HERCULES
Sustainable futures for Europe’s HERitage in CULTural landscapes: Tools for understanding, managing, and protecting landscape functions and values
GA no. 603447

D3.1 List and documentation of case study landscapes selected for HERCULES

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Reviewer: Nora Fagerholm, Anu Printsmann

<table>
<thead>
<tr>
<th>Work package</th>
<th>WP3 Landscape-scale case studies (short-term history)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deliverable nature</td>
<td>Report</td>
</tr>
<tr>
<td>Dissemination level (Confidentiality)</td>
<td>Public</td>
</tr>
<tr>
<td>Estimated indicated person-months</td>
<td>Person-months as estimated in the DoW : 6</td>
</tr>
<tr>
<td></td>
<td>Actual person-months: 4 (due to efficient work from the beginning)</td>
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<tr>
<td>Date of delivery</td>
<td>Contractual 31.08.2014 Actual 28.08.2014</td>
</tr>
<tr>
<td>Version</td>
<td>1.0</td>
</tr>
<tr>
<td>Total number of pages</td>
<td>93</td>
</tr>
<tr>
<td>Keywords</td>
<td>Investigation area, case study, study landscape, study municipality</td>
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Executive summary

HERCULES develops insights, tools, technologies and strategies and applies and tests these at regional case studies that span major environmental and land use history gradients throughout Europe. As a project that specifically refers to landscapes, the case studies form a cornerstone for HERCULES.

This report describes the selection of the HERCULES case studies (in the following termed study landscapes, SLs) regarding the criteria considered and the process carried out. As a second part, it contains an overview of all SLs and provides a detailed profile for each area, including cartographic information.

Attending to the criteria defined in the HERCULES Description of Work, a five step-process was carried out to identify the SLs. This encompassed 1) an open call for proposals of SL candidates among the HERCULES projects partners, 2) the evaluation of the suitability of proposed SLs by the leaders of those WPs that are active at the SL scale, 3) a decision on the SLs taken by the responsible WP 3 team and the project coordinator, 4) an adjustment process in order to achieve a maximum overlap of the activities of different WPs in the SLs, and 5) the selection of specific focus areas/study municipalities (SMs) within the larger SLs, to be referred to e.g. for more detailed map analyses or closer stakeholder interaction.

This process resulted in the identification of nine SLs: 1) Vooremaa and Kodavere (Estonia), 2) Lesvos (Greece), 3) Obereismental (Switzerland), 4) Grand Parc de Miribel Jonage, Rhône-Alpes area (France), 5) Sierra de Guadarrama foothills (Spain), 6) Parque Naturel Regional d’Armorique (France), 7) South West Devon (United Kingdom), 8) Dutch river delta Rhine-Meuse (Netherlands), and 9) Uppland (Sweden). These SLs span a variety of different characteristics (e.g. the major biogeographical zones of Europe), include both outstanding heritage features and everyday landscapes with more hidden historical layers, cover rural and urban areas and are all firmly embedded in the project via a local contact person who is member of the HERCULES consortium.

The case study selection was a joint enterprise to which all HERCULES partners actively contributed. It involved several typical challenges for Pan-European multi-partner projects, ranging from the homogenisation of material from different languages and administrative systems to the development of an integrative and well-balanced agreement on the potential of proposed sites beyond specific personal interests. As such, the successful selection of the SLs proves the capacity of the consortium to work as joint and target-oriented team.
Table of contents

Executive summary ........................................................................................................................................ 1
Table of contents ....................................................................................................................................... 2
List of figures and list of tables .................................................................................................................. 3
Abbreviations .......................................................................................................................................... 5
1  Introduction ........................................................................................................................................ 6
2  Selection of study landscapes .............................................................................................................. 6
   2.1 Selection criteria .......................................................................................................................... 6
   2.2 Selection process ........................................................................................................................ 7
3  Overview of study landscapes ............................................................................................................... 10
4  Study landscape descriptions ............................................................................................................... 12
   4.1 Vooremaa and Kodavere (Estonia) ............................................................................................. 13
   4.2 Lesvos (Greece) .......................................................................................................................... 23
   4.3 Obersimmental (Switzerland) ..................................................................................................... 33
   4.4 Grand Parc de Miribel Jonage, Rhône-Alpes area (France) ......................................................... 42
   4.5 Sierra de Guadarrama foothills (Spain) ....................................................................................... 48
   4.6 Parc Naturel Regional d’Armorique (France) ............................................................................ 58
   4.7 South West Devon (United Kingdom) .......................................................................................... 67
   4.8 Dutch river delta Rhine-Meuse (Netherlands) .......................................................................... 76
   4.9 Uppland (Sweden) ....................................................................................................................... 83
5  Conclusions .......................................................................................................................................... 92
List of figures

Figure 1: Overview map of HERCULES study landscapes
Figure 2: Orthophoto of the study landscape Vooremaa and Kodavere (Estonia)
Figure 3: Topographic map of the study landscape Vooremaa and Kodavere (Estonia)
Figure 4: Land cover map of the study landscape Vooremaa and Kodavere (Estonia)
Figure 5: Orthophoto of the study municipalities Alatskivi and Peipsiääre (Estonia)
Figure 6: Topographic map of the study municipalities Alatskivi and Peipsiääre (Estonia)
Figure 7: Land cover map of the study municipalities Alatskivi and Peipsiääre (Estonia)
Figure 8: Orthophoto of the study landscape Lesvos (Greece)
Figure 9: Topographic map of the study landscape Lesvos (Greece)
Figure 10: Land cover map of the study landscape Lesvos (Greece)
Figure 11: Orthophoto of the study municipalities Plomari and Gera (Greece)
Figure 12: Topographic map of the study municipalities Plomari and Gera (Greece)
Figure 13: Land cover map of the study municipalities Plomari and Gera (Greece)
Figure 14: Orthophoto of the study landscape Obersimmental (Switzerland)
Figure 15: Topographic map of the study landscape Obersimmental (Switzerland)
Figure 16: Land cover map of the study landscape Obersimmental (Switzerland)
Figure 17: Orthophoto of the study municipality Lenk (Switzerland)
Figure 18: Topographic map of the study municipality Lenk (Switzerland)
Figure 19: Land cover map of the study municipality Lenk (Switzerland)
Figure 20: Orthophoto of the study landscape Grand Parc de Miribel Jonage, Rhône-Alpes area (France)
Figure 21: Topographic map of the study landscape Grand Parc de Miribel Jonage, Rhône-Alpes area (France)
Figure 22: Land cover map of the study landscape Grand Parc de Miribel Jonage, Rhône-Alpes area (France)
Figure 23: Orthophoto of the study landscape Sierra de Guadarrama foothills (Spain)
Figure 24: Topographic map of the study landscape Sierra de Guadarrama foothills (Spain)
Figure 25: Land cover map of the study landscape Sierra de Guadarrama foothills (Spain)
Figure 26: Orthophoto of the study municipality Colmenar Viejo (Spain)
Figure 27: Topographic map of the study municipality Colmenar Viejo (Spain)
Figure 28: Land cover map of the study municipality Colmenar Viejo (Spain)
List of tables

Table 1: Overview of candidates for HERCULES study landscapes
Table 2: Results of intermediate steps within study landscapes selection procedure
Table 3: Allocation of study landscapes to work packages
Table 4: Focus areas (study municipalities) within study landscapes
Table 5: Overview of HERCULES study landscapes
Abbreviations

asl (metres) above sea level
ca. circa
GDP Gross domestic product
GPMJ Grand Parc de Miribel Jonage
p. persons
PNRA Parc Naturel Régional d'Armorique
SL study landscape
SM study municipality
WP work package
1 Introduction

As stated in the Description of Work, HERCULES develops insights, tools, technologies and strategies and applies and tests these at regional case studies. According to this plan, a number of five to six such case studies should be purposefully selected in order to span major environmental and land use history gradients throughout Europe.

This report describes the selection of these case studies (in the following referred to as study landscapes, SLs) regarding the criteria considered and the process carried out. As a second part, it contains an overview of all SLs and provides a detailed profile for each area, including cartographic information.

2 Selection of study landscapes

2.1 Selection criteria

The central criteria for the selection of SLs were already listed in the Description of Work of the HERCULES project. According to this, the SLs should:

- represent the diversity of European cultural landscapes, ranging from outstanding “flagship” landscapes (e.g. World Heritage sites) to “ordinary” landscapes,
- be underrepresented in previous case study research (as indicated through the systematic review carried out in WP 1), but exhibit historical / archaeological, biodiversity, and/or other societal values,
- host local stakeholder organisations that are specifically concerned with the cultural landscape, and
- dispose of a strong and committed base of small-scale and large-scale landowners / land users (including those under the umbrella of European Landowners’ Organization) to facilitate access to land and thus the implementation of good landscape practice.

Moreover, the reviewers of the project proposal raised the issue that:

- at least one region from the Central-Western European lowlands, i.e. from the Netherlands, Denmark, or Northern Germany, should be included.

Finally, the specific requirements of the tasks to be carried out in the WPs working at the SL scale need to be considered, both regarding content and practical issues. These requirements greatly vary across the WPs and include, for instance, a long-term history of the place in questions and the availability of data thereof (WP 2), the necessary language skills for researchers to be involved in the respective area to analyse primary historical documents on short-term history and carry out interviews with the local population (WP 3) and the existence of local stakeholders interested in getting involved in the project (WP 8). Therefore, an additional criterion was that an SL to be selected should:

- allow for the investigation in the course of ideally all, but as a minimum two different WPs, in order to achieve results that integrate different disciplines, time periods considered as well as the realms of science and practice.
2.2 Selection process

The HERCULES SLs were selected in the course of a five-step-process.

1) Identification of candidate study landscapes

Based on an open call among all HERCULES project partners and referring to the aforementioned selection criteria, 13 candidate SLs (see Table 1 for an overview) were identified. These sites were characterized in more detail by the persons who proposed those sites with regards to predefined criteria (e.g. size, land-use situation, existing contacts to local stakeholders) (accomplished 15.01.2014).

Table 1: Overview of candidates for HERCULES study landscapes

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Main landscape characteristics</th>
<th>Proposed by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vooremaa and Kodavere</td>
<td>Estonia</td>
<td>Drumlin field adjacent to large lake, rural</td>
<td>Anu Printsmann (TU)</td>
</tr>
<tr>
<td>Scečovlje Salina Natural Park</td>
<td>Slovenia</td>
<td>Rural coastal wetlands</td>
<td>Matej Batić (SIN)</td>
</tr>
<tr>
<td>Southern Peninsula of Santorini</td>
<td>Greece</td>
<td>Rural Mediterranean island of volcanic origin</td>
<td>Antonia Noussia (LRG)</td>
</tr>
<tr>
<td>Lesvos</td>
<td>Greece</td>
<td>Mediterranean rural hill landscape on volcanic island</td>
<td>Thanasis Kizos (UAEGEAN)</td>
</tr>
<tr>
<td>Puglia</td>
<td>Italy</td>
<td>Rural low tableland with coastal plains and wetlands</td>
<td>Jan Kolen (VU)</td>
</tr>
<tr>
<td>Southern Black Forest</td>
<td>Germany</td>
<td>Rural low mountain range</td>
<td>Claudia Bieling (ALUFR)</td>
</tr>
<tr>
<td>Obersimmental</td>
<td>Switzerland</td>
<td>Rural alpine valley</td>
<td>Matthias Bürgi (WSL)</td>
</tr>
<tr>
<td>Rhône-Alpes area</td>
<td>France</td>
<td>Valley landscape at the semi-urban/rural interface</td>
<td>Geneviève Girod (CIME)</td>
</tr>
<tr>
<td>Sierra de Guadarrama</td>
<td>Spain</td>
<td>Rural mountain range adjacent to metropolitan area</td>
<td>María García Martín (ALUFR)</td>
</tr>
<tr>
<td>Parc Naturel Régional d'Armorique</td>
<td>France</td>
<td>Low hill landscape facing the coast; basically rural with some semiurban areas</td>
<td>Laurence Le Du-Blayo (LRG)</td>
</tr>
<tr>
<td>Plymouth / Dartmoor area</td>
<td>UK</td>
<td>Variety of upland and coastal landscapes; rural and periurban areas</td>
<td>Pip Howard (FOC)</td>
</tr>
<tr>
<td>Rhine-Meuse area</td>
<td>Netherlands</td>
<td>River landscape with complex rural-urban interactions</td>
<td>Jan Kolen (VU)</td>
</tr>
<tr>
<td>Uppland</td>
<td>Sweden</td>
<td>Mix of rural and urban areas on tableland with inland and coastal plains</td>
<td>Carole Crumley (UU)</td>
</tr>
</tbody>
</table>
2) Evaluation of suitability of proposed study landscapes

Considering the investigations to be carried out, the leaders of the four work packages (WP 2: long-term history; WP 3: short-term history and current situation; WP 5: modelling/scenarios; WP 8: demonstration and stakeholder interaction) that will work at the SL scale commented on the suitability of the proposed SL candidates (accomplished 15.02.2014; Table 2).

Table 2: Results of intermediate steps within study landscapes selection procedure

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Suitable for</th>
<th>Finally selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vooremaa and Kodavere</td>
<td>Estonia</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Sečovlje Salina Natural Park</td>
<td>Slovenia</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Southern Peninsula of Santorini</td>
<td>Greece</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Lesvos</td>
<td>Greece</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Puglia</td>
<td>Italy</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Southern Black Forest</td>
<td>Germany</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Obersimmental</td>
<td>Switzerland</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Rhône-Alpes area</td>
<td>France</td>
<td>possibly</td>
<td>no</td>
</tr>
<tr>
<td>Sierra de Guadarrama</td>
<td>Spain</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Parc Naturel Régional d'Armorique</td>
<td>France</td>
<td>possibly</td>
<td>no</td>
</tr>
<tr>
<td>Plymouth / Dartmoor area</td>
<td>UK</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Rhine-Meuse area</td>
<td>Netherlands</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Uppland</td>
<td>Sweden</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

\(^a\) maximum of three to four SL to be covered  
\(^b\) maximum of seven SL to be covered  
\(^c\) maximum of two SL to be covered  
\(^d\) maximum of five SL to be covered

3) Decision on HERCULES study landscapes

Based on this feedback and considering first results from WP 1, in a next step, nine areas were selected as HERCULES SLs during a WP 3 meeting, in accordance with the project coordinator (accomplished 20.02.2014; Table 2). This decision was based:

- on the criteria listed in the Description of Work and the reviewer comment to include one region from the Central-Western European lowlands (see section 2.1, Selection criteria),
- the consideration of available literature on the proposed sites and their characteristics and processes, favouring less researched ones, and
- on the feedback of the WP leaders on the suitability of the proposed SLs for the specific task to be carried out within their WP.

This decision was communicated to and agreed upon by all HERCULES project partners (March 2014).
4) Achievement of maximum overlap of work packages in study landscapes

In order to achieve a maximum overlap of WPs being active in the SLs, some specific requests were made to the WP leaders, asking them to consider different or additional SLs than initially selected. This adjustment process resulted in the final decision on the SLs for each WP (accomplished 15.04.2014). Caused by changes in staff and a corresponding delay, the final decision on one or two SLs out of three candidate sites is still pending for WP 5, but will be made in due course.

Most of the SLs are covered by two or even three of the four WPs being active at this scale (Table 3). However, due to the specific requirements of the WPs ranging from availability of data on long-term history and data to be used for modelling future trajectories to the existence of good local stakeholder contacts and language skills of researchers involved, it was not possible to identify a SL that is suitable for all WPs. This resulted in a higher number of SLs than initially intended (nine instead of five to six as planned in the Description of Work).

Table 3: Allocation of study landscapes to work packages

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>Study landscape for</th>
<th>WP 2</th>
<th>WP 3</th>
<th>WP 5</th>
<th>WP 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vooremaa and Kodavere</td>
<td>Estonia</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Lesvos</td>
<td>Greece</td>
<td>no</td>
<td>yes</td>
<td>(yes)</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Obersiimmental</td>
<td>Switzerland</td>
<td>no</td>
<td>yes</td>
<td>(yes)</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Grand Parc de Miribel Jonage, Rhône-Alpes area(^a)</td>
<td>France</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Sierra de Guadarrama foothills(^b)</td>
<td>Spain</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Parc Naturel Régional d'Armorique</td>
<td>France</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>South West Devon(^c)</td>
<td>UK</td>
<td>no</td>
<td>yes</td>
<td>(yes)</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Dutch river delta Rhine-Meuse(^d)</td>
<td>Netherlands</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Uppland</td>
<td>Sweden</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

\(^a\) formerly called Rhône-Alpes area
\(^b\) formerly called Sierra de Guadarrama
\(^c\) formerly called Plymouth / Dartmoor area
\(^d\) formerly called Rhine-Meuse area
\(^e\) decision on max. 2 SL pending

The two French SLs (Grand Parc de Miribel Jonage, Rhône-Alpes area; Parc Naturel Régional d'Armorique) will be covered by only one WP (WP 8 and WP 3, respectively). For both this is due to very interesting existing methodological approaches that can serve as pilot cases to be transferred to other SLs in the subsequent steps of the HERCULES project (Grand Parc de Miribel Jonage, Rhône-Alpes area: pilot case for stakeholder engagement strategy; Parc Naturel Régional d'Armorique: photo observatory for eliciting landscape values in the context of historical developments).

5) Selection of specific focus areas within larger study landscapes

Particularly for the activities within WP 3, a more specific focus on a smaller area of the SL is necessary. Therefore, based on the feedback regarding the availability of data and active local stakeholder groups given by the SL contact persons, specific “study municipalities” (SMs, not strictly referring to municipalities in administrative terms) for WP 3 have been selected. These will likewise serve for WP 8, if active in the respective SL. Also for WP 2, focus areas have been defined (all accomplished 30.06.2014; Table 4).
Table 4: Focus areas / study municipalities within study landscapes

<table>
<thead>
<tr>
<th>Name of study landscape</th>
<th>Country</th>
<th>Focus area / study municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vooremaa and Kodavere</td>
<td>Estonia</td>
<td>Alatskivi, Peipsiääre</td>
</tr>
<tr>
<td>Lesvos</td>
<td>Greece</td>
<td>Plomari, Gera</td>
</tr>
<tr>
<td>Obersimmental</td>
<td>Switzerland</td>
<td>Lenk</td>
</tr>
<tr>
<td>Grand Parc de Miribel Jonage, Rhône-Alpes area</td>
<td>France</td>
<td>Grand Parc de Miribel Jonage</td>
</tr>
<tr>
<td>Sierra de Guadarrama foothills</td>
<td>Spain</td>
<td>Colmenar Viejo</td>
</tr>
<tr>
<td>Parc Naturel Régional d'Armorique</td>
<td>France</td>
<td>Dinéault</td>
</tr>
<tr>
<td>South West Devon</td>
<td>UK</td>
<td>Modbury</td>
</tr>
<tr>
<td>Dutch river delta Rhine-Meuse</td>
<td>Netherlands</td>
<td>Amstel, Niejen area</td>
</tr>
<tr>
<td>Uppland</td>
<td>Sweden</td>
<td>Uppsala, Börje parish</td>
</tr>
</tbody>
</table>

3 Overview of study landscapes

The selection process resulted in nine SL for the HERCULES project. As can be seen from Table 5, they span a variety of different characteristics (e.g. the major biogeographical zones of Europe), include both outstanding heritage features and everyday landscapes with more hidden historical layers, cover rural and urban areas and are all firmly embedded in the project via a local contact person who is a member of the HERCULES consortium. A map with an overview of the SLs is shown in Figure 1.

Fig. 1: Overview map of HERCULES study landscapes
Table 5: Overview of HERCULES study landscapes

<table>
<thead>
<tr>
<th>Name</th>
<th>Vooremaa and Kodavere</th>
<th>Lesvos</th>
<th>Obersimmental</th>
<th>GPMJ, Rhône-Alpes area</th>
<th>Sierra de Guadarrama foothills</th>
<th>Parc Naturel Régional d’Armorique</th>
<th>South West Devon</th>
<th>Dutch river delta Rhine-Meuse</th>
<th>Uppland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviation</td>
<td>VOK</td>
<td>LES</td>
<td>OBS</td>
<td>RHA</td>
<td>SGF</td>
<td>PRA</td>
<td>SWD</td>
<td>RMA</td>
<td>UPP</td>
</tr>
<tr>
<td>Country</td>
<td>Estonia</td>
<td>Greece</td>
<td>Switzerland</td>
<td>France</td>
<td>Spain</td>
<td>France</td>
<td>UK</td>
<td>Netherlands</td>
<td>Sweden</td>
</tr>
<tr>
<td>Approximate size (size of focus area)</td>
<td>1818 km$^2$ (162 km$^2$)</td>
<td>1639 km$^2$ (209 km$^2$)</td>
<td>334 km$^2$ (126 km$^2$)</td>
<td>28 km$^2$ (2–3 ha plots)</td>
<td>835 km$^2$ (183 km$^2$)</td>
<td>1269 km$^2$ (47 km$^2$)</td>
<td>995 km$^2$ (24 km$^2$)</td>
<td>12,839 km$^2$ (not clearly specified)</td>
<td>17,988 km$^2$ (148 km$^2$)</td>
</tr>
<tr>
<td>Bio-geographical region</td>
<td>Boreal</td>
<td>Mediterranean</td>
<td>Alpine</td>
<td>Continental</td>
<td>Mediterranean</td>
<td>Alpine</td>
<td>Continental</td>
<td>Mediterranean</td>
<td>Boreal</td>
</tr>
<tr>
<td>Climate zone (Köppen classification)</td>
<td>Humid continental climate (Dfb)</td>
<td>Mediterranean climate (Csa)</td>
<td>Maritime temperate / tundra climate (Cfb / ET)</td>
<td>Maritime temperate / Mediterranean climate (Cfb / Csa)</td>
<td>Mediterranean climate (Csa)</td>
<td>Maritime temperate climate (Cfb)</td>
<td>Maritime temperate climate (Cfb)</td>
<td>Maritime temperate climate (Cfb)</td>
<td>Humid continental climate (Dfb)</td>
</tr>
<tr>
<td>Rural/urban character (population density)</td>
<td>Rural (ca. 12 p./km$^2$)</td>
<td>Rural (ca. 49 p./km$^2$)</td>
<td>Rural (ca. 24 p./km$^2$)</td>
<td>Rural / urban interface (104–536 p./km$^2$)</td>
<td>Rural / urban interface (ca. 257 p./km$^2$)</td>
<td>Rural and semi-urban (ca. 90–320 p./km$^2$)</td>
<td>Rural and semi-urban (ca. 850–1200 p./km$^2$)</td>
<td>Rural / urban interface (ca. 21–90 p./km$^2$)</td>
<td>Rural / urban interface (ca. 21–90 p./km$^2$)</td>
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<td>Landscape character</td>
<td>Drummeln field and plain area adjacent to large lake; shaped by traditional land-use practices (partly specific for an ethnic minority)</td>
<td>Small-scale traditional agricultural landscape (olive plantations, pastures) with rich history</td>
<td>Alpine pasture landscape, several land-use related traditions (cheese-making, typical local architecture), high touristic value</td>
<td>Highly industrialized areas meet with largely natural river landscape, long history of water regulation, traditional vegetable and fruit varieties</td>
<td>Rural landscape based on livestock farming at the outskirts of a megacity, commuter area, rich natural and cultural heritage</td>
<td>Low hill landscape with riverine and estuarine areas; diversity of landscape features (bogage, wetlands, heathland etc.)</td>
<td>Diverse landscape with peri-urban areas, undulating farmland with hedgerows (bogage-style), coastal areas and moorland</td>
<td>Coastal and riverine wetlands with a long-term history of human interventions in water systems and natural biotopes</td>
<td>Mix of rural farmland and urban areas on a tabletop landscape with inland and coastal plains, visible historical features dating back to the Neolithic</td>
</tr>
<tr>
<td>Protection status</td>
<td>No overall protection status; several small-scale protected features (natural and cultural heritage)</td>
<td>Various protected features and areas (e.g. Geopark, Natura 2000, archaeological sites)</td>
<td>No protection status</td>
<td>Natural park set aside from further economic development, partly Natura 2000 site</td>
<td>Several nature protection sites (e.g. Natura 2000, partly UNESCO Biosphere Reserve)</td>
<td>Regional nature park (IUCN category IV), partly UNESCO Biosphere Reserve</td>
<td>Various protected sites and features, e.g. National Park, Area of Outstanding Natural Beauty</td>
<td>Two World Heritage Sites in a combination with nature reserves and landscapes of national value</td>
<td>World Heritage Site Old Uppsala and various nature reserves</td>
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<td>HERCULES contact person (institution)</td>
<td>Anu Printsmann (TU)</td>
<td>Thanasis Kizos (UAEGEAN)</td>
<td>Matthias Bürgi (WSL)</td>
<td>Geneviève Girod (CIME)</td>
<td>María García Martín (ALUFR)</td>
<td>Laurence Le Du-Blayo (LRG)</td>
<td>Pip Howard (FOC)</td>
<td>Niels van Manen, Jan Kolén (VU)</td>
<td>Kim von Hackwitz (UU)</td>
</tr>
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4 Study landscape descriptions

In the following, all HERCULES SLs will be described regarding their exact location, basic environmental characteristics, history, current sociodemographic and economic as well as landscape characteristics. The descriptions are based on information provided by those HERCULES consortium members that serve as contact persons for the respective SL.

This text is complemented by an orthopicture, a topographic map and a land cover map (based on CORINE data) for each SL, and if applicable, additionally for the focus area/study municipality for in-depth and stakeholder interaction-related investigations. More information on the SLs has been collected (e.g. indicating references and available historical maps and providing practical information on contact details for local actors). However, in order to keep the length of this report to a reasonable limit, they have not been included here, but are made available to all project members via the HERCULES Knowledge Hub.
4.1 Vooremaa and Kodavere (Estonia)

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Contact person
Anu Printsmann  anu.printsmann@tlu.ee

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Location
The Vooremaa landscape region (approximate centre at 58° 40' N, 26° 36' E) is located on the Central-Eastern part of Estonia and belongs mainly to the county of Jõgeva, with some parts in the county of Tartu. In its Southeast it borders to the historical parish of Kodavere (58° 35' N, 27° 5' E) that stretches in an oblong shape along the shore of Lake Peipsi. The area of the study landscape covers 1818 km². The studies will focus on the municipalities of Alatskivi and Peipsiääre. Historically, the study municipality Alatskivi (58° 36' N, 27° 7' E, Northernmost municipality of Tartu county; 129 km²) has been the centre of the Kodavere parish and includes 31 separate villages. Peipsiääre (58° 31’ N, 27° 11’ E; 32 km²) is situated in the Southeast of Alatskivi, encompassing the Russian Old Believers villages of the shore of Lake Peipsi: Kasepää, Kolkja, Savka, Sipelga and Varnja.

Basic environmental characteristics

Topography
The landscape of Vooremaa is characterised by moraine drumlins (voor = drumlin, maa = land), with interspersed swamps and lakes in lower depressions. The highest point of the region is 144 m asl. The relief form of Vooremaa is composed of 60–70 m thick Quaternary deposits. The Vooremaa drumlin field consists of around 120 NW–SE orientated drumlins which have been formed by several ice ages and are considered as one of the best preserved post-glacial drumlin formations on the East European plain.

The Western edge of Kodavere historical parish is a part of Vooremaa, which is covered with elongated drumlins. The North-Eastern part forms the end of the Southeast-Estonian plain, which reaches out as a peninsula surrounded by the Lake Peipsi lowland. The plain is cut through by two fluvial valleys that capacitate small rivers and/or lakes. The former delta areas of those valleys form Lake Peipsi lowland. The highest point is around Peatskivi (48 m asl).

Climate
The area belongs to the more continental part of Estonia, with colder winters and warmer summers compared to the Northern and Western coast (Köppen climate classification Dfb, humid continental climate). The warmest month is July (average temperature 17.1°C) and the coldest is February (average temperature -7.6°C). Average annual precipitation is about 600 mm. The vegetation period in Estonia lasts for 180–195 days; there are 110–190 frost free days a year. The annual snow cover can remain up to 135 days. The temperatures on drumlins and in intermediate depressions can vary considerably, and in damper parts it can even descend to -3 or -4°C in mid-summer, which can have a strong impact on vegetation.
Soils

The bedrock of the Vooremaa region is divided between Lower Silurian limestones (N and NW parts), Middle Devonian sandstones (Central part), and Middle and Upper Devonian sandstones and clay (S and SE parts). Because the drumlin field comprises oblong uplands and low damp depressions, soils are highly diverse. While the arable slopes of the drumlins are covered with slightly eroded soils (Regosols), the feet of the drumlins consist of diluvial soil deposits, which can be up to several meters thick. The lower depressions between drumlins are characterised by Histic Gleysols and Histosols. In the Western part of Vooremaa Calcaric Cambisols are prevailing, while Stagnic Luvisols and Terric Histosols dominate in the centre. In the East, typical soils are Eutric Gleysols.

Also in the historical parish of Kodavere, soils are diverse. Due to the fact that some parts of Kodavere are located in the former lake basin, some of the soils are damp or even moist. In the West, Carbic Podzols are common, in the North Stagnic Luvisols. Eutric Gleysols, Stagnic Luvisols, Terric Histosols and Haplic Podzols are typical soils of the Southern part of the area. The Eastern part of the Alatskivi municipality and the Western part of the Peipsiääre municipality are covered by moist Podzols soils. The Western part of the municipality of Alatskivi and the coastal part of Peipsiääre municipality are covered by Calc(ar)ic Cambi- and Luvisols and Eutric Gleysols.

Landscape history

The pollen stratigraphy from several lakes of Vooremaa has been studied quite well and also data on Holocene fauna is available for (re)constructing paleo-environments. The archaeological evidence for earlier human habitation is relatively scarce – there are some finds from the Mesolithic, but most of the Stone Age finds can be related to the Neolithic. Larger human impact on landscape and environment in Vooremaa can be seen during the Iron Age (in Estonia: 500 BC to 1227 AD). From this period there are in Vooremaa at least 45 stone graves (dated mostly to the centuries 2–5 AD), 10 hill forts (mostly Viking Age, 800–1050 AD), numerous settlement sites, and also several sites indicating local iron smelting, all of this showing the formation of local power and trading centres with arable background.

Archaeological findings in Kodavere depend on the different levels of Lake Peipsi. Oldest human traces from Kodavere date back to the Mesolithic and have been found from the delta of the river Great Emajõgi. There are stray finds dating back to the Neolithic found from different coastal parts of the rest of Kodavere historical parish as well. Those finds are located according to the settlement logic of the Stone Age hunter-gatherer economy. The oldest traces of farming society have been found where the best fields are, namely around Peatskivi and date back to the 2nd century BC. This centre (Peatskivi) was continuously in use until the end of Prehistory (about 12th century) when a Late Iron Age/Early Medieval estate was established on the other bank of River Alatskivi (the present Peatskivi).

After the German conquest (1208–1227, also known as Nordic Crusades) the land was subjected to (Baltic) German landlords, who started establishing network of manors based on labour of Estonian peasants (maarahvas = people/nation of the land, country-folk as the self-denomination and national awakening came about 19th century; administratrive name came earlier). The estates owned by the Germans became the main economical centres in rural areas shaping the landscape, and dictating the land use. The Medieval rural landscape was also characterised by stone built strongholds, churches and local cemeteries. Traditional layout of villages which have their origins in the Middle Ages can still partly be observed in today’s landscape.
The system of manors lasted till the Land Reform in 1919 (in 1918 Estonia claimed its independence); the manors were expropriated and turned into privately owned farms. This changed both the concept of land use and understanding of land ownership profoundly. During the soviet occupation (1940–1941, 1944–1991) the land was nationalised and private farms were forced into collective (kolkhoz) and state farms (sovhoz). Again, everything concerning land use and rural village life changed completely. Collective farms with huge cow barns and grain driers became dominating features in the landscape. After the collapse of the Soviet Union and regaining the independence in 1991 a new land reform was initiated, and in the course of the last 25 years more than 90% of the land has been returned to its rightful owners or has found new ones. The landscapes of today are characterised by multitude of landowners with very diverse land use practices.

The group of Russian Old Believers (староверы = starovery, старообрядцы = staroobryadtsy) started to move to the shores of Lake Peipsi after the 17th century schism in the Russian Orthodox Church after which the people who stayed true to the old ways were persecuted in Russia, so they emigrated to the peripheries of the Russian empire. In the 18th century many Russian Orthodox people also moved to this area, so the Russians of Kodavere actually have two different types of Orthodox Christianity. In addition, during the mid-20th century occupation a Russian-speaking minority was settled in Estonia, sometimes termed as ‘Soviets’ to be distinguished from the previous immigration waves.

**Current demographic and socioeconomic characteristics**

For the county of Jõgeva in which the major part of the study landscape region is located, the population density is 12 persons per km$^2$. With 8.8% of the total population, there is a high share of non-Estonian people in area, most of them being Russians (7.5% of total population). On average, people in the county are 43 years old. The primary sector in Jõgeva contributes to about 48% of the area’s GDP, the secondary 27% and the tertiary 25%. More specifically, with a share of 19%, manufacturing industry is the most important economic sector in Jõgeva county, followed by agriculture (11%) and public management (10%). The unemployment rate is at 3.6%, and the average monthly gross income 643 Euros.

The municipalities that make up the historical parish of Kodavere have a population of approximately 5000 persons. Around 1300 people live in Alatskivi and 700 in Peipsiääre, with a diverse ethnic structure: whereas in Alatskivi 78% of the population are Estonians, they make up only 8% of the inhabitants of Peipsiääre, which has a foremost Russian population. Also the population density varies greatly in Kodavere historical parish, ranging from 5.2 persons per km$^2$ in Saare over 9.9 in Alatskivi and 22.6 in Peipsiääre to 28.6 in Kasepää. The economic situation in Alatskivi largely complies with that of Jõgeva county (unemployment rate: 4%; average monthly gross income: 735 Euros); however, the situation in Peipsiääre is a little bit worse, with an unemployment rate of 6% and a monthly gross income of 574 Euros. Like in Jõgeva county, the highest employment in the area is in manufacturing industry.

**Landscape character**

Approximately 38% of Vooremaa is covered by forest, which grows mostly in damp and swampy depressions between the drumlins. The overall swamping level of the area is estimated around 20%. Common vegetation types are swamps with white birch (*Betula pubescens*), gray alder (*Alnus incana*), and mixed forest. Depending on different soil types, fresh boreo-nemoral forest (*Hepatica* and *Aegopodium* types) in the Central and Northern parts, and fresh boreal forest (*Oxalis-Vaccinium myrtillus* type) in the Southern part of
Vooremaa are most commonly spread. About 48% of Vooremaa is agricultural land, with roughly 75% of it being arable land and 25% natural grassland.

The Eastern part of Kodavere historical parish that stretches to Lake Peipsi is covered by grasslands, but more damp areas also have birch and other trees species that are common on moist areas. The most Western areas along the lakeshore (Western part of Alatskivi) are dominated by pine forests. Large parts of former forested areas have been cleaned for agricultural purposes, but at present many of those former fields can be considered as fallows. Whereas the Vooremaa cultural landscape is mainly shaped by the drumlins, in Kodavere it is mostly the Russian Old Believers and their particular land-use practices and architecture that are formative for the distinctive landscape character. The Old Believers mostly live on the coast of Lake Peipsi with the least arable soils, thus their land use mainly includes horticulture, fishing and foraging. Estonians, on the other hand, are mostly engaged in agriculture.

Although the region is basically an everyday landscape, it encompasses a variety of protected features. The Southern part of the Vooremaa landscape region with the highest density of drumlins and lakes is a landscape protection area (Vooremaa maastikukaitseala, established in 1964). It covers 9831 ha, which is approximately 10% of the landscape region and aims to protect characteristic landscape features, traditional cultural landscapes, but also the natural beauty of the region. In the Southern part of Kodavere in the delta area of the river Great Emajõgi, there is the nature reserve Emajõe Suursoo (Emajõe-Suursoo looduskaitseala, established in 1981). Moreover, the Estonian Land Board lists a great number of cultural heritage features and monuments, for instance archaeological sites (settlements, burial sites, hillforts), historical sites (memorials, school places) and heritage sites (old farm places, natural sacred sites).
Fig. 2: Orthophoto of the study landscape Vooremaa and Kodavere (Estonia)
Fig. 3: Topographic map of the study landscape Vooremaa and Kodavere (Estonia)
Fig. 4: Land cover map of the study landscape Vooremaa and Kodavere (Estonia)
Fig. 5: Orthophoto of the study municipalities Alatskivi and Peipsiääre (Estonia)
Fig. 6: Topographic map of the study municipalities Alatskivi and Peipsiaare (Estonia)
Fig. 7: Land cover map of the study municipalities Alatskivi and Peipsiääre (Estonia)
4.2 Lesvos (Greece)

<table>
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<th>Name</th>
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<td>Greece</td>
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Contact person

Thanasis Kizos          akizos@aegean.gr

Study landscape within WP 2 WP 3 WP 5 WP 8
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Location

With 1639 km², Lesvos is the third largest Greek island. It is located in the North-Eastern Aegean Sea (island’s approximate centre at 39° 10’ N, 26° 20’ E). Forming a separate administrative unit, since 2011 Lesvos is a municipality that unites 13 formerly independent municipalities. The studies will focus on the municipal units of Gera (39° 2’ N, 26° 27’ E; 87 km²) and Plomari (38° 59’ N, 26° 22’ E; 122 km²) in the South-Eastern part of the island.

Basic environmental characteristics

Topography

Lesvos is a mountainous island of volcanic origin. Two large peaks, Lepetymnos and Olympus, dominate its Northern and Central parts and rise up to about 970 m asl. The island is roughly triangular, with two gulfs deeply intruding in the Southeast and the Southwest. The study municipalities Gera and Plomari are located at the foot of the Olympus mountain range, with a highest point at 850 m near Megalohori. The slope gradient is high with many seasonal streams, except in the lowland parts of the Gera area.

Climate

The climate of Lesvos is Mediterranean, with dry and hot summers (Köppen classification Csa). It ranges from semi-dry in the East (400 mm precipitation, 16.1°C average temperature) to semi-wet in the West (with 600 mm precipitation, 17.6°C). Data from the Akrasi weather station in the vicinity of Plomari and Gera indicate an average temperature of 17.9°C (average max 28.1°C, average min 8.0°C). Average precipitation is around 660 mm (2003–2013 data) with important annual differences (e.g. 2004 with 793 mm and 2005 with 484 mm) and seasonal differences (the wettest month is December on average with 124 mm, but the overall highest monthly precipitation is January 2004 with 310 mm).

Soils

In the East, soils stem from recent volcanic material, whereas in the West schist and limestone material is dominating and resulting in stony and shallow soils described as typic Yerochrept, Lithic Xerochrept, and Lithic Xerorthent.

Landscape history

Some artifacts found on Lesvos date back to the Paleolithic period, and there are several important archaeological sites from the Neolithic. The island has a rich and dynamic history and was, among others, part of Persian, Hellenistic, Roman, Byzantine, and Ottoman empires. In 1912, it became part of the Kingdom of Greece.
All available data on agriculture and animal husbandry on Lesvos before the 19th century indicate that Lesvos’ landscape was characterized by greater diversity in land use terms than that of the 19th and 20th centuries and the current one. Until the end of the 18th century, the agricultural landscape of Lesvos presented largely Mediterranean characteristics, namely mixed land uses being predominated by small parcels and cereals. Terraces most likely were used primarily for cereals, grazing lands and groves. The slow but steady increase of olive groves with the expansion of agricultural land and the conversion of arable land into olive cultivation marked the gradual landscape transformation with the expansion of terraces in groves, stone constructions for olives storage, the increase of olive mills and the decrease of forests, as terraced olive grove parcels began to “climb” upwards on the mountain sides replacing forests. The 19th century stabilized and reinforced these transformations.

However, after the first quarter of the 20th century, rural exodus brought significant reduction of land use diversity: olives and savanna type grazing lands dominated the landscape. Forests increased in the mountains, as mountainous and/or less productive fields were abandoned. In the plains, agriculture was intensified by pumping and watering arable animal feeding stuff or greenhouses. In addition, in coastal areas housing and tourist uses compete with agriculture for land. On the whole, the 19th century transformations can be held responsible for a major part of the current landscape characteristics and appearance, despite significant modern changes.

**Current demographic and socioeconomic characteristics**

The population of Lesvos is today 87,000 people (population density 49 with a national average of 80 per km²) with a steady decrease in the last 70 years (-32% from 127,000 people in 1951, the biggest decrease between 1961 and 1971 of -17.4%). Those that have left are the younger and educated part of the population and the ageing indicator (people over 65 / people under 15*100) has increased from 100.0 in 1981 to 155.5 in 2001, with 21.1% of the population being over 65 years old (median age of the population: 42 years). The natural balance (births minus deaths) is negative for more than 60 years. As a result, the local labour market is characterized by low percentages of active inhabitants (35% of the population) and relatively low unemployment rates (until recently, as in 2011 unemployment stood at 16%, again lower than the 24% national average). GDP per capita of the Region of North Aegean which includes Lesvos is 70% of the EU average and decreases from 2006 onwards. The current average annual income from tax records per family in Lesvos is 17,677.06 Euros or 1,473.09 Euros per month.

For production, the tertiary sector produces most of the GDP, but the contribution of agriculture is still important (the data are for the former Lesvos Prefecture, which includes Lemnos and Agios Afstratios islands as well) with 13% of the GDP (but is declining), manufacture 15.6% and services forming the rest (71%). The public sector is also important and in general the local economy is based in a large extent in activities that are not exporting but move around the money that comes in from salaries and pensions. Only tourism, agriculture and processing of agri-food products and some other minor activities are exporting but these cover a mere 18% of the total Gross Value Added.

Population in the study municipality area (Plomari and Gera municipal units) presents similar trends with a steady decrease (-12% between 1981 and 2001) and is roughly 12,000. It is also ageing with higher values of the ageing indicator than those of the island, at 141.2 in 1981 and 187.6 in 2001 when 26% of the population was over 65 (median age of the population: 47 years). The economy of the area is similar with that of the island, with a higher focus on and
dependency from agriculture. The current average annual income from tax records for the area per family is 14,423.24 Euros or 1,201.94 Euros per month.

**Landscape character**

Due to the different soil and climate characteristics, Lesvos is divided into two largely distinct vegetation types: the Eastern part (olive landscape) is mostly covered by maquis, olive trees and farmland, with minimal presence of phrygana. Western Lesvos (the oak and phrygana landscape) is dominated by phrygana scrubland, with minimal presence of pine, olive trees, maquis and crops.

Across the island the number of farms has recently declined, but in spite of this agriculture is still quite important in terms of the jobs and incomes it provides. The most important agricultural landscapes consist of olive plantations in the Eastern part of the island and grazing lands (for sheep) in the West. The number of farms with olive plantations makes up 95% of the total number of farms (more than 15,000). Olive plantations cover 45% of the total Utilized Agricultural Area (UAA) and roughly 30% of the total area of the island, whereas the other crops and fallow cover 9%, pastures 38%, forests 19% and the other areas (cities, roads etc.) 6% of the total area of the island.

Olive plantations on Lesvos are of the “Low-input traditional plantations and scattered trees” category and are managed with few or no chemical inputs, but with a high labour input. The tree density is low (typically 20 to 50 trees per ha). The management of the understorey rarely involves grazing, more often mowing and/or tillage. Pesticide use is minimal or occasional, irrigation is not usual, although it is becoming common on some fields in level areas.

Harvesting is usually performed by hand, or may be left in years of little harvest. Typical yields are in the range of 200–1500 kg/ha. Consistency of annual yield is low, due to modest fertilization and irrigation practices. Labour requirement is very high in harvesting, pruning, maintenance of terraces and walls, scrub control, etc. Neglected plantations are in between cultivation and abandonment, in which little other management is practised besides collecting olives. The olive plantations on slopes steeper than 10–15% are all terraced, either in pocket type (a single terrace in semi-circle around one tree), in parallel-braided type, or often in mixed types. The abundance of pocket terraces is a unique characteristic for olive cultivation globally.

For grazing lands two different types are encountered: (A) Cultivated arable fields on terraces, sown with cereals in systems combined with fallow and grazing or with mixed cultivation with legumes; and (B) Former arable fields turned into grazing land for sheep, in which the terraces are degraded and non-edible for sheep scrub and bare ground appear. Changes have taken place only from landscape (A) to (B) and not vice versa.

Three areas on the island are characterized as Natura 2000 areas:

- **West peninsula – Petrified Forest (Lesvos: Dytiki Chersonisos – Apolithomeno Dasos, GR4110003, 20,817 ha):** located in the West and including a number of sites of petrified trees, but also an important habitat for birds and reptiles;

- **Kalloni Gulf and coastal zone (Lesvos: Kolpos Kallonis Kai Chersaia Paraktia Zoni, GR4110004, 18,311 ha):** located in the centre of the island and surrounding the Gulf of Kalloni, a very important site for birds;
• Gera Gulf, Ntipi wetland and Olympus Mountain (Lesvos: Kolpos Geras, Elos Ntipi Kai Oros Olympos, GR4110005, 11,200 ha): located around the Gulf of Gera with a narrow corridor linking it with the Olympus mountain area (over 600 m asl), a very diverse area in terms of vegetation.

The study municipality area in Gera and Plomari contains a major part of the last site: the Western part of the Gera Gulf and a large part of the Olympus area. It has to be noted that olives are not directly mentioned in the site specifications as contributing to the high biodiversity of the area, neither are they recognized as High Nature Value Farming area.
Fig. 8: Orthophoto of the study landscape Lesvos (Greece)
Fig. 9: Topographic map of the study landscape Lesvos (Greece)
Fig. 10: Land cover map of the study landscape Lesvos (Greece)
Fig. 11: Orthophoto of the study municipalities Plomari and Gera (Greece)
Fig. 12: Topographic map of the study municipalities Plomari and Gera (Greece)
Fig. 13: Land cover map of the study municipalities Plomari and Gera (Greece)
4.3 Obersimmental (Switzerland)

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<td>Matthias Bürgi</td>
<td>bü<a href="mailto:rgi@wsl.ch">rgi@wsl.ch</a></td>
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Location

The Obersimmental (approximate centre 46° 55' N, 7° 24' E; 334 km²) is a valley located in the Bernese Oberland, Switzerland. Up to 2009, Obersimmental was a separate district consisting of the four municipalities Boltigen, Zweisimmen, St. Stephan and Lenk. Since then, the municipalities belong to the administrative unit of the Verwaltungskreis Obersimmental-Saanen. The study municipality Lenk (46° 27' N, 7° 26' E; 126 km²) covers the highest part of the alpine Obersimmental area.

Basic environmental characteristics

Topography

The Obersimmental is located in the Western part of the Alps. It covers a multitude of altitudinal bands, ranging from the central valley floor at about 800 m asl to the surrounding mountain peaks at 2500 m asl.

Climate

The region belongs to the continental climate zone. Due to the rugged topography, climatic conditions vary a lot, but can mainly be classified as humid continental (Köppen classification Dfb; for the most elevated parts also ET (tundra climate) applies). The nearest station providing climate diagrams is located in Château-d’Oex (1029 m asl), a little further to the West of the study landscape. Average annual precipitation can be estimated at approximately 1300 mm that are distributed relatively evenly over the year. The average annual temperature is at about 6.9°C, with a rough average of -2°C in winter and 16°C in the summer months.

Soils

The soil of the valley bottom consists of layers of alluvial deposits and aggradation sediments. The bottom of the valley was flooded several times due to landslides which retained the water and created temporary lakes. The mountain slopes consist of shallow Rendzina, Regosol and Podzol. In the highest regions in the South of Lenk bare rock and glaciers are prevalent.

Landscape history

First traces of humans in Obersimmental date from the Paleolithic with several caves used as shelter. On Iffigensee a Roman building was found which was probably connected to a trading route over the Rawilpass and which was not permanently inhabited. Today’s settlements of Obersimmental were founded in early Medieval times. These settlements were inhabited by self-sufficient farmers. After this period of mixed farming, including grain production, the whole Simmental valley specialized in dairy farming with an orientation towards exporting high-quality cattle and dairy products and importing grain. The region is
home to one of the oldest and most widely distributed cattle breeds in the world, i.e. the Simmental, originally used for dairy and beef, but also as draught animal, and exported to Italy since the 1400s, later on to Eastern Europe, and also overseas. The focus on cattle breeding and cheese making started in the 16th century and included common management of alpine pastureland. The importance of cattle breeding became more pronounced in the mid-19th century, when cheese factories were founded also in the lowlands and the alpine areas lost their monopoly on butter and cheese making. In a classification of land use at around 1850, Zweisimmen was classified as Alpines Hirtenland (alpine herders’ land) together with the neighbouring Sannenland, whereas the other municipalities belonged to the more widespread Alpine Gemischtwirtschaft (alpine mixed farming), but only there, very little cropland was cultivated. The specialized farmers were not only cattle breeders, but also traders, which required a lot of capital. Low interest rates lead to widespread speculation and an increase in level of dept at the turn to the 20th century.

Tourism started with a bath in Lenk (first concession 1689), which later on led to the hotel Lenkerhof. It promoted itself to have the “Strongest Sulphur Waters in Europe”. In 1902, a railroad was built from Erlenbach to Zweisimmen, which was expanded to Château-d’Oex in 1904/05 and to Lenk in 1912. World War I set an end to the boom in hotel-based tourism. After 1950, the construction of second homes left significant traces in parts of the landscape, especially in Lenk and Zweisimmen.

Current demographic and socioeconomic characteristics

The four municipalities that make up Obersimmental have a total population of about 8100 persons, which is the same number as for the year 1850. In 1930, however, only 7000 people lived in the valley. Population density is 24 persons per km². With a share of 54%, the tertiary economic sector is the most important one, followed by the primary (28%) and the secondary sectors (18%). However, the importance of the economic sectors varies greatly: whereas Boltigen and St. Stephan are still foremost agricultural communities, tourism plays a larger role in Lenk and in Zweisimmen. Income data are not available.

The situation in the study municipality Lenk largely corresponds with the overall situation in Obersimmental. Population density (total number of residents: 2463 in 2012) is little bit lower (22 persons/km²), and the tertiary sector even more dominating (61%), at the cost of the primary sector (22%). Also average age is a little lower in Lenk (42.5 years) than in the Obersimmental region as a whole (43.6 years).

Landscape character

The landscape of Obersimmental region is characterized by altitudinal differences. Pastures are prevalent on the valley bottom where also major settlements and winter stables are located. On the slopes, pastures alternate with mixed forest. Forest is both used as working forest and as protective forest. In higher altitude pastures are replaced by alpine meadows and unproductive land.

On average, agricultural areas cover around 47% of the valley, wooded areas 30% and settlements 2%. 21% of the area is considered as unproductive land. However, these land-use characteristics vary considerably for the four municipalities. In Lenk, the share of unproductive land is a lot higher (around 39%), agricultural areas cover only 36% and there is also less woodland (23%) than in the average of the valley.
Recent statistical data on land use in Obersimmental shows 75% of the agricultural areas to be alpine meadows, whereas no cropland is recorded. Unproductive areas are foremost located on higher ground, i.e. contain rocks, scree and ice. For Lenk, 8.5% of the municipality are covered by glaciers (Plaine-Morte-Gletscher), which most likely will be gone by the end of the 21st century.

Today, alpine agriculture is still the backbone of this region, expressed also in a series of yearly festivals, such as the Lenker Älplerfest, the Alpabzug in St. Stephan and the Bauernmarkt (farmers market) in Boltigen. Hiking and biking as summer sports and the usual diversity of alpine winter sports are keeping tourism alive.

The relative wealth of the area is expressed up to the present day in a series of wooden decorated farmhouses from the 15th to the 18th century. Today, these farmhouses and the tradition of alpine farming are cornerstones of tourism. Many of the old farmhouses are listed in the Swiss Inventory of Cultural Property of National and Regional Significance (KGS Inventar) and the village of Boltigen as well as the hamlet of Adlemsried (municipality Boltigen) are listed in the Federal Inventory of Swiss Heritage Sites (ISOS).

Various objects from federal inventories are within the boundaries of Obersimmental, such as the Federal Inventory of Landscapes and Natural Monuments of National Importance (Federal Office for the Environment FOEN), which encompasses the Southern part of Lenk, in the object Nr. 1501 “Gelten-Iffigen” (description in the inventory turns to a relatively untouched alpine landscape with impressive waterfalls and beautiful lakes and an outstanding example of an alpine tree line with little human influences and a particularly rich flora).
Fig. 14: Orthophoto of the study landscape Obersimmental (Switzerland)
Fig. 15: Topographic map of the study landscape Obersimmental (Switzerland)
Fig. 16: Land cover map of the study landscape Obersimmental (Switzerland)
Fig. 17: Orthophoto of the study municipality Lenk (Switzerland)
Fig. 18: Topographic map of the study municipality Lenk (Switzerland)
Fig. 19: Land cover map of the study municipality Lenk (Switzerland)
4.4 Grand Parc de Miribel Jonage, Rhône-Alpes area (France)

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Location

Grand Parc de Miribel Jonage is mainly based in the Rhône-Alpes area, and more precisely the upper Rhône of Lyon (45° 48' N 4° 56' E), in the Northwest of Lyon, France, covering the landscapes between the confluence of the Ain river with the Rhône and its entry into Lyon city (area approximately 28 km²). Besides a regional approach, for demonstration activities the studies will focus on 2–3 ha plots within this area.

Basic environmental characteristics

Topography

The study landscape is at about 200 m asl, with a relatively flat topography except for adjustments related to dikes and some elevated points on riverside hills.

Climate

Lyon lies in the broad transition zone between the temperate oceanic climates of Northern France, and the Mediterranean climates to the South (Köppen classification Cfb, maritime temperate climate). Although Lyon does not share the drier summers typical of Mediterranean climates, it has summer temperatures that are warmer than typical temperate oceanic climates. In contrast, Lyon does not exhibit the higher winter rainfall and cool summer temperatures typical of oceanic climates. Thus, Lyon appears to be located in the broad transition zone between these two climate types. The mean temperature in Lyon in the coldest month (January) is 3.2°C and in the warmest month (July) 22°C. The winter months are the driest, but in general precipitation is relatively evenly distributed over the year, with an average of 830 mm.

Soils

The site is based on the aquifer of East Lyon, an alluvial groundwater accompanying the Rhône, and on the deep aquifer of Miocene molasses. The sandstone aquifer is heterogeneous and consists of siliceous and calcareous elements as well as flint stone that can enrich coarser elements.

Landscape history

Unfolding extensive meanders, up to the Middle Ages the Rhône was very different from now. It was not until the 14th century that the river became rapid and dangerous, a gravel carrier and a destroyer of villages, due to climate change known as the Little Ice Age.

In the 19th century, the bad passage Miribel was feared by sailors who failed on gravel banks. People on both sides of the river disputed over uncertain property rights for the land, most notably connected to the use of firewood and grazing.
The development of engineering techniques during the Industrial Revolution helped to stabilize the river for navigation purposes and the channel Miribel was built in the years 1848–1857. The principle of natural capping of flood flows by spreading water in floodplains has been recognized through law in 1858, which meant that the protection of farmland and villages upstream of Lyon had to be abandoned. The realization of the most important by-pass hydraulic structure in Europe, Jonage-Cusset (built 1892–1899), also had these positive and negative effects.

However, the river reacted to the implementation of the Miribel channel and deposited gravels at the entrance of Lyon. Moreover, the upstream areas faced droughts, while some settlements were affected by increasingly severe floods. This motivated the construction of Jons’ dam for a better distribution of water: a power canal with a very high flow rate was added to the Miribel channel, which from now on served only for reserved flow and was abandoned for navigation.

In the early 1960s, while industrial development concentrated in the areas Rhône downstream, upstream infrastructure had to accommodate the new tertiary centre of Lyon without retaining its hydraulic functions. The area served as backfill for transport infrastructure and was used to produce construction material and accommodate flood flows.

A second wave of hydraulic impacts came in the late 1980s, when urban development increasingly threatened the area’s drinking water resources. It became clear that the Rhône upstream could not accommodate mutually incompatible economic functions and the proliferation of devices like the motorway A 46, TGV route, and hotel and camping projects. Choices had to be made and in 1991 the Grand Lyon community set aside 1340 ha as “unalterable natural site” to protect a part of upstream Rhône from development projects.

**Current demographic and socioeconomic characteristics**

The Grand Parc of Miribel Jonage covers 11 local communities including five in the Rhône department (Vaulx-en-Velin, Décines-Charpieu, Meyzieu, Jonage, Jons), and six in the Ain department (Beynost, Neyron, Miribel, Saint-Maurice-de-Beynost, Thil, Niévroz), with a population of over 100,000 inhabitants. Medium density in the departments ranges from 104 persons/km$^2$ (Ain) to 536 persons/km$^2$ (Rhône), and still increases locally up to 1500 persons/km$^2$ in the local communities around the Park. Population is growing and the average age in the different communities ranges from 34 to 40 years. Average monthly income is around 1670 Euros per family. Half of the employed people are in tertiary activity, 22% craftsmen and tradesmen, 20% are workers, and 8% farmers. The unemployment rate is around 10%.

**Landscape character**

From the junction of the Rhône with the river Ain to the entry of the city, the study landscape encompasses one of the last natural, unaltered confluences of Europe with a dense riparian vegetation. The delta offers a variety of remarkable environments of running or standing water, willow gravel bars, alluvial forests, dry steppes, and lônes (back water). Although some areas with a largely natural character still exist today, other parts of the study landscape are heavily altered by human influence, including several drinking water catchments (Charmy-Crêpieu, Jonage, Décines, Meyzieu) that are exploited. The dynamics of water flow and sedimentation is complex, and since a long time humans tried to find a good balance that complies with their needs. Today, climate change and changes undergone by the river system in the upper basin, such as infrastructure development in the area near Lyon for 150 years, are
at the centre of “readjustement” processes that aim to reduce the trend of urban expansion and acknowledge Lyon’s tradition for protection of the upstream to benefit the city.

The Grand Parc de Miribel Jonage is settled between a suburban economical sector and a more rural landscape towards the Ain river, more and more turning into a residential area. The Park itself is a natural park (2200 ha) and includes large water areas (350 ha) as well as farmland (400 ha) and forest. It has a very rich biodiversity and attracts four million visitors per year. The islands of Miribel-Jonage and the banks Rhône upstream of Jons are considered one of the jewels of Lyon landscape. The vast space combining features of transport, water production and recreation amazes by its size and relatively wild character at the gates of the second largest city of France and claims to be the largest park in suburban Europe.

Heritage features include 13 natural areas (Natura 2000 sites), artworks (e.g. Horizon Bank, Fountain of love, Ugo Rondinone), landscapes associated with historic heritage (Bac à Traille, Mulberry Alley, Borne), industrial Heritage (hydroelectric features), and landscapes associated with agricultural heritage (connected to agroforestry/orchards, Black poplar (*Populus nigra*) nursery, beer production, beekeeping including cultivation of honey crops, buckwheat and wheat cultivation, pastoralism).
Fig. 20: Orthophoto of the study landscape Grand Parc de Miribel Jonage, Rhône-Alpes area (France)
Fig. 21: Topographic map of the study landscape Grand Parc de Miribel Jonage, Rhône-Alpes area (France)
Fig. 22: Land cover map of the study landscape Grand Parc de Miribel Jonage, Rhône-Alpes area (France)
4.5 Sierra de Guadarrama foothills (Spain)

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Location

The area (835 km²) encompasses the foothills of the Sierra de Guadarrama mountain range, which is situated in the Northwest of the Autonomous Community of Madrid, Spain, and which is a part of the massif known as the Sistema Central. The investigations focus on the study municipality of Colmenar Viejo at the centre of the study landscape (40° 40' N, 3° 46' W; 183 km²), 31 kilometres to the North of the city centre of Madrid, located at the interface between the rural and the urban areas of the region.

Basic environmental characteristics

Topography

Located in the foothills of the Sierra de Guadarrama mountains, the orography of the study landscape is defined by a ramp that descends from the Northwest towards the Southeast. The altitude varies between 1423 m asl (Cerro de San Pedro peak) in the North to approximately 700 m asl in the South, with the main settlement of Colmenar Viejo situated at 880 m asl. The topography is characterised by a soft and irregular relief dominated by an undulating landscape of hills and swallow valleys (mostly in the North-Western sector), with scarcer areas of pronounced valleys and ravines (in the sector covered by tertiary sediments), rocky outcrops of granite, and prominent hills; all carved by the watercourses. The area is crossed by many streams and rivers, the most important ones being the rivers Manzanares and Tejada that run from the North to the South. Many small streams flow crosswise into these two water bodies.

Climate

The area presents a continental, semiarid/sub-humid climate, with four months dry period per year in the hot summers (Köppen classification Csa, Mediterranean mild climate with dry and hot summers). The Sistema Central massif produces a barrier effect for the Atlantic moist air masses coming from the West, preventing them to reach the centre, East and South of the Autonomous Community of Madrid. The proximity of Colmenar Viejo to this mountain range allows annual precipitations above 700 mm (varying a lot between years: 1990 = 467 mm, 2000 = 602 mm, 2010 = 712 mm), an amount that gradually decreases towards the South and East of the Autonomous Community. The average temperature in the hottest month (July) is 24°C, and in the coldest month (January) 5°C.

Soils

The altitude gradient responds to the geologic characteristics of the area, where two sectors can be distinguished: the Northwest sector with plutonic and metamorphic materials (granite, gneiss and quartzite, resulting in Haploxeralfs soils), and the Southeast sector covered by
tertiary sediments eroded from the mountains (arkosic sand, clay sand, silts and clay; Xerochrepts and the Psamment soils).

**Landscape history**

Although there is evidence that already in the 3rd and 2nd millennium BC there were some nomad populations in the area, it is not until the 6th century AD when the first inhabitants populated the area. These first populations were the Visigoths, who created a net of hamlets and roads whose remains are still visible today. These hamlets created open spaces of about one hectare and based their economies in iron-ore reduction processes and in sheep and goat farming, shaping a new rural landscape.

In the High Middle Ages the area was quite depopulated and the landscape was probably mostly covered by woods, but the disputes for the region between the towns of Madrid and Segovia lead to the creation of new towns (one of them was the origin of the current village of Colmenar Viejo) through the execution of town charters (legal documents that gave populations the right to settle in an area) to repopulate it. In the following centuries the area was confiscated by the Crown, given the name of El Real de Manzanares, and governed by a succession of persons linked to the Crown. The forested landscape of the area was used by the kings to hunt and there are references to the bears and wild pigs that populated the area. With a fast growing population and independence obtained in the 16th century, Colmenar Viejo became the main economic and administrative centre in the region. By that time, the landscape had change radically as it had to provide food, wood, coal and stone to the Court of Madrid, resulting in a process of deforestation.

In the Early Modern Period, Colmenar Viejo developed an important textile craftsmanship, from which there are some remains, such as water mills and fulling houses. The other main activities in the region were agriculture and livestock farming, which employed half of the population; moreover, beekeeping, forestry, mining, and services were of importance. The Ecclesiastical Confiscations that took place in the second half of the 19th century transformed the social and economic structure of the area. The breeding of wild stock (cattle also used for bullfighting) became a very important part of the municipality’s economy that acquired a great prestige. In 1858 the first big infrastructure in the area was constructed: a waterway to supply the population of Madrid. In 1911 a railway connection between the capital and Colmenar Viejo was inaugurated, mainly in order to transport stones from the quarries of Colmenar for the urban development of the capital. In the following years Colmenar Viejo experienced a strong socio-economic development. The Spanish Civil War brought to an end the strength of the wild stock farming that would not recover after the war, and the strong industrial and urban development fostered by Franco’s regime marked the beginning of the urban development of Colmenar Viejo as a commuter town of Madrid. Further infrastructure was built to supply the growing population of the capital with water.

The 1967 the Land Use Plan of Colmenar Viejo was completely focused towards accommodating the urban development necessities of the capital city. This led to the development of a new town in the South of the municipality that should absorb inhabitants from the capital. In 1991 the population of the new town had grown so much that it was segregated from Colmenar Viejo, forming the new municipality of Tres Cantos. This put an end to the expectations of Colmenar Viejo of becoming the economic centre of the Northern metropolitan region of Madrid, and reinforced its transformation into a commuter town of the capital. In the years 1970 a highway was built to increase the capacity of the road that lead to the recreational areas of the Sierra de Guadarrama mountains and that allows the population to commute between their houses and their working places. The intense urban development of
Colmenar Viejo initiated in the decade of the 1940s continues into the present. The early planning of the town’s urban development has enabled the settlement to remain compact and within the space left by the two main communication axes of the municipality: the railway in the West side and the highway in the East side.

**Current demographic and socioeconomic characteristics**

Since the time when the first record on the number of inhabitants of Colmenar Viejo was kept in the year 1960, the population in the area has increased fivefold. This strong growth tendency started in the decade of the 1980s and continues in the present, resulting in a current population density of 257 inhabitants/km$^2$ (well below the density of above 1000 inhabitants/km$^2$ in the capital, but still above the density in the adjacent municipalities that are closer to the Sierra de Guadarrama mountain range). With an average age of 38 years, the municipality presents a less aged population than the whole of Spain (42 years) and the Autonomous Community of Madrid (41 years).

Regarding the economic activity, the main sector is services (68.1%), clearly dominating over industry (31.5%) and primary production (0.4%). The economic activities that engage most people in the municipality are distribution, hotels and catering services, followed by other services, such as administration, education, and health. About a quarter of the population is engaged in mining, industry and construction, and only a 1.5 % work in the agricultural sector. With a monthly average gross income of 1421 Euros, Colmenar Viejo shows slightly lower incomes per capita than the rest of the Community and particularly the Northern metropolitan area of Madrid. The municipality has an unemployment rate of 8.2% which is higher than for the rest of the region, possibly due to the fact that Colmenar Viejo has a higher proportion of building workers, which is one of the sectors most affected by the current economic crisis.

**Landscape character**

Concerning the natural vegetation, the study landscape is located in the area of transition between the altitudinal zones of the holm oak (*Quercus ilex*) and the pyrenean oak (*Quercus pyrenaica*). Nevertheless, the area is dominated by the presence of holm oak woods and dehesas, alternated with other evergreen and broadleaf trees, scrubland (prickly juniper (*Juniperus oxycedrus*), thyme (*Thymus vulgaris*), rockrose (*Cistus ladanifer*), broom (*Genista cinerea*), and common broom (*Cytisus scoparius*), grassland and pastures. Along the riverside predominates the willow (*Salix salviifolia*) accompanied by a thorny fringe of wild blackberry (*Rubus ulmifolius*) and rose (*Rosa spec.*).

Despite only 1.5% of the population of Colmenar Viejo is engaged in farming, the main land use is farmland (83%). With less than 4% of the total municipal area being arable land (cultivated with rein-fed crops), almost all farmland is dedicated to rain-fed permanent pastures for the livestock (mostly based on bovine livestock). Regarding the size of the farm holdings, 12% of the holdings have an area bigger than 500 ha, 45% between 200 and 500 ha, 34% between 50 and 200 ha, and 9% are smaller than 50 ha. 1% of the area is considered as woodland, and the remaining 16% of the land is dedicated to urban areas, industry polygons, military uses, mining, and infrastructures. However, with only 5% of the total surface of the municipality covered by the compact settlement, about 95% of Colmenar Viejo is considered as rural land.

One of the most important values of the study landscape is its natural heritage. Most of the area of Colmenar Viejo is covered by habitats included in the Council Directive 92/43/EEC of
21 May 1992 on the conservation of natural habitats and of wild fauna and flora: Thermophilous *Fraxinus angustifolia* woods (91B0), Thermophilous *Fraxinus angustifolia* woods (9340), Dehesas with evergreen *Quercus spp.* (6310). The East of the municipality of Colmenar Viejo is protected by several nature protection figures that overlap each other: Parque Regional Cuenca Alta del Río Manzanares (ES310004), Site of Community Importance Cuenca del Río Manzanares (ES3110004), and Biosphere reserve (UNESCO) Cuenca Alta del Manzanares. The municipality is also surrounded by Special Protection Areas for birds (SPA): SPA Monte de El Pardo (ES0000011) and SPA Soto de Viñuelas (ES0000012).

In the East and the West of the municipality, there are some patches of particularly well-preserved holm oak dehesas, constituting one of the main characteristics of the Colmenar Viejo landscape. The agroforestry system of dehesas is the expression of a traditional land use, based in a deep knowledge of the Mediterranean ecosystems dynamics, and hence, they are testimonies of important natural, aesthetic, cultural and productive values. Another important feature in the landscape of Colmenar Viejo is the extensive livestock farming and the presence of herds of cows and sheep (autochthonous breed *oveja colmenareña*) as well as fighting bulls. Linked to the traditional livestock farming is the dense net of drove roads that cross the municipality and that have a very important cultural significance as they have been first used by the Romans for trading and military purposes, and then by the farmers as connections between the main transhumance roads.

The area is also important for its historic heritage. Important Visigoths remains have been found in the North of the municipality: the hamlets of Navalvillar and Navalahija, and the necropolis of Remedios and Fuente del Moro. From the Middle Ages it is to be highlighted the Andalusian bridge Puente del Grajal. Its religious heritage is also noteworthy, for instance the churches and rural chapels built in the first decades of the Early Modern Age, such as the Asunción de Nuestra Señora Basilica and the Virgen de los Remedios Chapel. From this time there are also interesting civil constructions: the water mills and fulling houses that supported the textile handicraft.

An important part of the local culture is the processions and festivities celebrated in the area. The most important events are: *La Maya* (to celebrate the start of spring) and *La Vaquilla* (to celebrate the livestock farming activity), both going back to the Middle Ages. Also a tradition in the municipality is the Knucklebones game, that it is still played today in the pubs two days per year.

In the Northeastern part of the municipality there is an area of special natural and cultural interest called Dehesa de Navalvillar. Here, important Visigoths remains have been found. Later, the area has been the setting of many national and international well-known movies, especially Spaghetti Westerns.
Fig. 23: Orthophoto of the study landscape Sierra de Guadarrama foothills (Spain)
Fig. 24: Topographic map of the study landscape Sierra de Guadarrama foothills (Spain)
Fig. 25: Land cover map of the study landscape Sierra de Guadarrama foothills (Spain)
Fig. 26: Orthophoto of the study municipality Colmenar Viejo (Spain)
Fig. 27: Topographic map of the study municipality Colmenar Viejo (Spain)
Fig. 28: Land cover map of the study municipality Colmenar Viejo (Spain)
4.6 Parc Naturel Regional d’Armorique (France)

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**Location**

This study landscape (approximate centre at 48° 15’ N, 4° 13’ W; 1269 km²) is part of the Parc Naturel Régional d’Armorique (PNRA, 44 municipalities) in the department of Finistère in Brittany, France. Located on the Crozon peninsula, it encompasses the estuarine section of the river Aulne with its valley and meander areas as well as the hill of Ménez-Hom and covers the area of the municipalities of Trégarvan, Dinéault, Argol, Port Launay, Rosnoën and Pont-de-Buis-lès-Quimerch. Dinéault (48° 13’ N, 4° 09’ W; 47 km²) will serve as a study municipality within the project.

**Basic environmental characteristics**

**Topography**

The study landscape encompasses the river valley and lowlands adjacent to the Aulne river, with its large and deep meanders. Within short distance, elevation reaches up to 330 metres at the top of Ménez-Hom, mainly constituted of Armorican sandstone from 480 million years BP. The Ménez-Hom is the most Western part of the Hercynian mountains called Montagnes Noires, a succession of eroded anticlinal valleys and synclinal ridges which cross all South Brittany.

**Climate**

The region has a maritime temperate climate (Köppen classification Cfb), with around 1380 mm of annual precipitation and an approximate average temperature of 8.2°C in January and 17.9°C in August.

**Soils**

Close to the valley soils are rather deep but acid on schist rocks, and then turn to thin and podzolic soils up to the Ménez-Hom on quartzic sandstones.

**Landscape history**

The superb panoramic view from the Ménez-Hom probably explains why it has since ages been used either for strategic and religious purposes. Evidence of prehistoric settlements exists on the North side of Ménez-Hom, and some megaliths on the South side. A famous bronze statue of the Celto-Roman goddess Brigitte, dating back to the 1st century AD, was found by a farmer in Dinéault. The Ménez-Hom was one of the sacred hills of the Celts, and then Catholic syncretism has converted it for Christian liturgy until nowadays. The top of the hill was used as a lookout and fire alarm post to give warning against Vikings, but also pirates in the 15th century. Inappropriate for arable land, the heathlands and poor pastures of the Menez-Hom were still use for livestock in summer till the Second World War, and furze was
cut for different purposes, especially horse breeding. This particular landscape is now mainly a touristic viewpoint and a famous spot for paragliding and hang-gliders, but is also recognised for the biodiversity of the heathland. This long history explains the different protected status features applied to the Ménez-Hom, either for landscape, cultural or natural values.

At the bottom of the Ménez-Hom, the Aulne valley history is rather linked to its use as a way of communication and its character of a safe estuary. Around 485 AD St. Guenolé founded on a small island in the valley one of the biggest abbeys in Brittany, Landévennec, in the Celt-Christianism tradition. Archaeology proved the development of the abbey and its influence on the landscape around, with diverse fruit trees and a vineyard (8th to 11th century AD). The monastery was destroyed and burned by the Vikings in 913 AD, and the abbey then went through periods of reconstruction and abandonment according to the general history of Brittany. The Aulne river use as way of communication increased notably in the beginning of the 19th century when Napoléon I decided the construction of a big canal from Nantes to Brest (364 km) to avoid the English blockade from the sea. With this canal ending in the Aulne valley, industrial and commercial activities developed in the study area in the end of the 19th century, especially in the harbour Port-Launay. The slopes of the valley were forested, but the rest of the arable land was mainly devoted to self-sufficiency agriculture, which progressively specialised in cattle breeding in the 19th century.

Current demographic and socioeconomic characteristics

Around 8100 people live in the study landscape, which results in a population density of 49 inhabitants per km$^2$. However, population density greatly varies (Port-Launay: 220 persons/km$^2$; Trégarvan: 14.5 persons/km$^2$), with the study municipality Dinéault representing one of less populated municipalities (38.2 persons/km$^2$). The average age of the local population is 39 years.

Covering between 36% (Dinéault) and 42% (Trégarvan) of the economic activities, for most municipalities included in the study landscape the agricultural sector still plays an important role. The secondary sector (industry and construction) involves a share of 10 to 20%, and the tertiary sector around 45%. However, particularly Pont-Launay has a very different economic character, with only 5% of the activities dedicated to agriculture, but 75% to the tertiary sector. The average gross income per month ranges between 1495 Euros (Dinéault) and 1754 Euros (Port-Launay). 7% of the inhabitants of Dinéault are unemployed, which is the lowest rate in the study landscape (highest rate in Trégarvan with 12.3%).

Landscape character

Close to the Aulne valley, and in the small adjacent valleys in general, are most of the deciduous forests (oak, chestnut tree and willow), some of them quite old. The low plateau of arable lands is mainly devoted to cultivated grassland or corn used for cattle breeding. The bocage landscapes, with hedgerows of oak or chestnut trees enclosing the fields is a good protection against wind, sun or rain for the cows, but also provides wood to the farmers. With the trend of converting most of the permanent grassland to culture (including grassland), fields tend to be enlarged and hedgerows removed. This trend started in the 1970s and is still active as some farmers want to have their work simplified, but in the same time public bodies (with state and European funds) started to promote hedgerow safeguard and creation (rebocagement) as these landscape elements have an important role against soil erosion and
nitrate pollution, but also preserve biodiversity and can be used as renewable energy resources.

At the foothills of Ménez-Hom, the border between fields and heathland moved up or down according to demographic pressure and agricultural techniques to fertilise the soils, but now most of the heathland is converted to cultivated fields and the poorest soils are converted into coniferous forests, which is the best income for that type of land but with dramatic effects on soil acidity, biodiversity and landscape quality.

The highest part of the Menez-Hom itself remains an open space of heathland and moor, mainly because it is now protected for its superb landscape and cultural values, biodiversity and very specific habitats. The area includes two sites which are protected under the Natura 2000 network: Complex du Ménez-Hom-Argol (FR5300014) and the Aulne valley (FR 5300041), mainly for salmons and otters.
Fig. 29: Orthophoto of the study landscape Parc Naturel Régional d'Armorique (France)
Fig. 30: Topographic map of the study landscape Parc Naturel Régional d'Armorique (France)
Fig. 31: Land cover map of the study landscape Parc Naturel Régional d'Armorique (France)
Fig. 32: Orthophoto of the study municipality Dinéault (France)
Fig. 33: Topographic map of the study municipality Dinéault (France)
Fig. 34: Land cover map of the study municipality Dinéault (France)
4.7 South West Devon (United Kingdom)

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Contact person

Pip Howard          pipahoward@gmail.com

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Location

This study landscape is situated in the South Western part of Devon (approximate centre at 50° 21' N, 3° 53' W; 995 km$^2$), which is a county on the Southwest peninsular of England, covered by the administrative districts of the South Hams and Plymouth City in the main (Torbay is excluded). The physical geographic boundaries are the Dart river on the Eastern boundary, the watershed of the Dartmoor upland to the North, The Tamar valley to the West and the English Channel to the South. The studies will focus on the parish of Modbury in the district of South Hams (24 km$^2$).

Basic environmental characteristics

**Topography**

From sea level on the South, the landscape increases in elevation to top heights of around 400 to 500 metres asl on Dartmoor. The land is predominantly gently undulating with many small rivers. The coastline includes estuaries which are disproportionate to the size of these rivers and is thus a classic example of a ria coast with coastal inlets formed by the partial submergence of an unglaciated river valley.

**Climate**

The area has a maritime temperate climate (Köppen classification Cfb). Southwest prevailing winds, combined with the Gulf Stream flow, create a particular local climate of significant influence on land management, both historic and modern. Annual rainfall totals are increasing year on year, with a current average in the range of 1000–1100 mm. Average annual temperatures are between 3°C in winter and 19°C in summer.

**Soils**

The geology of the area is predominantly Devonian mudstone, siltstone and sandstone, with rears of Schist Mica towards the coast. To the North the Carboniferous igneous intrusive granitic are characteristic. The majority of soils are free draining slightly acidic loamy soils, predominantly base-rich. Patches of this soil type towards the coast are over rock. To the North, the upland, very wet acidic soils predominate.

**Landscape history**

This area is identified as one of the first areas settled in following the last Ice Age, from evidence found in Kents Cavern in Torbay. There is much evidence of Neolithic settlements and some evidence of Mesolithic also on Dartmoor. Thus together with East Cornwall the region is considered the oldest cultural landscape in the UK.
For the majority of prehistory, the area was silvopastoral, with increasing enclosed land as hedgerows were constructed over millennia. The name ‘Devon’ derives from the tribe of Celtic people who inhabited the South-Western peninsula of Britain at the time of the Roman invasion in 43 AD, the Dumnonii – possibly meaning “Deep Valley Dwellers” or “Worshippers of the god Dumnonos”. Roman influence never gained much of a foothold. Little significant change occurred to the landscape until mining for copper, tin and precious metals increased the population from the Roman period up until the 18th century.

Enclosure was completed very early in the area, before 1400 AD, and thus the later parliamentary acts of enclosure had little effect. The hedgerows which define this landscape remained relatively unchanged up until the mid-19th century. Hedgerows are the most significant element in the nowadays Devon landscape still, some dating back as far as 4000 years ago and many over 1000 years old. To this day hedgerow removal is significantly less than elsewhere in the UK.

Devon retains a visible link to the traditional land management of England. Worked woodland, well managed fisheries etc., were left alone as the area had little to include itself into the Industrial Revolution, aside from China Clay – an industry that continues to this day and scars land Northeast of Plymouth.

This allowed for Devon to quickly establish itself as a destination in the burgeoning tourism industry, thus forcing by default the conservation of its landscape. However from the early 1970s the lure of Devon for retirees and service industries seeking more “pleasant” environments has resulted in rapid new development in certain pockets. The town of Ivybridge just North of Modbury and easily accessible to both Plymouth and Exeter has seen the fastest growing urbanisation in Europe for many years in the late 80s and 90s of the 20th century.

Current demographic and socioeconomic characteristics

The population of the study landscape area is circa 354,000 people, with more than 75% of them living in Plymouth City. The rural population density is approximately 90 persons/km² (Plymouth: 320 inhabitants/km²). There is a steady migration into Devon, almost exclusively for “well-being” purposes and thus the area has few international migrants. The percentage of ethnic minorities is low at 5.4%, the majority of whom settle in the City of Plymouth.

The mean age for the population of both Plymouth and the South Hams is 45.3 years. In the South Hams almost 40% of the population are aged over 55. Incomes remain slightly higher than the national average, aside London, at £16,669 per capita and year for the South Hams, equalling approximately 1752 Euros per month. The average property value in the South Hams is £261,908 (ca. 330,318 Euros). South Hams has the highest share of people volunteering in the UK.

The fastest growth sector of the economy in the South Hams is construction, accounting for 52% of growth. Agriculture is on the decline accordingly and the proportion of local residents who work in agriculture is negligible in statistical information.

Landscape character

Agriculture accounts for 57% of the land in the greater area of Devon. The remaining 43% includes forestry (usually small spruce plantations of less than 20 ha), land used for equestrian husbandry and sports, hobby farming (a significant proportion compared to elsewhere in the UK), nurseries, tree and specialist plants as well as nature conservation land (including
woodland). The greatest share of agricultural land use is dedicated to dairy and lowland cattle and sheep farming (more than half of the registered land management by holding), followed by upland cattle and sheep farming (15%) and mixed agriculture (11%). Cereals and other cropping accounts for 9%, the rest is used for horticulture, pigs and poultry.

The landscape in South West Devon can be divided into four easily identifiable types: 1) urban, peri-urban, 2) undulating farmland with hedgerows (bocage-style landscape), 3) coastal, and 4) moorland.

The bocage landscape and the moorland are the landscapes which are considered ‘uniquely’ or iconic Devon. For the bocage landscape, the rich soils are characteristically a reddish hue, which when combined with the large hedgerows, deep lanes and undulating topography creates a classic landscape regarded as an iconic English “safe” landscape. It is often used in literature, films and even modern music as a “place to escape to”.

With regard to its moorland landscapes, particularly Dartmoor has been subject to much use in literature and films. It is a unique landscape, wet, misty and with the heavy granite tors imposing the horizons it is no surprise that this is a landscape of the richest mythology.

The upland area of Dartmoor is a National Park, and as such is subject to well defined protective legislation and autonomous administration by way of a separate authority. The Southern area, up to and including the coastline, is contained within a designated Area of Outstanding Natural Beauty (AONB). A myriad of other land designations dot the landscape, with Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR) as well as areas under the ownership and management of NGOs. On the Eastern boundary of the study landscape is the internationally significant geological area of Torbay, a UNESCO Geopark.

It is a landscape of conflict with so many different interests resulting in huge pressure on farming and forestry. Access, rather than environmental issues, is the most debated issue amongst those with an interest in land management, with development being the most debated issue amongst general public. Devon has a rich history in the development of land management policy and practice for the whole of the UK, for no discernible reason than perhaps that the smaller sized parcels of land available allow for much more experimentation as well as allowing those from alternative backgrounds to work on their own land. This in some ways adds to the conflict, but also allows for quick assessment of varying practice.

A considerable amount of NGOs, large and small, are not only born here but retain large interest. Many commentators on land management issues and landscape live and work here and the region also has a disproportionate quantity of spokespeople for the land industry lobby groups. Thus it is a “melting pot” of interests and consequently under threat of severe fragmentation physically, politically and in terms of biodiversity movement across the whole area.

Land designated for development is confined to a corridor along the Devon Expressway route which bisects the study landscape.
Fig. 35: Orthophoto of the study landscape South West Devon (UK)
Fig. 36: Topographic map of the study landscape South West Devon (UK)
Fig. 37: Land cover map of the study landscape South West Devon (UK)
Fig. 38: Orthophoto of the study municipality Modbury (UK)
Fig. 39: Topographic map of the study municipality Modbury (UK)
Fig. 40: Land cover map of the study municipality Modbury (UK)
### 4.8 Dutch river delta Rhine-Meuse (Netherlands)

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<tr>
<td>Jan Kolen</td>
<td><a href="mailto:j.c.a.kolen@arch.leidenuniv.nl">j.c.a.kolen@arch.leidenuniv.nl</a></td>
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**Location**

The study landscape covers the central river landscape formed by the rivers Rhine and Meuse between the Dutch Eastern border with Germany near Nijmegen and the coastal area (Den Haag, Rotterdam) to the North Sea (approximate centre 51° 58' N, 5° 28' E; 12,839 km²). Within the study landscape two areas are researched in more detail. The first is the rural landscape South of Amsterdam which is known as Amstelland. The second is the area around the municipality of Nijmegen.

**Basic environmental characteristics**

*Topography*

The study landscape is characterized as a river landscape highly influenced by human activity. The construction of dykes and polders has shaped the study landscape as it is. The landscape is flat. Due to these dykes and polders large parts of the West of the study area are below sea level. Towards the East and Northeast of the study landscape Pleistocene moraines are present resulting in elevation differences of 40–60 metres.

*Climate*

The area has a maritime temperate climate (Köppen classification Cfb). With its relatively high humidity the Dutch river delta exhibits rather cool summers (average temperature in July and August 17.9°C and 17.5°C) and mild winters (January 3.1°C and February 3.3°C).

*Soils*

The North Sea and the Rhine, Waal and Meuse rivers have highly influenced the formation of the landscape and its soil. The soil is mainly formed by processes of fluvial and maritime depositions. The most dominant soil types in the study landscape are Fluvisols and Podzols, together covering more than two thirds of the area.

**Landscape history**

Parts of the Dutch river landscape were occupied already during the Mesolithic and Neolithic. Land use will have been limited to the stream ridges of the rivers and the adjacent parts of backswamps, as well as on Pleistocene river dunes and their environment. In the Middle and Late Bronze Age significant sections of the stream ridges were transformed into true rural landscapes, with scattered (and roaming) farmyards with associated burial mounds, gardens, field systems and roads. This rural landscape was part of a mosaic environment with forests, wetlands and more open cultivated areas.
In the Roman Period, the study region formed the North-Western part of the Roman frontier on the continent. By then, land use had been intensified considerably, creating a more open landscape with an increased human impact on the water system.

In about 1000 AD, the inhabitants of the river villages in the study region began building embankments along major rivers like the Rhine and Meuse. Along with the villages themselves, fields and gardens occupied the highest parts of the banks, while the slopes down to the flood basins behind the banks were used as communal meadows and pastureland. In the period from 800 to 1250 AD, towns in the Dutch river area expanded significantly and there was growing demand for agricultural products. To satisfy this demand, the agricultural land area had to be extended to the low-lying peat areas and river basins. But before these areas could be drained and reclaimed, embankments had to be built along the river courses and any obstructing ones had to be dammed. Several centuries later, the still remaining open spaces between the village embankments were closed off and long, uninterrupted dikes were built. This process was completed in most parts of the Dutch delta by about 1300 AD. Inside the dikes, where in winter especially the river water was sometimes dammed up to a significant extent, river forelands were created.

Thus over the course of five centuries, from 1000 to 1500 AD, the Dutch delta changed dramatically. It was transformed from an open delta where the rivers had free reign and where large areas were taken up by fens and marshes to a tightly ordered agricultural territory under human control. With their far-reaching interventions such as dike building, the inhabitants of the Dutch river landscapes unconsciously reset the environmental agenda for themselves. In the long run, their reshaping of wetlands and stream valleys had unexpected repercussions. The construction of dams and closed dike systems forced the river into an artificial straitjacket. This severely restricted the river’s sedimentation area, causing a continuous uplifting of the riverbed within the narrow space between the dikes. By contrast, the polders alongside rivers were vulnerable to soil subsidence as a result of being systematically drained and pumped dry with the aid of drainage ditches, horsepower (early on) and windmills and pumping plants (at a later stage). This increased still further the height difference between river courses and adjacent land, so that dike breaches had ever more serious consequences over the centuries and flooding inflicted ever greater damage on river villages, livestock and arable land. Between 1750 and 1800 alone, more than 152 dikes along the major rivers in the central Netherlands were breached during various floods. Therefore, new measures were taken and dikes made higher and stronger, unaware that occasional floods would now have an even more catastrophic effect.

Between 1815 and 1870 an elaborate line of defence was built in the central part of the study region, crosscutting the river landscape from the North to the South: the Nieuwe Hollandse Waterlinie. This line consisted of a long-stretched complex of fortifications, infrastructure, and inundation areas. The defence line functioned until the Second World War, although it turned out to be outdated already at a quite early stage.

From the Second World War onwards, and especially since the 1980s, large parts of the rural landscape in the study region has been urbanized at rapid pace, more particularly around the cities of Arnhem-Nijmegen (which by now is one large urban region), Tiel, Utrecht, Leiden and Amsterdam.

**Current demographic and socioeconomic characteristics**

With 10.5 million inhabitants (which is a little less than two thirds of the whole Dutch population of 16.8 million) the study landscape is densely populated (850 persons/km²). In the
Randstad area, the West side of the study landscape between Amsterdam, Rotterdam and Utrecht, the population density even reaches 1200 persons/km².

Whereas the rest of the Netherlands is estimated to have a population growth of 200,000, the Randstad area is estimated to grow 700,000 inhabitants around 2025. After 2025 the Randstad area is estimated to grow another 400,000 until 2040, whereas the rest of the Netherlands will neither grow, nor undergo a demography decline.

The unemployment rate in the study landscape is between 7.3 to 10%. Average monthly gross incomes per capita are around 2450–2550 Euros. People work mostly in the tertiary economic sector, with 35% of the labour force work in commercial services and 31% in the non-commercial services sector. Only a 2% of the labour force work is in the primary agriculture sector. The secondary sector accounts for 20% and 12% are considered unknown. The economic activities in the study landscape are mostly situated in the West, i.e. the area around Randstad.

Landscape character

The natural vegetation in the study landscape has been heavily altered by human activities over the centuries (e.g. peat reclamation, polders, dykes) and therefore is nowadays scarce. The study area exists mainly of pasture landscapes, accounting for about 37% of the land. About 24% of the area is used for residential and/or commercial issues as well as infrastructure, whereas 19% is dedicated to cropping and horticulture. 11% of the area is covered by forests, and about 7% by water, most of it salt water. Recent studies on land-use modelling show that the pressure on the rural landscape, especially in the Randstad region, is significant, particularly when considering a scenario characterized by a strong global economy.

The Dutch river area is one of the regions with the highest density of archaeological landscape relics and sites in the Netherlands. The region counts several thousands of registered archaeological sites, of which over 2000 have been assigned a formal status according to the Dutch Monuments Act (protected sites and/or areas with a (very) high archaeological potential). Recent archaeological excavations have shown that these sites may relate to quite extensive buried landscape relics with field systems, dating from the Bronze Age onwards. The study region has the highest density of historical villages in the Netherlands that developed prior to 1400 AD. The amount, nature and condition of maritime archaeological heritage in the study region is unknown at present, but a new database has been established by the National Heritage Agency to fill this knowledge gap.

Additionally, the region contains several valuable landscapes with a specific status in terms of protection, landscape preservation or spatial planning. The most prominent of these are the Groene Hart (the rural landscape between the major cities of Holland and Utrecht) in the Western part of the region and the Gelderse Poort (a large nature reserve near the border of the Netherlands and Germany near Nijmegen) in the Easternmost part, which are both classified as National Landscapes. In National Landscapes, strategies of preservation focus on the core qualities of the natural and cultural landscape. In the Gelderse Poort this strategy is combined with a re-wilding program. In the so-called National Parks, which have a different juridical status, landowner organisations like Staatsbosbeheer and Natuurmonumenten have more flexibility in designing their own policy for nature, landscape, heritage and land use. A good example is the Biesbosch area near the urban region of Rotterdam-Dordrecht, which consists of a series of wetlands that are supposed to resemble ancient (prehistoric) conditions in the Western river area. The central part of the Dutch river landscape consists of four large
so-called “Belvedere-areas”, where all new developments are or should be directed towards the national Belvedere policy of “preservation by development”. In those areas, new spatial developments can best be based or inspired on the natural and/or cultural history of the landscape, making use of existing historical elements and structures as much as possible. In the areas concerned, it is the ancient infrastructure of roads, the historical structure of the villages, the ancient water system with dikes, as well as hedgerow landscapes and nature reserves in the river forelands that are considered of highest importance.

The Dutch river landscape numbers two UNESCO World Heritage sites: the long-stretched Nieuwe Hollandse Waterlinie (see the section on landscape history) and the ancient mills and dike of Kinderdijk. A nomination for UNESCO’s World Heritage list of the Dutch part of the Roman limes, together with other European partners, is currently being prepared.
Fig. 41: Orthophoto of the study landscape Dutch river delta Rhine-Meuse (Netherlands)
Fig. 42: Topographic map of the study landscape Dutch river delta Rhine-Meuse (Netherlands)
Fig. 43: Land cover map of the study landscape Dutch river delta Rhine-Meuse (Netherlands)
4.9 Uppland (Sweden)

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Contact person
Kim von Hackwitz  kim.vonhackwitz@arkeologi.uu.se

Study landscape within
WP 2 X  WP 3 X  WP 5  WP 8

Location
Uppland is a historical province or landskap on the Eastern coast of Sweden, Uppland is a historical province or landskap on the Eastern coast of Sweden (17,988 km²). It stretches from the Northern part of Sweden’s capital Stockholm in the South to the town Gävle in the North. Uppland holds about 1.5 million inhabitants. The corresponding administrative county (län) is Uppsala county, which occupies the larger part of the territory (but not of the population as it excludes Stockholm). The studies will focus on that administrative area Uppland in general and the city of Uppsala (59° 51' N, 17° 38' E; 101 km²) and the adjacent parish of Börje (47 km²) in particular.

Basic environmental characteristics

Topography
The study landscape consists of a tableland with inland and coastal plains, shaped by the ice sheet of the last Ice Age. The subsequent post-glacial uplift is still ongoing and raises the area about 4 mm/year. The landscape is flat, with no higher formations. The glacial ridge of Uppsalaåsen running through the city of Uppsala reaches an elevation of about 75 metres in its highest places. Eskers and moraines are very common. With several major rivers, an extensive lake system and the seashore consisting of various bays, the topography of Uppland is strongly linked to water bodies and their forces.

Climate
The region has a humid continental climate, bordering to a subarctic climate, with cold winters and mild summers (Köppen classification Dfb). Due to its Northerly location, Uppland experiences over 18 hours of visible sunshine during the summer solstice, and less than six hours during the winter solstice. The average annual precipitation is 450–650 mm and the average temperature in winter is -3 to -5°C (January-February), while in the summer the average annual temperature ranges between 16 and 18°C (July). The vegetation period is 210–240 days.

Soils
The ridges often have sandy soils which during the prehistoric time were used for slash-and-burn farming, while the soil in the intermediate lower areas is covered of moraine clay that was formed during the last deglaciation through an unsorted deposit of rock materials directly from glacier ice. This soil type is often used for farming, both in historic and modern times. At several places the moraines’ layer of clay is up to 100 metres thick. The city of Uppsala is situated on the fertile Uppsala flatlands of muddy soil.
Landscape history

The name Uppland literally means “up land”, a name which is commonly encountered in especially older English literature. Its Latinised form, which is occasionally used, is Uplandia. The earliest unambiguous mention of the province of Uppland (landskap) comes from the 1296, when it was mentioned that it included the Folklands of Fjärdhundraland, Attundaland, Tiundaland and Roslagen.

The region has been occupied since the withdrawn of the ice sheet about 10,000 years ago. The first settlers were Mesolithic hunter-gatherers. Around 4000 BC the first signs of farming are visible in the archaeological record within the widespread Funnel Beaker Culture. However, farming was not established until late Neolithic/early Bronze Age which in Sweden occur later then central Europe, around 1800 BC. The area is also the centre from which the middle Neolithic Pitted Ware Culture is believed to have developed from eastern influences, a culture that existed simultaneously with the Swedish version of the Corded Ware Culture – the Battle Axe Culture.

The area is well known for its many remains from the Viking Age/Iron Age, especially the rune stones which are counted up to at least 950. Uppsala was originally located a few kilometres to the North, at a location now known as Gamla Uppsala (Old Uppsala) that was established during the Iron Age. (Old) Uppsala was, according to the medieval writer Adam of Bremen, the main pagan centre of Sweden, and the Temple at Uppsala contained magnificent idols of the Æsir gods. The area also includes the archaeological site Birka and the castle of Drottningholm which are both UNESCO World Heritage sites. Both are located in Stockholm county.

As a replacement for the Scandinavian gods, Uppsala was made into a strong Christian centre. A bishop was soon consecrated, and in 1164 Uppsala was made into an archdiocese, with Stefan, a monk from Alvastra Abbey, being consecrated the first Archbishop of Uppsala and primate of Sweden. The present-day Uppsala was by then still known as Östra Aros. In 1274, Östra Aros overtook Gamla Uppsala as the main regional centre, and when the cathedral of Gamla Uppsala burnt down, the archbishopric was moved to Östra Aros, where the impressive Uppsala Cathedral was erected; it was inaugurated in 1435. The cathedral is built in the Gothic style and is one of the largest in Northern Europe, with towers reaching 118.70 meters. In addition, Uppsala is the site of the oldest university in Scandinavia, founded in 1477.

Börje parish was originally called Birium meaning the passage between water, pointing to its location between two rivers. Some of the farms in the parish were founded already in the 16th century, for example Altuna, Ekeby and Åkerby. The overall land use has mostly been farming and woodland, but also includes iron-stone mining. However, none of the mines are in use today.

Current demographic and socioeconomic characteristics

The population of Uppland is around 1,500,000 of which the majority lives in Stockholm and around 200,000 live in the city of Uppsala. With around 6.1%, the unemployment rate in Uppsala is lower than in the rest of Sweden (8.5%). The average gross income per month is around 2938 Euros (2012), which does not differ from the national average. The character of Uppsala is as a university city holding both Uppsala University (UU), including the University Hospital, and the Swedish Agricultural University (SLU). Besides the universities the main occupations are within the governmental as well as the governmental health/social related sectors.
Börje parish has an area of 47 km$^2$ holding around 1000 inhabitants (i.e. population density of around 21 persons/km$^2$), most of them working in the city. There are though several agricultural farms and woodland farms.

**Landscape character**

Uppland is located South of the river Dalälven dividing Southern from Northern Sweden. Meadows and woodlands are the most common vegetation types. Large areas of the forests consist of Norway spruce (*Picea abies*) and pines (*Pinus sylvestris*). At the forest edge trees such as aspen (*Populus tremula*), alder (*Alnus sp.*) and birch (*Betula sp.*) predominate. Extensive planting of oak (*Quercus sp.*) characterizes several areas. The high population density and sprawling urban area has brought great impact on the landscape.

Outside of Uppsala and Stockholm, Uppland is basically a rural area with agriculture and farming land. Börje parish lies to the West and Northwest of Uppsala, with Fyrisån bordering at the East and the river Jumkil in the Northeast. The parish has a plain adjacent to the Uppsala plain to the East and Northeast, and is otherwise a hilly woodland with elements of a growing community.

Uppland includes a lot of protected areas: heritage protection, habitat protection, national parks, protection of freshwater environments etc., including biosphere reserves that are model regions where the aim is to preserve natural and cultural heritage. At the same time social and economic development with local ties are favoured. For Uppsala the main archaeological heritage is Old Uppsala and the cathedral. In Börje parish there are many remains from the Bronze Age and Iron Age with 60 Iron Age burial sites within the area, all protected by the Antiquities Act which is very strong in Sweden and one of the oldest in the world (1666).
Fig. 44: Orthophoto of the study landscape Uppland (Sweden)
Fig. 45: Topographic map of the study landscape Uppland (Sweden)
Fig. 46: Land cover map of the study landscape Uppland (Sweden)
Fig. 47: Orthophoto of the study municipalities Uppsala and Börje parish (Sweden)
Fig. 48: Topographic map of the study municipalities Uppsala and Börje parish (Sweden)
Fig. 49: Land cover map of the study municipalities Uppsala and Börje parish (Sweden)
4 Conclusions

Within this first task of WP 3, a purposeful, balanced and transparent selection of case studies to serve within the HERCULES project was achieved. The identified SLs are agreed upon by the project consortium, are firmly embedded in the project via local contact persons out of the HERCULES team and comply with all defined selection criteria, e.g. regarding the involvement of both rural and peri-urban/urban areas and a good coverage of the biogeographical regions of Europe as well as of “outstanding” and “everyday” heritage features.

For this, the homogenisation of material from different languages and administrative systems had to be achieved; moreover, all project partners needed to develop a common understanding of the potential of different proposed sites, from an integrative point of view beyond specific disciplinary or geographic interests. Therefore, the successful selection of the study landscapes can be regarded as an exercise for and demonstration of the consortium’s capacity to work as joint and target-oriented team.

With nine selected SLs there are more case study areas than initially planned (Description of Work: five to six). However, since it showed to be not possible to carry out all activities in every SL, it is reasonable to work with this higher number. With the standard rule of a minimum of two WPs being active in a SL, as envisaged results will be achieved that integrate different disciplines, time periods as well as the realms of science and practice.

The study landscape descriptions will serve not only as a reference for all specific tasks connected to the case studies, but as a starting point and common basis for developing a comparative view on European landscapes, e.g. by developing and testing hypotheses on specific drivers of landscape change.