they are promoting the rural development. The awareness of the commons continues to increase by the press, civil acts and the education. Moreover, planning regulations also protect urban green areas more elaborately than the rural commons such as pastures.

In order to maintain the pasture integrity, agricultural specialization zones and Savannah Law can be effective. It is obvious that provincial extent cannot adequately protect the pastures. Thus, the role of the planning is crucial at this point to promote the biodiversity and cleaning the atmosphere, to direct the legislations, and to persuade the ambiguous stakeholders. The 6360 numbered Metropolitan Law also has a potential to specify the responsibilities of the institutions and the 1/25000 scaled Master Plans and Master Plans may propose a more protective usage of the pastures (e.g. improving pasture quality by the animal effect and grazing management). However, the current legislations are contradictory, especially for the rural common lands and the perception of the rural and urban residents on the common areas differentiates. Planning and agency on these areas at the regional scale is necessary; however, also the planners ignore these areas like the villagers. At this rate, the older residents will not be able to continue the husbandry

activities within a decade. It is crucial to maintain the younger residents to stay at the villages and continue these activities.

Moreover, the fragmentary allocation of the pastures to other uses (e.g. quarries) is a very problematic situation as it has massive negative effects on the overall pasture condition and destroys the integrity of the functions. Ministry of Agriculture, Food and Livestock should promote the cooperatives, small businesses and manufactured products at the rural areas are necessary to maintain the rural development, increase the life quality and financial sufficiency and to reduce the rural-urban migration of the younger generations. Sheep and goats' specialization farming zones and Savannahs can be promoted in order to protect pastures adopted by the local stakeholders. Younger residents defend and protect their pasturelands if the actors such as Metropolitan Municipalities, NGOs, and universities support them. Awareness and demands of the locals effect the investors (e.g. civil acts against wind energy plants). Therefore, a "resistance-conscious" *right to the village* attitude against the harmful investments should be constituted among the rural residents, similar to the urban residents.

Planning of the common lands requires more than institutional opinions. Responsible institutions should directly participate in the planning process. Provincial regional planning is contradictory due to the 6360 numbered Metropolitan Plan, which is advantageous. Thus, the planners, agricultural engineers, landscape architects and other relevant professions should directly participate in the planning process, as well as creating alternative organizational forms among the District Municipalities, Metropolitan Municipalities, District Directorates of Agriculture, Provincial Directorates of Agriculture, Ministry of Food Agriculture and Livestock, NGOs, Universities, Cooperatives and users.

At this stage, legislations and regulations are vital as they have a potential to destroy the integrity of the rural common lands, rather than to protect them, such as Development Amnesty (*İmar Barışı*) and the disappearance of the rural-ecological commons, e.g. Ayder highlands, Black Sea Region). It is crucial to emphasize that "benevolent" central and local governments are necessary in order to protect the commons, rural-ecological commons, pastures, villages (rural neighborhoods), the rural tradition, and the lifestyle, as well as the increased number of the resistance-conscious villagers and the commoners.

Overall, a further research on the commons and the rural-ecological commons is required and should be experimental in terms of the communions to the proactive commonization processes. These communions may eventuate through the several case studies and/or theoretical discussions and debates. It is crucial to know that especially the rural-ecological commons (e.g. pastures) need to be precisely analyzed to reveal their planetary importance, by using adequate tools and instruments for the representations of the communication and participation in the planning and decision-making processes.



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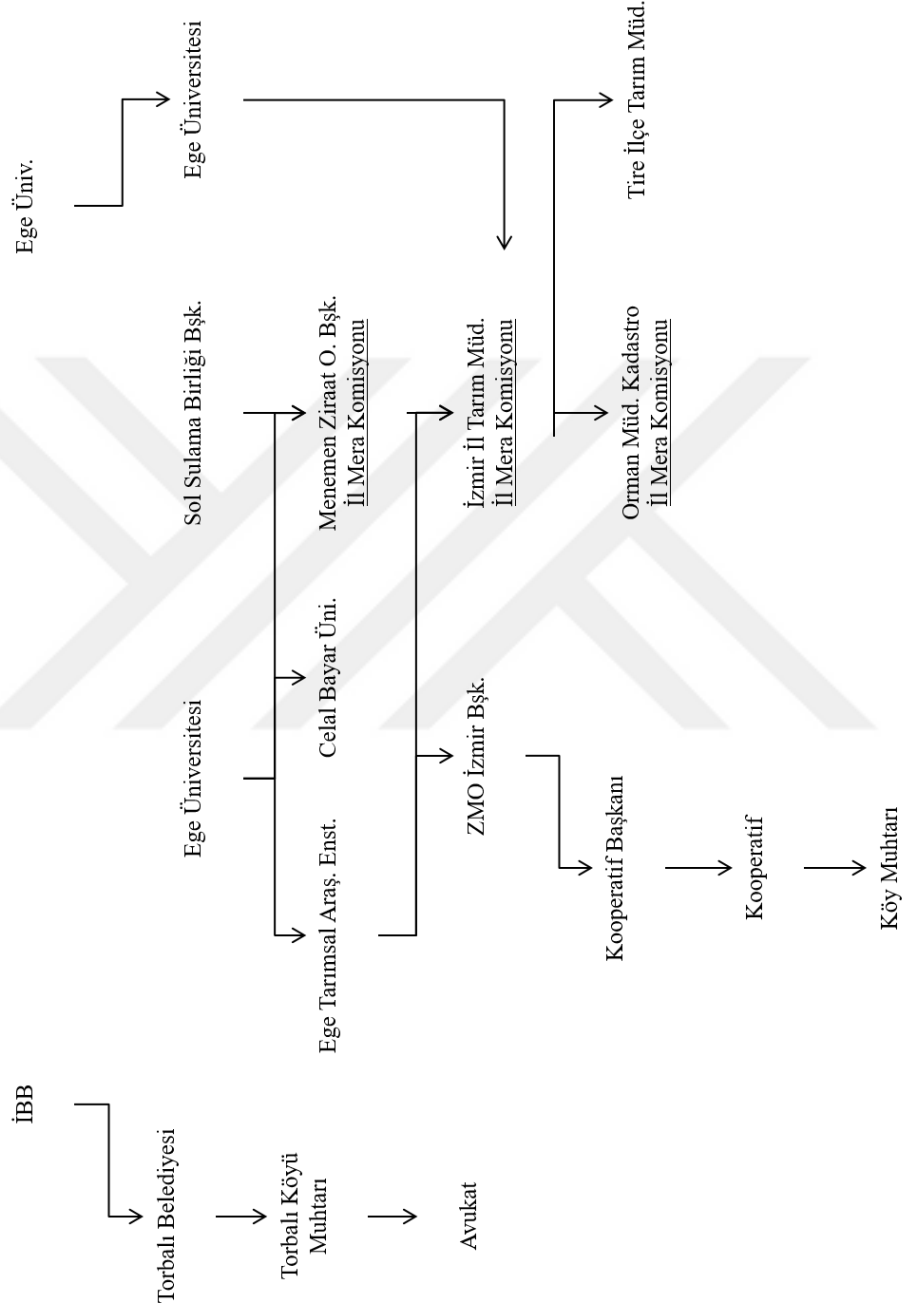
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APPENDIX A. UNSTRUCTURED SNOWBALL INTERVIEWS



APPENDIX B. IN-DEPTH INTERVIEWS WITH PROFESSIONALS

Yapılan çalışmanın amacı İzmir İli mera varlığıyla ilgili konuların araştırılması; meraların biyo-bölgeler içerisindeki yeri ve sosyo-kültürel yapısı, mevzuat, yerel ekonomi, sürdürülebilir çevre ve biyoçeşitlilik açısından önemini anlaşılması; ve DPSIR Süreç Modeline uyarlanmasıdır.

Kısaltmalar:

DPSIR (Drivers, Pressures, State, Impact, Response), S (Sosyal), Y (Yasal), E1 (Ekonomik) , E2 (Ekolojik)

Katılımcı:

Tarih:

A. MEVCUT DURUM

Drivers, Pressures, State

1. İzmir İli mera varlığına dair yeterli envanter var mıdır? (Y)
2. Mera alanları ortak/müşterek kültür, gelenek, kırsal kalkınma açısından önemli midir? (S, E1)
3. Mera alanlarındaki vasıf/verim kaybı var mıdır? Varsa sebebi neledir? (S) Otlama zamanları, ağaçlandırma, işgal vb.
4. Mera alanlarına dair yasal mevzuat yeterli midir? (Y) 4342 Mera Yasası, 6360 Bütünşehir Yasası, politikalar, mülkiyet
5. Mera alanları ekolojik sürdürülebilirlik ve biyoçeşitlilik açısından önemli midir? (E2) Biyo-bölgeleme, flora, fauna, apiculture
6. İzmir'de özel sicilene işlenmemiş mera alanları var mıdır? (Y)
7. Plan bütünlüğü ve sürdürülebilirliği mera vasıf değişiklikleriyle bozulmakta mıdır? (Y)
8. Vasıf değişikliği kabul edilirken dikkate alınan başlıca kriterler nelerdir? (Y)
9. İzmir İlinde mera vasıf değişikliği kabul edilen ilçelerden ve projelerden örnekler verebilir misiniz? Diğer ilçelere görece daha fazla vasıf değişikliği yapılan ilçeler var mıdır? Varsa hangileridir? (Y, E1) (Okul, hastane, taş ocağı/madencilik, tarım vb.)
10. Bahsi geçen alanın önceden mera kullanım şekli nedir? Mülkiyet yapısı nasıldır? (Y, S) (ortak/müşterek, terk edilmiş, işgal edilmiş, özel mera vb.)
11. Bahsi geçen alan için yapılan vasıf değişikliği başvurusu kimlerden gelmektedir? (S, E1) Özel sektör, yerel girişimciler vb.

B. ÖNGÖRÜLER

12. Sizce "Milli Tarım Projesi", "Büyük Ova" ilanı ve mera ihtisas bölgelerinin meralara etkisi ne olacaktır? Bahsedilen 25 İl içerisinde İzmir olacak mıdır? Bahsi geçen 25 İl dışındaki İllerde ne olacağını öngörüyorsunuz? (Y)

C. ÖNERİLER

13. Mera alanlarının korunması/iyileştirilmesi için önerileriniz nelerdir?
14. İzmir İli Mera Varlığı konusundaki bu mülakata katılımı için en az bir kişiyi önerebilir misiniz?

APPENDIX C. IN-DEPTH INTERVIEWS WITH VILLAGE HEADMEN

Bu mülakatın amacı İzmir İli mera varlığının araştırılması; meraların biyo-bölgeler içerisindeki yeri ve sosyo-kültürel yapı, mevzuat, yerel ekonomi, sürdürülebilir çevre, bütüncül yönetim ve biyoçeşitlilik açısından öneminin anlaşılması; ve DPSIR Süreç Modeline uyarlanmasıdır. Kısaltmalar: E1 (Ekonomik) , E2 (Ekolojik), S (Sosyal), Y (Yasal)

Mülakatın yapılandırılmış kısmında *Biçkin, İ. (2003) "Eski ve Yeni Mera Mevzuatının Karşılaştırmalı İncelenmesi ve Uygulamaya İlişkin Sorunların Tarım Hukuku Açısından Değerlendirilmesi: Konya-Altnekin Örneği"* isimli Yüksek Lisans tezinin anket formundan yararlanılmıştır.

İlçe: Bornova Aliğa Torbalı

Mahalle / Köy:

Nüfus:

Hayvan Sayısı:

Muhtar:

Telefon:

A. MEVCUT DURUM

1. Kaç dönemdir bu köyde muhtarlık yapmaktasınız? (Y, S)

1-2 yıl

1 dönem (5 yıl)

2 dönem (10 yıl)

3 dönem ve daha fazla (15 yıl +)

2. Mera denilince ne anlıyorsunuz? (Y, S)

Hayvanların ara sıra otlatıldığı araziler

Hayvanların otlatıldığı, köylü halkın ortak olarak yararlandığı, köyün ortak malı olan araziler

Bina ve benzeri yapıların yapılabileceği araziler

Boş ve sahihsiz araziler

Diğer

3. Meralarda hayvanlarınızı hangi düzende otlatırsınız? (S, E2)

Çoban kontrolünde serbest

Bir dönem bütününlü otlatarak, bir dönem dinlendirerek

Eşit bölmelerde çitle çevirerek

Bütünlükçü Yönetim padok (hareketli çitleme) sistemi ile

Diğer

4. Köyünüzdeki mevcut mera alanlarında genellikle hangi hayvanlar otlatılmaktadır? (E1, E2)

Büyükbaş-Küçükbaş karışık otlatılmaktadır

Koyun otlatılmaktadır. Çünkü meralardaki otlar çok kısa boyludur

Sığır otlatılmaktadır. Çünkü meralardaki otlar yüksek boyludur

Keçi otlatılmaktadır. Çünkü meralarda çalılıklar ve dikenler vardır

Diğer

5. Köyünüzdeki mera alanları büyüklüğü ne kadardır? (Y, E1, E2)

..... dekar

6. Köyünüzdeki mera alanları kiraya veriliyor mu? Ne kadar? (Y, E1)

Evet dekar

Hayır

7. Meralarda otlatma başlangıcı'dır. (Y, E2)

8. Meralarda otlatma sonu'dır. (Y, E2)

9. Otlatma mevsiminde mera alanları hayvanların beslenmesi için yeterli gıda sağlıyor mu? Yoksa hayvanlara ek yem veriliyor mu? (E1, E2)

Evet

Hayır

10. Köy merası üzerinde kamuya veya şahsa ait inşa edilen yapılar hangileridir? (Y)

Camii

Okul

Sağlık ocağı

Köy odası

Şahıs evleri ve hayvan ahırları

Hiçbiri

Diğer

11. Köyünüzde yapay/işlenmiş mera var mı? Ne kadar? (E1, E2)

Evet dekar

Hayır

12. Sizce mera alanlarınız müşterek kültür, gelenek açısından önemli mi? Meralardan yararlanırken uyguladığınız kadimden gelen gelenek-görenek var mı? (S, E1)

Evet. Şunlardır

Hayır

13. Mera alanlarınızda vasıf/verim kaybı var mı? Varsa sebebi nelerdir? (S, E2)

Aşırı otlatma, ağaçlandırma, işgal vb.

Evet. Şunlardır

Hayır

14. Mera alanlarına dair yasal mevzuata ilişkin çiftçilerin yeterli bilgisi var mı? Yasal mevzuata dair görsel ve yazılı olarak eğitim ve yayım faaliyetleri yapıldı mı? Kim tarafından? (Y, S) 4342 Mera Yasası, 6360 Bütünşehir Yasası

Evet yapıldı.

Hayır

15. Köyünüzde mera alanları ile ilgili anlaşmazlık var mı?

Evet

Hayır

16. Anlaşmazlık var ise kimler arasındadır?

Başka köyler ile bu köy arasındadır

Bu köyde bulunan şahıslar arasındadır

Belediye ile köyedeki şahıslar arasındadır

Diğer

17. Sizce mera alanları kırsal kalkınma açısından önemli mi? Köyün hayvancılıktan sağladığı ekonomik gelir yeterli mi? (E1)

Evet

Hayır

18. Köyünüzdeki eğitim ve sağlık kurumları yeterli mi? Neden? (S)

Evet

Hayır. Çünkü.....

19. Köyünüz nüfus kaybediyor mu? Neden? (S, E1)

Evet. Çünkü.....

Hayır

20. Sizce mera alanlarınız doğa ve biyoçeşitlilik açısından önemli mi? (E2, S)

Flora, fauna, arıcılık

Evet. Çünkü.....

Hayır

21. Meralarınızda vasıf değişikliğine uğrayan yerler var mı? Mera ne zaman, neye dönüştü? (Y, E1)

Taş ocağı önce

Maden önce

Tarım önce

Enerji tesisi (RES, Biyogaz vb.) önce

İmar önce

Hiçbiri

Diğer

22. Bu vasıf değişikliği yapılmadan önce mera kullanıcılarına soruldu mu ya da bilgi verildi mi?

Evet

Hayır

23. Vasıf değişikliğinin istihdama katkısı oldu mu? Kaç kişi?

Evet. kişi

Hayır

24. Bahsi geçen meranın/meraların önceden mülkiyet yapısı nasıldı? (Y, S)

Müşterek / Köy orta malı

Özel mera

Terk edilmiş / Boş

Diğer

İşgal edilmiş (imar vb.)

B. ÖNGÖRÜLER

25. Mera alanlarınızın geleceği hakkında ne düşünüyorsunuz? (S, E1, E2)

26. “Mera Yönetim Birlikleri” hakkında ne düşünüyorsunuz? (Y, S)

27. Sizce “Mera Yönetim Birlikleri”nin köyünüzde yaptığı çalışmalar yeterli mi? Yeterli değilse neden? (Y, S)
Otlatma planlaması, ıslah çalışmaları, ihtiyaç fazlası ürünlerin satılması ve ıslah fonuna yatırılması, otlatma ücretlerinin toplanması, meraların korunması ve işgalin önlenmesi, il/ilçe Mera Komisyonlarınca verilen görevlerin yerine getirilmesi vb.

Evet

Hayır. Çünkü.....

28. Sizce meraların daha verimli kullanımı ve ıslahı, hayvancılıktan elde edilecek ürünlerin pazarlanması ve çiftçinin kazancının arttırılması için neler yapılmalı? “(Müşterek) Mera Üretici Birlikleri” adında bir oluşum organize edilirse yararlı olabilir mi? (S, E1)

C. ÖNERİLER

29. Mera alanlarınızın korunması/iyileştirilmesi için önerileriniz var mı? (E2, E1)

APPENDIX D. LIST OF THE INTERVIEWS

| No. | Interview Type | Interview Date | Interviewee | Profile of the Interviewee | Interest Group |
|-----|----------------|----------------|-------------|--|--------------------|
| 1 | APPENDIX A | 11.05.2016 | S_1 | Planner at Torbalı Municipality | Municipality |
| 2 | APPENDIX A | 11.05.2016 | S_2 | Village Headman of Torbalı, Göllüce | Resident* |
| 3 | APPENDIX A | 08.06.2016 | S_3 | Assoc.Dr. at Ege University, Biology Department | University |
| 4 | APPENDIX A | 09.06.2016 | S_4 | Menemen Aegean Agricultural Research Institute | Public Institution |
| 5 | APPENDIX A | 09.06.2016 | S_5 | Menemen Irrigation Union | Public Institution |
| 6 | APPENDIX A | 09.06.2016 | S_6 | Menement Chamber of Agriculture & Provincial Pasture Commission | NGO |
| 7 | APPENDIX A | 10.06.2016 | S_7 | Provincial Directorate of Food Agriculture and Livestock | Public Institution |
| 8 | APPENDIX A | 10.06.2016 | S_8 | Lawyer | Private Sector |
| 9 | APPENDIX A | 13.06.2016 | S_9 | İzmir Chamber of Agricultural Engineers | NGO |
| 10 | APPENDIX A | 17.06.2016 | S_10 | Regional Directorate of Forestry & Provincial Pasture Commission | Public Institution |
| 11 | APPENDIX A | 22.06.2016 | S_11 | Tire Milk Cooperative | Cooperative |
| 12 | APPENDIX A | 22.06.2016 | S_12 | Tire Milk Cooperative | Cooperative |
| 13 | APPENDIX A | 22.06.2016 | S_13 | Village Headman of Tire, Kırtepe | Resident |
| 14 | APPENDIX A | 22.06.2016 | S_14 | Tire District Directorate of Agriculture | Public Institution |
| 15 | APPENDIX A | 22.07.2016 | S_15 | Prof. at Ege University, Department of Field Crops | University |
| 16 | APPENDIX B | 08.11.2016 | P_1 | Provincial Directorate of Food Agriculture and Livestock | Public Institution |
| 17 | APPENDIX B | 11.11.2016 | P_2 | Prof. at Ege University, Department of Field Crops | University |
| 18 | APPENDIX B | 29.11.2016 | P_3 | Prof. at Ege University, Department of Field Crops | University |
| 19 | APPENDIX C | 10.05.2017 | H_1 | Village headman of Bornova, Kayadibi | Resident |
| 20 | APPENDIX C | 10.05.2017 | H_2 | Village headman of Bornova, Çamiçi | Resident |
| 21 | APPENDIX C | 10.05.2017 | H_3 | Village headman of Bornova, Eğridere | Resident |
| 22 | APPENDIX C | 12.05.2017 | H_4 | Village headman of Bornova, Çiçekli | Resident |
| 23 | APPENDIX C | 12.05.2017 | H_5 | Village headman of Bornova, Yakaköy | Resident |
| 24 | APPENDIX C | 12.05.2017 | H_6 | Village headman of Bornova, Beşyol | Resident |
| 25 | APPENDIX C | 12.05.2017 | H_7 | Village headman of Bornova, Karaçam | Resident |
| 26 | APPENDIX C | 12.05.2017 | H_8 | Village headman of Bornova, Sarnıçköy | Resident |
| 27 | APPENDIX C | 17.05.2017 | H_9 | Village headman of Bornova, Laka | Resident |
| 28 | APPENDIX C | 17.05.2017 | H_10 | Village headman of Bornova, Kurudere | Resident |
| 29 | APPENDIX C | 20.05.2017 | H_11 | Village headman of Bornova, Kavaklıdere | Resident |
| 30 | APPENDIX C | 20.05.2017 | H_12 | Village headman of Bornova, Gökdere | Resident |

(cont. on next page)

APPENDIX D (Cont.)

| | | | | | |
|----|------------|------------|------|--|-----------|
| 31 | APPENDIX C | 22.05.2017 | H_13 | Village headman of Torbalı, Yeşilköy | Resident |
| 32 | APPENDIX C | 22.05.2017 | H_14 | Village headman of Torbalı, Demirci | Resident |
| 33 | APPENDIX C | 22.05.2017 | H_15 | Village headman of Torbalı, Yoğurtçular | Resident |
| 34 | APPENDIX C | 26.05.2017 | H_16 | Village headman of Torbalı, Dağtekke | Resident |
| 35 | APPENDIX C | 26.05.2017 | H_17 | Village headman of Torbalı, Ormanköy | Resident |
| 36 | APPENDIX C | 26.05.2017 | H_18 | Village headman of Torbalı, Karakızlar | Resident |
| 37 | APPENDIX C | 26.05.2017 | H_19 | Village headman of Torbalı, Karaot | Resident |
| 38 | APPENDIX C | 03.06.2017 | H_20 | Village headman of Torbalı, Çamlıca | Resident |
| 39 | APPENDIX C | 03.06.2017 | H_21 | Village headman of Torbalı, Helvacı | Resident |
| 40 | APPENDIX C | 03.06.2017 | H_22 | Village headman of Torbalı, Taşkesik | Resident |
| 41 | APPENDIX C | 10.06.2017 | H_23 | Village headman of Torbalı, Çakırbeyli | Resident |
| 42 | APPENDIX C | 10.06.2017 | H_24 | Village headman of Torbalı, Bozköy | Resident |
| 43 | APPENDIX C | 10.06.2017 | H_25 | Village headman of Torbalı, Saipler | Resident |
| 44 | APPENDIX C | 10.06.2017 | H_26 | Village headman of Torbalı, Korucuk (Dirmil) | Resident |
| 45 | APPENDIX C | 10.06.2017 | H_27 | Village headman of Torbalı, Arslanlar | Resident |
| 46 | APPENDIX C | 10.06.2017 | H_28 | Village headman of Torbalı, Sağlık | Resident |
| 47 | APPENDIX C | 10.06.2017 | H_29 | Village headman of Torbalı, Tulum | Resident |
| 48 | APPENDIX C | 13.06.2017 | H_30 | Village headman of Torbalı, Yeniköy | Resident |
| 49 | APPENDIX C | 13.06.2017 | H_31 | Village headman of Torbalı, Ahmetli | Resident |
| 50 | APPENDIX C | 13.06.2017 | H_32 | Village headman of Torbalı, Göllüce | Resident* |
| 51 | APPENDIX C | 13.06.2017 | H_33 | Village headman of Torbalı, Dağkızılca | Resident |
| 52 | APPENDIX C | 23.06.2017 | H_34 | Village headman of Aliağa, Çakmaklı | Resident |
| 53 | APPENDIX C | 23.06.2017 | H_35 | Village headman of Aliağa, Horozgediği | Resident |
| 54 | APPENDIX C | 23.06.2017 | H_36 | Village headman of Aliağa, Çaltıldere | Resident |
| 55 | APPENDIX C | 23.06.2017 | H_37 | Village headman of Aliağa, Çıtak | Resident |
| 56 | APPENDIX C | 23.06.2017 | H_38 | Village headman of Aliağa, Şehitkemal | Resident |
| 57 | APPENDIX C | 23.06.2017 | H_39 | Village headman of Aliağa, Samurlu | Resident |
| 58 | APPENDIX C | 24.06.2017 | H_40 | Village headman of Aliağa, Hacıömerli | Resident |
| 59 | APPENDIX C | 15.09.2017 | H_41 | Village headman of Aliağa, Çoraklar | Resident |
| 60 | APPENDIX C | 15.09.2017 | H_42 | Village headman of Aliağa, Karaköy | Resident |
| 61 | APPENDIX C | 15.09.2017 | H_43 | Village headman of Aliağa, Kalabak | Resident |
| 62 | APPENDIX C | 15.09.2017 | H_44 | Village headman of Aliağa, Aşağısakran | Resident |
| 63 | APPENDIX C | 15.09.2017 | H_45 | Village headman of Aliağa, Bahçedere | Resident |
| 64 | APPENDIX C | 18.10.2017 | H_46 | Village headman of Aliağa, Yenişakran | Resident |
| 65 | APPENDIX C | 18.10.2017 | H_47 | Village headman of Aliağa, Kapukaya | Resident |
| 66 | APPENDIX C | 18.10.2017 | H_48 | Village headman of Aliağa, Uzunhasanlar | Resident |
| 67 | APPENDIX C | 18.10.2017 | H_49 | Village headman of Aliağa, Güzelhisar | Resident |
| 68 | APPENDIX C | 14.12.2017 | H_50 | Village headman of Aliağa, Karakuzu | Resident |

APPENDIX E. LIMITATIONS

Evrak Tarih ve Sayısı: 23/02/2017-1634



IZMİR VALİLİĞİ
İl Gıda Tarım ve Hayvancılık Müdürlüğü

Sayı : 67970180-115.99[115.99]-E.363204
Konu : Doktora Tezi

16.02.2017

İZMİR YÜKSEK TEKNOLOJİ ENSTİTÜSÜNE
35430 URLA

İlgi : 31.01.2017 tarihli ve 37668103-623 sayılı yazınız.

Enstitünüz Şehir ve Bölge Planlama Anabilim Dalı Doktora öğrencisi Dalya HAZAR tarafından "Kır-Kent Çeperi Bağlamında Kentsel Müşterekler konulu doktora tezi çalışmalarında kullanılmak üzere bilgi ve belge talep edilmektedir.

Söz konusu yazı ile ilgili cevap Kurumumuz tarafından 07.10.2016 tarih ve 36653 sayılı yazı ile gönderilmiş olup konu ile ilgili komisyon kararı yazımız ekindedir.

Bilgilerinize rica ederim.

 e-izmaldir
Erol TÜRKMEN
Vali a.
Vali Yardımcısı
İl Mera Komisyonu Başkanı

Ek : Komisyon Kararı (1 adet)

İZMİR İLİ MERA KOMİSYONU KARARI

Karar No : 747
Karar Tarihi : 12.08.2016
Karar Konusu : 14-İzmir Yüksek teknoloji Enstitüsü Ar. Gör. Dalya HAZAR'ın 29.07.2016 tarihli dilekçesi.

14- İzmir Yüksek teknoloji Enstitüsü Ar. Gör. Dalya HAZAR'ın Komisyonumuza vermiş olduğu 29.07.2016 tarihli dilekçesi ile; "Kır-kent çeperi bağlamında Kentsel Müşterekler" konulu doktora tezinde kullanılmak üzere, Mera Kanunu kapsamında uygulanan kiralama, vasıf değişikliği ve tahsis konularında; başvuran projeler, İl Mera Komisyonunca alınan kabul ve ret kararları, bu kararların gerekçeleri, uygulanmış olan tahsis değişiklikleri ve bunların öncel kullanımları, projelerin büyüklüğü, ne kadar vasıf değişikliği yapıldığı, hangi kullanıma dönüştüğü, projelerin konumları, girişimcilerin yerel ya da dışarıklı aktörler olup olmadıkları, kabul edilen ve onaylanan projelerin plan bütünlüğüne uygunluğu gibi konularda sayısal ve sözel veriler talep edilmektedir. Konu üzerinde yapılan değerlendirme sonucunda; talep edilen çalışmaların çok geniş kapsamlı olması ve spesifik bir bilgi talebinin olmaması, ayrıca İl Mera Komisyonu sekreteryasının yoğun bir çalışma programının olması ve bununla birlikte böyle bir taleple ilgilenebilecek yeterli eleman olmaması nedenleri ile, Ar. Gör. Dalya HAZAR'ın 29.07.2016 tarihli dilekçesinde belirtilen taleplerin reddine oy birliği ile karar verilmiştir.

| | | |
|-------------------------------------|--------------------------------|-------------------------------|
| (İMZA) Hüseyin İÇTEN Başkan | (İMZA) Ahmet GÜLDAL Üye | (İMZA) Ebru YÜKSEL Üye |
| (İMZA) Ş.Ertuğrul ALTUNEL Üye | (İMZA) M.Koray TOPUZ Üye | (İMZA) Halit İSİYEL Üye |
| (İMZA) Arif Metin KARAGÖL Üye | (İMZA) Osman ÖZLER Üye | (İMZA) Hatice AMUŞ Üye |

APPENDIX F. LIST OF VILLAGES

| | District | Villages / Rural Neighborhoods | 2016 Population | 2017 Population |
|----|----------|---|-----------------|-----------------|
| 1 | Aliğa | İzmir(Aliğa/Aliğa Bel./Aşağışakran Mah.)-192999 | 249 | 253 |
| 2 | Aliğa | İzmir(Aliğa/Aliğa Bel./Bahçedere Mah.)-193001 | 8111 | 9315 |
| | Aliğa | İzmir(Aliğa/Aliğa Bel./Bozköy Mah.)-193003 | 583 | 597 |
| 3 | Aliğa | İzmir(Aliğa/Aliğa Bel./Çakmaklı Mah.)-193005 | 673 | 665 |
| 4 | Aliğa | İzmir(Aliğa/Aliğa Bel./Çaltılıdere Mah.)-193021 | 655 | 661 |
| 5 | Aliğa | İzmir(Aliğa/Aliğa Bel./Çıtak Mah.)-193029 | 570 | 538 |
| 6 | Aliğa | İzmir(Aliğa/Aliğa Bel./Çoraklar Mah.)-193035 | 55 | 44 |
| 7 | Aliğa | İzmir(Aliğa/Aliğa Bel./Güzelhisar Mah.)-193049 | 1139 | 959 |
| 8 | Aliğa | İzmir(Aliğa/Aliğa Bel./Hacıömerli Mah.)-193057 | 769 | 759 |
| 9 | Aliğa | İzmir(Aliğa/Aliğa Bel./Horozgediği Mah.)-193067 | 327 | 310 |
| 10 | Aliğa | İzmir(Aliğa/Aliğa Bel./Kalabak Mah.)-193071 | 417 | 413 |
| 11 | Aliğa | İzmir(Aliğa/Aliğa Bel./Kapukaya Mah.)-193079 | 417 | 187 |
| 12 | Aliğa | İzmir(Aliğa/Aliğa Bel./Karaköy Mah.)-193083 | 203 | 205 |
| 13 | Aliğa | İzmir(Aliğa/Aliğa Bel./Karakuzu Mah.)-193091 | 609 | 609 |
| 14 | Aliğa | İzmir(Aliğa/Aliğa Bel./Samurlu Mah.)-193097 | 425 | 700 |
| 15 | Aliğa | İzmir(Aliğa/Aliğa Bel./Şehitkema Mah.)-193109 | 897 | 882 |
| 16 | Aliğa | İzmir(Aliğa/Aliğa Bel./Uzunhasanlar Mah.)-193117 | 287 | 271 |
| | Aliğa | İzmir(Aliğa/Aliğa Bel./Yüksekköy Mah.)-193121 | 158 | 152 |
| 17 | Aliğa | İzmir(Aliğa/Aliğa Bel./Yenişakran Mah.)-192907 | 4187 | 4478 |
| 18 | Bornova | İzmir(Bornova/Bornova Bel./Beşyol Mah.)-192739 | 283 | 278 |
| 19 | Bornova | İzmir(Bornova/Bornova Bel./Çamiçi Mah.)-192747 | 243 | 242 |
| 20 | Bornova | İzmir(Bornova/Bornova Bel./Çiçekli Mah.)-192751 | 343 | 346 |
| 21 | Bornova | İzmir(Bornova/Bornova Bel./Eğridere Mah.)-192757 | 1228 | 1318 |
| 22 | Bornova | İzmir(Bornova/Bornova Bel./Gökdere Mah.)-192763 | 379 | 367 |
| 23 | Bornova | İzmir(Bornova/Bornova Bel./Karaçam Mah.)-192767 | 575 | 570 |
| 24 | Bornova | İzmir(Bornova/Bornova Bel./Kavaklıdere Mah.)-192775 | 2916 | 2952 |
| 25 | Bornova | İzmir(Bornova/Bornova Bel./Kayadibi Mah.)-192787 | 144 | 135 |
| 26 | Bornova | İzmir(Bornova/Bornova Bel./Kurudere Mah.)-192791 | 50 | 45 |
| 27 | Bornova | İzmir(Bornova/Bornova Bel./Laka Mah.)-192793 | 409 | 406 |
| 28 | Bornova | İzmir(Bornova/Bornova Bel./Sarıçöy Mah.)-192795 | 48 | 42 |
| 29 | Bornova | İzmir(Bornova/Bornova Bel./Yakaköy Mah.)-192797 | 999 | 1058 |
| 30 | Torbalı | İzmir(Torbalı/Torbalı Bel./Ahmetli Mah.)-194793 | 1032 | 1049 |
| 31 | Torbalı | İzmir(Torbalı/Torbalı Bel./Arslanlar Mah.)-194795 | 805 | 805 |
| 32 | Torbalı | İzmir(Torbalı/Torbalı Bel./Bozköy Mah.)-194829 | 376 | 390 |
| 33 | Torbalı | İzmir(Torbalı/Torbalı Bel./Çakırbeyli Mah.)-194831 | 522 | 532 |
| 34 | Torbalı | İzmir(Torbalı/Torbalı Bel./Çamlıca Mah.)-194797 | 195 | 194 |
| 35 | Torbalı | İzmir(Torbalı/Torbalı Bel./Dağteke Mah.)-194799 | 169 | 161 |
| 36 | Torbalı | İzmir(Torbalı/Torbalı Bel./Dağkızılca Mah.)-194827 | 807 | 793 |
| 37 | Torbalı | İzmir(Torbalı/Torbalı Bel./Demirci Mah.)-194801 | 479 | 475 |
| | Torbalı | İzmir(Torbalı/Torbalı Bel./Düverlik Mah.)-194803 | 145 | 147 |
| 38 | Torbalı | İzmir(Torbalı/Torbalı Bel./Göllüce Mah.)-41688 | 614 | 637 |
| 39 | Torbalı | İzmir(Torbalı/Torbalı Bel./Helvacı Mah.)-194805 | 255 | 249 |
| | Torbalı | İzmir(Torbalı/Torbalı Bel./Kaplanlık Mah.)-194807 | 250 | 235 |

(cont. on next page)

APPENDIX F (Cont.)

| | | | | |
|----|---------|--|------|------|
| 40 | Torbalı | İzmir(Torbalı/Torbalı Bel./Karakızlar Mah.)-194809 | 395 | 389 |
| 41 | Torbalı | İzmir(Torbalı/Torbalı Bel./Karaot Mah.)-194833 | 282 | 280 |
| 42 | Torbalı | İzmir(Torbalı/Torbalı Bel./Korucuk/Dirmil Mah.)-194811 | 765 | 749 |
| 43 | Torbalı | İzmir(Torbalı/Torbalı Bel./Ormanköy Mah.)-194813 | 217 | 208 |
| 44 | Torbalı | İzmir(Torbalı/Torbalı Bel./Sağlık Mah.)-194815 | 151 | 140 |
| 45 | Torbalı | İzmir(Torbalı/Torbalı Bel./Saipler Mah.)-194835 | 269 | 249 |
| 46 | Torbalı | İzmir(Torbalı/Torbalı Bel./Taşkesik Mah.)-194817 | 470 | 477 |
| 47 | Torbalı | İzmir(Torbalı/Torbalı Bel./Tulum Mah.)-194819 | 400 | 407 |
| 48 | Torbalı | İzmir(Torbalı/Torbalı Bel./Yeniköy Mah.)-194821 | 1400 | 1401 |
| 49 | Torbalı | İzmir(Torbalı/Torbalı Bel./Yeşilköy Mah.)-194823 | 560 | 531 |
| 50 | Torbalı | İzmir(Torbalı/Torbalı Bel./Yoğurtçular Mah.)-194825 | 336 | 332 |



APPENDIX G. CONTENT ANALYSIS TABLE



APPENDIX H. EXPERT OPINION SURVEY

KIRSAL-EKOLOJİK MÜŞTEREKLERİN eDPSİR NEDENSEL AĞ ANALİZİ: İZMİR MERA ALANLARI VAKASI

Bu çalışma, İYTE Şehir ve Bölge Planlama Bölümünde yapılmakta olan “Kırsal-Ekolojik Müsterekler: İzmir Mera Alanları Vakası” isimli doktora tezi kapsamındadır. Çalışma sonucunda, İzmir ili mera varlığının ve İzmir’in Aliğa, Bornova ve Torbalı ilçelerindeki 50 köyde yapılan vaka çalışmaları ve medya analizi sonucunda elde edilen bulguların eDPSİR Nedensel Süreç Modeline uyarlanması amaçlanmaktadır. DPSİR Süreç Modeli, bilgi organizasyonunu sağlayarak etki-tepki süreçlerininaraçsallaştırılması ve karar vericilerle iletişimin kolaylaştırılması adına Avrupa Çevre Ajansı (EEA) tarafından Çevre Etki Değerlendirme (EIA) raporlarında kullanılan bir modeldir. Modelde kullanılacak mera boyutları; **faktörler** (*driving forces*), **baskılar** (*pressures*), **durum** (*state*), **etkiler** (*impacts*) ve **yanıtlar** (*responses*) başlıkları içerisine dağıtılmıştır. Yapılan çalışma sonucunda 14 faktör, 11 baskı, 8 durum, 11 etki ve 25 yanıt belirlenmiştir. Çeşitli arazi kullanım çatışmaları karşısındaki çözüm önerilerini de içeren yanıtların(R) etkileyebileceği ve aynı zamanda birbiriyle de etkileşim sağlayabilecek herboyut için, anahtar yazılı olankodlarınınişaretlenmesi beklenmektedir. (ÖRNEK: **D_x** faktörünün sebep olduğu baskı(lar), örneğin **P_x, P_y, P_z** işaretlenecektir. Faktörün sebep olduğu hiçbir baskı olmadığı düşünülüyorsa işaretlenmeyecektir. Faktörünün etkilediği diğer faktör(ler) örneğin **D_y, D_z** işaretlenecektir. **R_x** yanıtının etkilediği bütün faktörler, baskılar, durum ve etkiler işaretlenecektir. Kodların açıklamaları anahtar da bulunmaktadır.)

d. FAKTÖRLER (*Driving Forces*)

(d1): YANLIŞ / EKSİK HARİTALAMA

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14

(d2): YÖNETİCİLERİN İLGİSİZLİĞİ

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14

(d3): DEĞİŞEN YASALAR

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14

(d4): ARAZİ İŞGALİ

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14

(d5): YERALTI KAYNAKLARI (maden vb.)

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d6 d7 d8 d9 d10 d11 d12 d13 d14

(d6): TARIMSAL KULLANIMLARA YA DA ORMANA DÖNÜŞME

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d5 d7 d8 d9 d10 d11 d12 d13 d14

(d7): ÇÖP DEPONİ ALANI KULLANIMI

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d5 d6 d8 d9 d10 d11 d12 d13 d14

(d8): KAMU YATIRIMLARI (hastane, karayolu vb.)

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d5 d6 d7 d9 d10 d11 d12 d13 d14

(d9): KURUMLAR ARASI KOORDİNASYON EKSİKLİĞİ

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d5 d6 d7 d8 d10 d11 d12 d13 d14

(d10): DİĞER GİRİŞİMLER VE YATIRIMLAR

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d11 d12 d13 d14

(d11): YETERSİZ / YANLIŞ TARIM POLİTİKALARI

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d12 d13 d14

(d12): ÇİTLEME (ÇEVRELEME) HAREKETLERİ (özelleştirme, erişim kısıtı vb.)

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d13 d14

(d13): PAZAR FİYATLARI DENGESİZLİĞİ

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d14

(d14): İKLİM, YAĞIŞ, TOPRAK VERİMİ

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Etkilediği diğer faktörler (*drivers*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13

p. BASKILAR (*Pressures*)

(p1): KENTLEŞME

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

(p2): NÜFUS ARTIŞI

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p3 p4 p5 p6 p7 p8 p9 p10 p11

(p3): BAŞKA KULLANIMLARA TAHSİS TALEPLERİ

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p2 p4 p5 p6 p7 p8 p9 p10 p11

(p4): MERA ISLAHI İÇİN ALTYAPI EKSİKLİĞİ

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p2 p3 p5 p6 p7 p8 p9 p10 p11

(p5): SÜRDÜRÜLEBİLİR OLMAYAN ISLAHLAR

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p2 p3 p4 p6 p7 p8 p9 p10 p11

(p6): YETERSİZ SU KAYNAKLARI

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p2 p3 p4 p5 p7 p8 p9 p10 p11

(p7): TOPRAK VERİMSİZLİĞİ

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p8 p9 p10 p11

(p8): YANLIŞ UYGULAMALAR (aşırı otlatma vb.)

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p9 p10 p11

(p9): TARIM İLACI KULLANIMI

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p10 p11

(p10): DENETİM EKSİKLİĞİ

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p11

(p11): HAYVANCILIK SEKTÖRÜNDE YETERLİ KAR ELDE EDİLEMEMESİ

Durum (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkilediği diğer baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10

s. DURUM (State)

(s1): KIRILGAN MERALAR

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(s2): KIRILGAN EKOSİSTEM VE BİYOÇEŞİTLİLİK

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(s3): KİRLİLİK

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(s4): KURAKLIK

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(s5): DİKENLİ (GEREN) BİTKİ NÜFUSUNDA ARTIŞ

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(s6): PROFESYONEL OLMAYAN UYGULAMALAR

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(s7): BAŞKA KULLANIMLARA TAHSİS

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(s8): YOKSULLAŞAN KIR NÜFUSU

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

i. ETKİLER (Impacts)

(i1): VERİMSİZ MERA ALANLARI

Etkilediği diğer etkiler:

i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(i2): MERA ALANLARININ KAYBEDİLMESİ

Etkilediği diğer etkiler:

i1 i3 i4 i5 i6 i7 i8 i9 i10 i11

(i3): KÜÇÜK ÇİFTÇİ VE MERADA OTLAYAN HAYVANSAYISINDA AZALMA

Etkilediği diğer etkiler:

i1 i2 i4 i5 i6 i7 i8 i9 i10 i11

(i4): YAŞLANAN TARIM NÜFUSU

Etkilediği diğer etkiler:

i1 i2 i3 i5 i6 i7 i8 i9 i10 i11

(i5): AZALAN BİYOÇEŞİTLİLİK

Etkilediği diğer etkiler:

i1 i2 i3 i4 i6 i7 i8 i9 i10 i11

(i6): ÇÖLLEŞME

Etkilediği diğer etkiler:

i1 i2 i3 i4 i5 i7 i8 i9 i10 i11

(i7): AZALAN EKOLOJİK SÜRDÜRÜLEBİLİRLİK

Etkilediği diğer etkiler:

i1 i2 i3 i4 i5 i6 i8 i9 i10 i11

(i8): KIRDAN KENTE GÖÇ

Etkilediği diğer etkiler:

i1 i2 i3 i4 i5 i6 i7 i9 i10 i11

(i9): KIR SOYLULAŞTIRMASI (MUTENALAŞTIRMASI)

Etkilediği diğer etkiler:

i1 i2 i3 i4 i5 i6 i7 i8 i10 i11

(i10): AZALAN CO₂EMİLİMİ

Etkilediği diğer etkiler:

i1 i2 i3 i4 i5 i6 i7 i8 i9 i11

(i11): GIDA GÜVENSİZLİĞİ

Etkilediği diğer etkiler:

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10

r. YANITLAR (Responses)

(r1): MERA TESCİLİ

Faktörler(drivingforces):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14

Baskılar (pressures):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar(state):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler(impacts):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r2): ENVANTER SAYISALLAŞTIRMASI (ör. MERBİS)Faktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11**(r3): MERA YÖNETİM BİRLİKLERİ KURULMASI**Faktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11**(r4): SÜRDÜRÜLEBİLİR MERA ISLAHI**Faktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11**(r5): TEKNİK ALTYAPI İYİLEŞTİRMESİ**Faktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11**(r6): DAHA KATI YASALAR VE CEZALAR**Faktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r7): MERA ISLAH FONUNUN YENİDEN DÜZENLENMESİFaktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11**(r8): KOOPERATİF VE BİRLİKLERİN TEŞVİK EDİLMESİ**Faktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11**(r9): BİYOÇEŞİTLİLİĞİN KORUNMASI**Faktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11**(r10): MERA KALİTESİNİN İYİLEŞTİRİLMESİ**Faktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11**(r11): HAVZA BAZLI ÜRETİMİN TEŞVİK EDİLMESİ**Faktörler (*drivingforces*): d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14Baskılar (*pressures*): p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11Durumlar (*state*): s1 s2 s3 s4 s5 s6 s7 s8Etkiler (*impacts*): i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11**(r12): OTLATMA YÖNETİMİ**Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r13): KAMUOYU BİLGİLENDİRMESİ

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r14): ARI MERASI VE ARICILIK FAALİYETLERİ

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r15): SULAMA SİSTEMLERİ İLE YAPAY MERA OLUŞTURULMASI

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r16): KÜÇÜK ÜRETİCİYE SÜBVANSİYON VE KREDİ DESTEĞİ

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r17): ÇED RAPORLARININ GELİŞTİRİLMESİ

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r18): ÇOBAN SERTİFİKA SİSTEMİ

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r19): ÇALIŞTAYLAR, PANELLER

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r20): MODERN MERA ISLAH YÖNTEMLERİ (Bütüncül Otlama Yönetimi vb.)

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r21): EĞİTİM

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r22): PROFESYONEL HAYVANCILIK UYGULAMALARI

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12
d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r23): KENTTEN KIRA GERİ GÖÇ

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r24): SİVİL EYLEMLER

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

(r25): ÇATIŞAN ARAZİ KULLANIMLARIN KISITLANMASI

Faktörler (*drivingforces*):

d1 d2 d3 d4 d5 d6 d7 d8 d9 d10 d11 d12 d13 d14

Baskılar (*pressures*):

p1 p2 p3 p4 p5 p6 p7 p8 p9 p10 p11

Durumlar (*state*):

s1 s2 s3 s4 s5 s6 s7 s8

Etkiler (*impacts*):

i1 i2 i3 i4 i5 i6 i7 i8 i9 i10 i11

Mera alanlarına dair eklemek istediğiniz faktör (D), baskı (P), durum (S), etki (I) ve yanıt (R) var mıdır?

FAKTÖR (D):

BASKI (P):

DURUM (S):

ETKİ (I):

YANIT (R):

ANAHTAR

D. FAKTÖRLER (*Driving Forces*)

- (d1): YANLIŞ / EKSİK HARİTALAMA
- (d2): YÖNETİCİLERİN İLGİSİZLİĞİ
- (d3): DEĞİŞEN YASALAR
- (d4): ARAZİ İŞGALİ
- (d5): YERALTI KAYNAKLARI (maden vb.)
- (d6): TARIMSAL KULLANIMLARA YA DA ORMANA DÖNÜŞME
- (d7): ÇÖP DEPONİ ALANI KULLANIMI
- (d8): KAMU YATIRIMLARI (hastane, karayolu vb.)
- (d9): KURUMLAR ARASI KOORDİNASYON EKSİKLİĞİ
- (d10): DİĞER GİRİŞİMLER VE YATIRIMLAR
- (d11): YETERSİZ / YANLIŞ TARIM POLİTİKALARI
- (d12): ÇITLEME (ÇEVRELEME) HAREKETLERİ (özelleştirme, erişim kısıtı vb.)
- (d13): PAZAR FİYATLARI DENGESİZLİĞİ
- (d14): İKLİM, YAĞIŞ, TOPRAK VERİMİ

P. BASKILAR (*Pressures*)

- (p1): KENTLEŞME
- (p2): NÜFUS ARTIŞI
- (p3): BAŞKA KULLANIMLARA TAHSİS TALEPLERİ
- (p4): MERA ISLAHI İÇİN ALTYAPI EKSİKLİĞİ
- (p5): SÜRDÜRÜLEBİLİR OLMAYAN ISLAHLAR
- (p6): YETERSİZ SU KAYNAKLARI
- (p7): TOPRAK VERİMSİZLİĞİ
- (p8): YANLIŞ UYGULAMALAR (aşırı otlatma vb.)
- (p9): TARIM İLACI KULLANIMI
- (p10): DENETİM EKSİKLİĞİ
- (p11): HAYVANCILIK SEKTÖRÜNDE YETERLİ KAR ELDE EDİLEMESİ

S. DURUM (*State*)

- (s1): KIRILGAN MERALAR
- (s2): KIRILGAN EKOSİSTEM VE BİYOÇEŞİTLİLİK
- (s3): KİRLİLİK
- (s4): KURAKLIK
- (s5): DİKENLİ (GEREN) BİTKİ NÜFUSUNDA ARTIŞ
- (s6): PROFESYONEL OLMAYAN UYGULAMALAR
- (s7): BAŞKA KULLANIMLARA ARAZİ TAHSİS
- (s8): YOKSULLAŞAN KIR NÜFUSU

I. ETKİLER (*Impacts*)

- (i1): VERİMSİZ MERA ALANLARI
- (i2): MERA ALANLARININ KAYBEDİLMESİ
- (i3): KÜÇÜK ÇİFTÇİ VE MERADA OTLAYAN HAYVAN SAYISINDA AZALMA
- (i4): YAŞLANAN TARIM NÜFUSU
- (i5): AZALAN BİYOÇEŞİTLİLİK
- (i6): ÇÖLLEŞME
- (i7): AZALAN EKOLOJİK SÜRDÜRÜLEBİLİRLİK
- (i8): KIRDAN KENTE GÖÇ
- (i9): KIR SOYLULAŞTIRMASI (MUTENALAŞTIRMASI)
- (i10): AZALAN CO₂ EMİLİMİ
- (i11): GIDA GÜVENSİZLİĞİ

R. YANITLAR (Responses)

- (r1): MERA TESCİLİ
- (r2): ENVANTER SAYISALLAŞTIRMASI (ör. MERBİS)
- (r3): MERA YÖNETİM BİRLİKLERİ KURULMASI
- (r4): SÜRDÜRÜLEBİLİR MERA ISLAHI
- (r5): TEKNİK ALTYAPI İYİLEŞTİRMESİ
- (r6): DAHA KATI YASALAR VE CEZALAR
- (r7): MERA ISLAH FONUNUN YENİDEN DÜZENLENMESİ
- (r8): KOOPERATİF VE BİRLİKLERİN TEŞVİK EDİLMESİ
- (r9): BİYOÇEŞİTLİLİĞİN KORUNMASI
- (r10): MERA KALİTESİNİN İYİLEŞTİRİLMESİ
- (r11): HAVZA BAZLI ÜRETİMİN TEŞVİK EDİLMESİ
- (r12): OTLATMA YÖNETİMİ
- (r13): KAMUOYU BİLGİLENDİRMESİ
- (r14): ARI MERASI VE ARICILIK FAALİYETLERİ
- (r15): SULAMA SİSTEMLERİ İLE YAPAY MERA OLUŞTURULMASI
- (r16): KÜÇÜK ÜRETİCİYE SÜBVANSİYON VE KREDİ DESTEĞİ
- (r17): ÇED RAPORLARININ GELİŞTİRİLMESİ
- (r18): ÇOBAN SERTİFİKA SİSTEMİ
- (r19): ÇALIŞTAYLAR, PANELLER
- (r20): MODERN MERA ISLAH YÖNTEMLERİ (Bütüncül Otlatma Yönetimi vb.)
- (r21): EĞİTİM
- (r22): PROFESYONEL HAYVANCILIK UYGULAMALARI
- (r23): KENTTEN KIRA GERİ GÖÇ
- (r24): SİVİL EYLEMLER
- (r25): ÇATIŞAN ARAZİ KULLANIMLARIN KISITLANMASI

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