

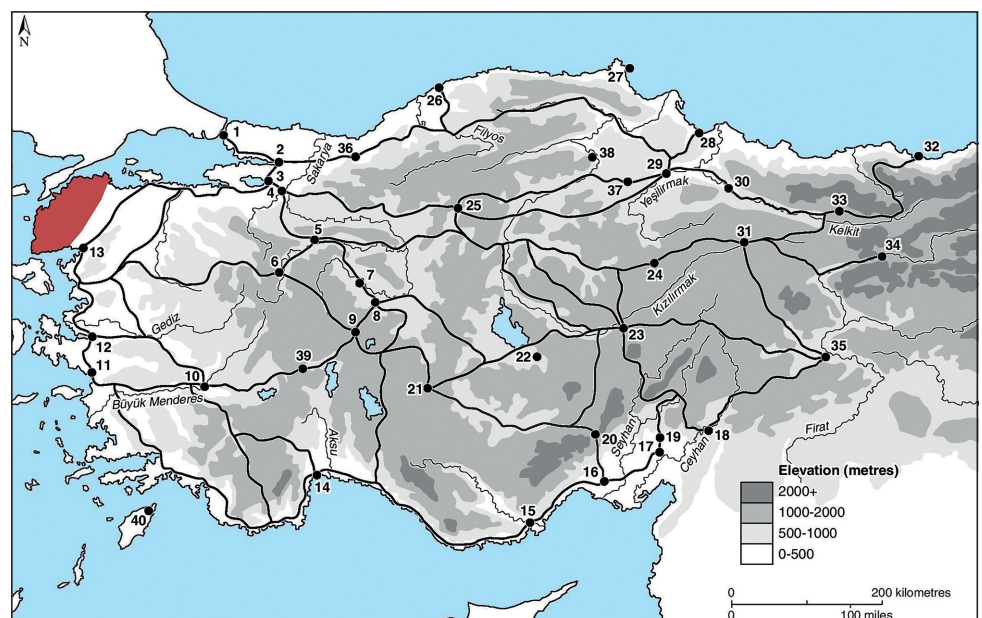
Changes in the Settlements and Economy of the Southern Troad (Turkey) from the 4th to 15th Century

The economic dynamics of a region are linked to its population size, immediate environs, and the subsequent development of its settlements¹. Due to past and ongoing research in the southern Troad it is possible to reconstruct the interconnection between the economic and settlement history of the region from the late antique to the Byzantine period. The Troad is situated on a peninsula in the northwest of Turkey (fig. 1). To the north it borders the Hellespont (the Dardanelles), and to the west and the south, the Aegean Sea. Nearby are two islands important for navigation and trade, Tenedos (Bozcaada) and Lesbos. The Troad extends from Pegai in the north to Assos and Antandros in the south. Thus, the region controlled the entry to the Hellespont and the Sea of Marmara, and secured the maritime traffic to the Black Sea via Constantinople. The capital Constantinople is not far away; by boat a two-day trip according to the direction of the wind, and over land about 10 to 11 days by foot, faster on horse or donkey².

In Antiquity, the settlements in the Troad were mostly spread along the coast, along important roads, beside large rivers and in valleys³. Pliny the Elder, Strabo and other writers provide information on some of the important trade goods. Among them are grain and sarcophagi from Assos, valuable metals, and pine and larch wood from the Ida mountain range, which were also export articles in high demand⁴. A contrary viewpoint is given in some publications, that claim that in Byzantine times the region was far from all trade routes, and even the maritime route passed south of Lesbos and west of Tenedos. For those authors, the Troad was economically insignificant during the Byzantine period⁵.

This paper aims to study the settlement and economic history of the Troad region diachronically and to answer the following questions: Did the establishment of the new capital Constantinople affect the economic, social and cultural development of the region? What was the impact of external factors – such as military invasions, environmental disasters

Fig. 1 Asia Minor with its major routes and the Troad (in red). – (After Haldon, Atlas 12 map 1.10).



1 Lefort, Rural Economy. – Decker, Agricultural Production 228-233. – Laiou/Morrisson, Byzantine Economy 16 f.
2 Belke, Reisegeswindigkeit 51.

3 Cook, Troad 360-375.
4 Strabo, Geography 15.3.22. – Pliny, NH 2.98.
5 Haldon, Byzantium 18. – Haldon, Atlas 82. – Kislinger, Verkehrswege.

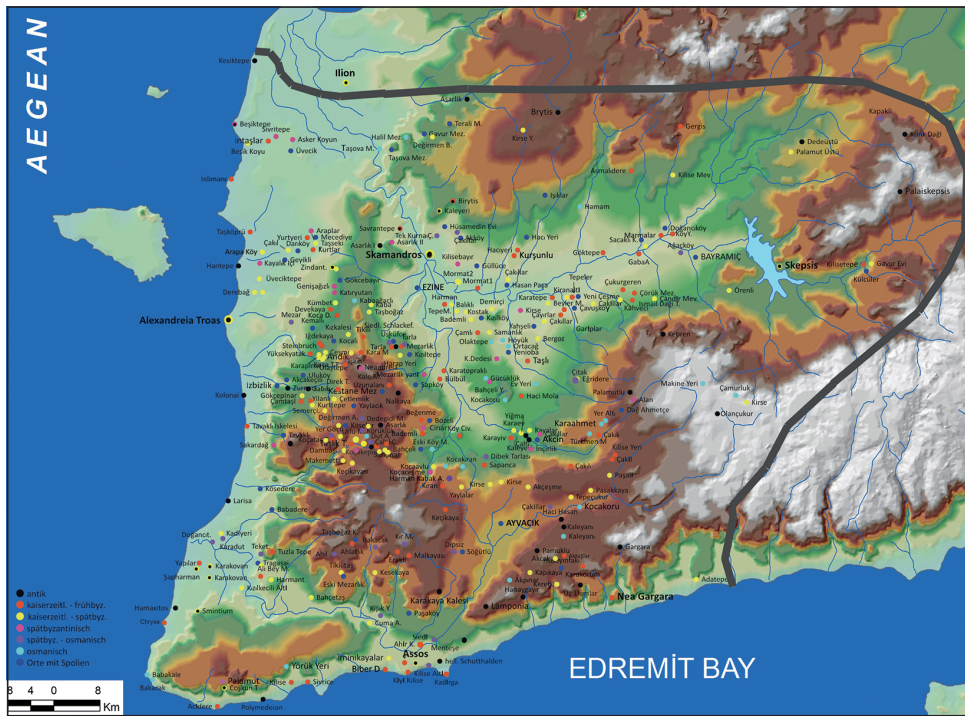


Fig. 2 Find spots in the southern Troad. – (Map B. Böhlendorf-Arslan).

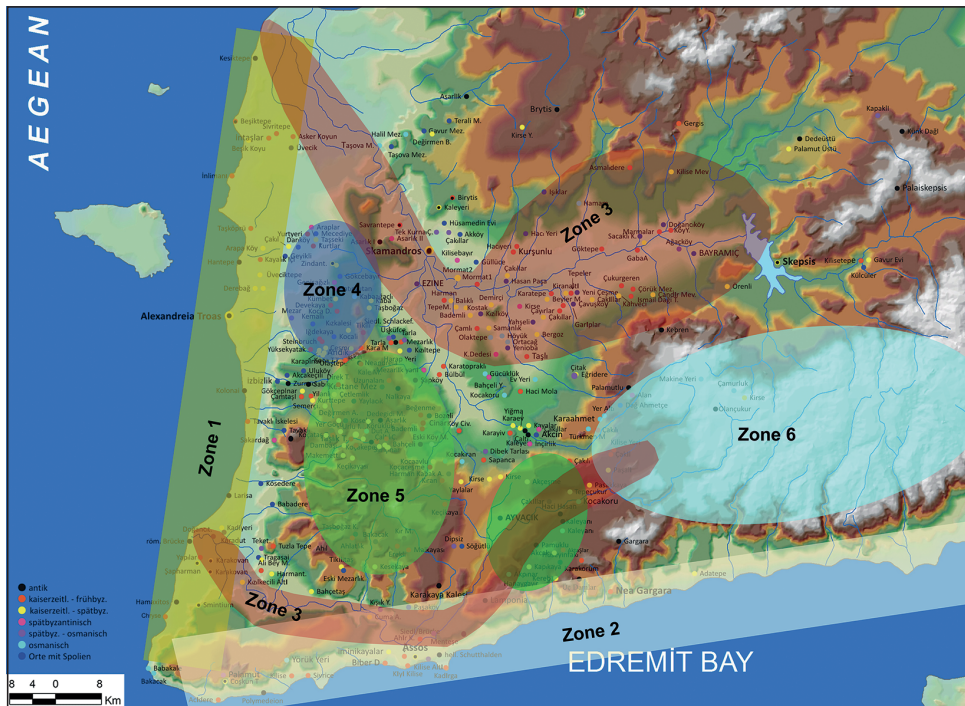


Fig. 3 Geographical zones in the southern Troad. – (Map B. Böhlendorf-Arslan).

and pandemics – to the size of the population and settlement patterns? How did historical events influence the economic organization of the region? The basis for an answer to these questions are the results of a regional survey covering 2832 km² that was conducted in the southern Troad, in the

counties of Ezine, Ayvacik and Bayramic⁶. The survey area with artificial boundaries is located in two Byzantine themata, Hellespontus and Asia.

The survey conducted between 2006 and 2018 identified more than 200 sites in the southern Troad, which indicates

6 Permission for the survey was kindly granted by the Turkish Antiquities Authority. The individual surveys were supported by the Gerda Henkel Foundation, the German Archaeological Institute, and the Römisch Germanisches Zentralmuseum Mainz. I would like to thank the government representatives Zerrin Akdoğan, Ayşe Akman, Safiye Dönmez, Günay Karakaş, Halil Kocaman, Şenal Öcal, Adil Özme and Hasan Taylan for their cooperation. Special thanks go to the team

members: Nilden Ergün, Aykan Özener, Caner Bakan, Nurettin Arslan, Mehmet Ayaz, Bilge Bal, Yvonne Becker, Osman Çapalov, Martin Dennert, Andrea Jacob, Yella Karadeniz, Emrah Karaman, Moritz Kiderlen, Oğuz Koçyiğit, Bettina Kreuzer, Selina Küst, Amber Öncel, Nikolas Schmidt, Luise Schubert, Kudret Sezgin, Antje Steinert, Veysel Tolun, Dilek Tuna and Hüseyin Yaman. For all campaigns, see the annual reports in *Araştırma Sonuçları Toplantısı*.

that the region was densely populated (fig. 2). Our team recorded all settlement remains within the sites, namely, villae rusticae, small and large villages, and towns. Our results show that 90 of these settlement traces were abandoned in the 6th or 7th century, 53 settlements were newly-founded or built in the 12th century, and 73 settlements were inhabited without a break from Late Antiquity to at least the late Byzantine period.

Geographical features of the southern Troad

The geography of the southern Troad is variegated⁷. In the west, the coastal sections are wide and sandy (fig. 3, zone 1), but the south is dominated by a steep coast, notched by small bays (fig. 3, zone 2). The interior in the northern part is characterized by the wide delta of the Skamandros River, which is interrupted in parts by inflows from other streams. Similar conditions also exist in the somewhat narrower valley of the Satnious River (fig. 3, zone 3). To the south of this, the landscape is marked by the long range of the Ida mountains. The mountain range itself is subdivided into three parts; the northwestern part is a hillside landscape interrupted at intervals by hills and high flat plateaus (fig. 3, zone 4). This region and its shallow foothills consists mainly of granites shaped by spheroidal weathering, which often create rounded boulders of relatively unweathered rocks that look like woosacks or mushrooms.

The section in the middle of the southern Troad is divided by the Satnious River. In this region, forested mountains alternate with treeless high plateaus (fig. 3, zone 5). The third, easternmost subdivision is dominated by densely-forested steep mountains (fig. 3, zone 6).

Cities and distribution of late antique and Byzantine settlements in the Troad

Alexandria Troas was one of the most important cities of the region in Roman times. Abydos and Parion were strategically important bases for the Komnenian emperor Alexios I Assos was, before the arrival of the Turks, a refuge fort in the region, and at Pegai the Latins had an important trade station until the 14th century⁸. Six of the ten bishoprics of the Troad are located in the south⁹.

The centers, like the bishops' sees and the larger market towns in the interior were connected by a network of roads;

the larger roads were connected to cross-regional traffic systems. A tight network of smaller towns and villages shows that the Troad was populated densely from Late Antiquity until late Byzantine times¹⁰. After this, the architectural remains of these settlements were dismantled fairly quickly, or merged into Ottoman villages and towns, so that even Western travelers in the 18th and 19th century were not able to report much about the remains. Today, the settlement density can therefore be traced less from still-standing architecture but more from pottery remains scattered on the terrain with other finds, as well as from singular walls.

The geographical features are reflected in the foundation of settlements. During Late Antiquity, settlements were established especially in areas that were well-suited for agriculture or were associated with the extraction of resources. If we consider that at this time, ancient settlements in the southern Troad like Hamaxitos, Kolonai and Polymedeion had lain abandoned in Roman times as well¹¹, the number of newly-established settlements during the early Byzantine era nearly tripled. The preferred settlement regions are clearly located in zones 3 and 4. A smaller number of new settlements were also established in zones 1, 2 and 5.

Many of the small sites on the coast of the Troad were abandoned at the end of the 6th or during the 7th century. They were not resettled in the middle and late Byzantine period¹². Apparently, the inhabitants moved increasingly to the interior of the peninsula. From the 8th to 9th century no other small sites or villages existed along the coast outside of the central towns. We can only speculate about the reasons for this. The archaeological data point out that for this period there is no evidence of an invasion by the Persians and Arabs, as has often been suggested¹³. The region was, however, shaken by severe earthquakes in the mid or later 5th century and also in the 8th century. Perhaps a tsunami was triggered by this earthquake, which destroyed many of the smaller settlements built close to the coast¹⁴.

In all the buildings excavated so far, tectonic movements in the floor of structures and long continuous cracks in the bedrock have been recorded, indicating that a natural catastrophe, most likely an earthquake, had occurred. This earthquake dates to the beginning of the 8th century and resulted in the collapse of houses and roofs¹⁵. In one case the entire inventory of a storage room was thus sealed and includes a well, pithoi, a grinding stone, a mortar, ceramic vessels, a hook and also a pig, which had apparently escaped and settled down behind the storage vessels for a nap¹⁶.

7 Höhfeld, Stadt und Landschaft 17-36. – Böhlendorf-Arslan, Naturraum Troas 279-283. – Böhlendorf-Arslan, Ländliche Siedlungen 64-71.

8 For Alexandria Troas see: Rici, *Inscriptions* 21. 229-231; for Abydos and Parion see: Belke, *Bithynien und Hellespont* 352-361. 887-891; for Assos see: Böhlendorf-Arslan, *Assos in byzantinischer Zeit* 121 f.; for Pegai see: Aylward, *Pegai*.

9 The following bishoprics were located in the Troad: Pegai, Parion, Lampsakos, Dardanos, Ilion, Skamandros, Alexandria Troas, Skepsis, Assos, and Gargara. The last six mentioned were located in the southern Troad. On bishoprics, see: *Notitiae* 207-355 (various notitiae).

10 Böhlendorf-Arslan, *Ländliche Siedlungen* 72-84 fig. 16-17.

11 Cook, *Troad* 219-221. 360-368. – Belke, *Bithynien und Hellespont* 590. 684.

12 Böhlendorf-Arslan, *Naturraum Troas* 284-286. – Böhlendorf-Arslan, *Ländliche Siedlungen* 72-75.

13 Foss, *Persians* 736-745. – Brandes, *Stadt* 82-124.

14 Marcellinus Comes 447. 460. 480. – Euagrios Scholastikos, *Historia* 2, 14. – See also Ambraseys, *Earthquakes* 165-168. 176 f. 227-229. – Soloviev et al., *Tsunamis* 30-32.

15 Böhlendorf-Arslan, *Assos* 224.

16 Böhlendorf-Arslan, *Sixth century Assos* 240-243.



Fig. 4 a shoreline with tile and pottery layers of the late antique-early Byzantine settlement Acidere. – b pottery from the shoreline layer. – (Photos B. Böhlendorf-Arslan).

Such a devastating natural catastrophe was certainly not restricted to the city of Assos alone but must have wreaked havoc in the entire Troad¹⁷. A clue regarding this hypothesis can be provided by the find-spot at Acidere, which is located 24 km west of Assos on the southern coast of the Troad. In Acidere, exactly opposite the island of Lesbos, existed a small village until the 7th century. The economic basis of the village was probably fishing, which was conducted from a small harbor fortified with a man-made jetty¹⁸. On the surface, nothing can be detected of this find spot, and the surrounding fields are completely devoid of remnants, so the size of the settlement cannot be determined. Along a distinctive part of the shoreline, traces of the village of Acidere can be observed along a stretch of 32 m in the form of pottery and tile layers, interrupted by various walls (fig. 4). The walls, typical of post-Antique architecture, are built of quarry stones and adhered only with earth mortar. In the soil between the walls there are numerous

17 Brian Rose dates the earthquake which destroyed Troy to the early 6th century after dating the finds, mostly coins. See Rose, *Troy* 269f. fig. 11,26.
 18 Böhlendorf-Arslan, *Ländliche Siedlungen* 65-67 fig. 5.



Fig. 5 a shoreline with remnants of the late antique-early Byzantine settlement Inlimani. – b pottery from the shoreline in Inlimani. – (Photos B. Böhlendorf-Arslan).

sherds dating back to the 3rd-7th century. Along this shore one can also observe that the late antique/early Byzantine village is buried under an alluvial layer with a thickness of ca. 1.20-2.45 m. These thick layers of alluvial deposits may have been caused by a stream that has dried up and once sought its way down into the valley between the slopes. Or, it could have been caused by a tsunami. Ultimately, this can only be answered by geological investigation of the soil fill.

A similar feature also appears on the shore of the harbor settlement Inlimani on the west coast of the Troad¹⁹. This site is characterized by a deeply indented natural bay, an exceedingly advantageous location, which was protected furthermore by breakwaters and quay walls. Despite this excellent situation, the village did not continue to be populated after the 7th century. Wall remains and pottery layers visible in the brim line of the coast appear ca 30-50 cm beneath the modern surface (fig. 5). The harbor settlement was therefore possibly destroyed by a tsunami in which it was flooded and buried by mud.

19 For general information on the site, see: Bieg/Tekkök/Aslan, *Troas* 156-158. – Böhlendorf-Arslan, *Ezine* 260. 269 fig. 8.

Fig. 6 Late antique-early Byzantine settlements. – (Map B. Böhlendorf-Arslan).

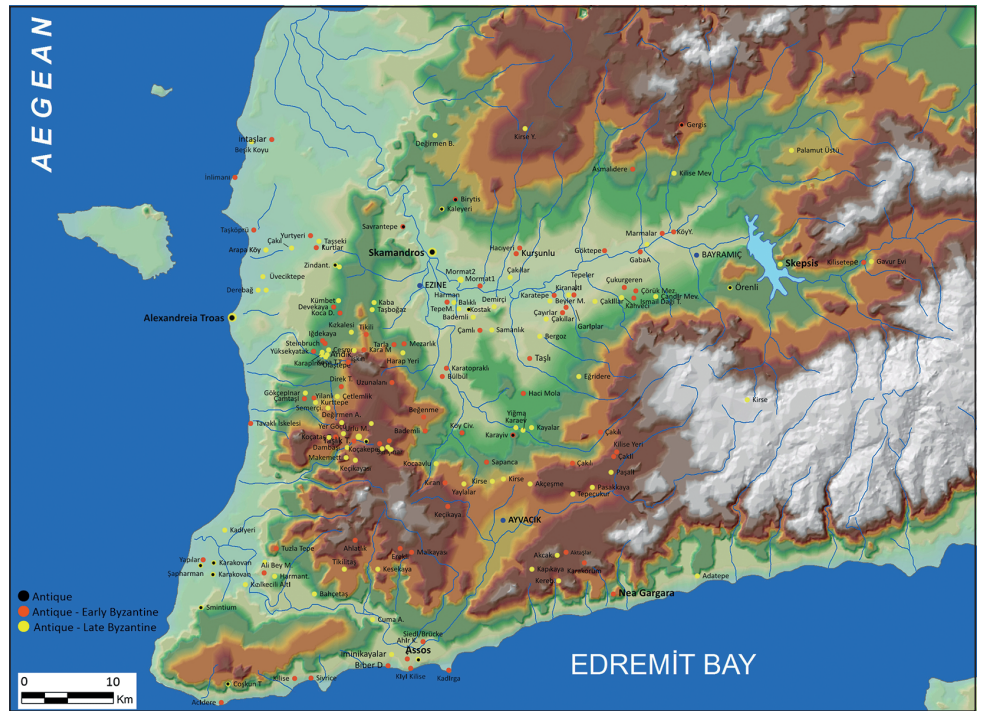
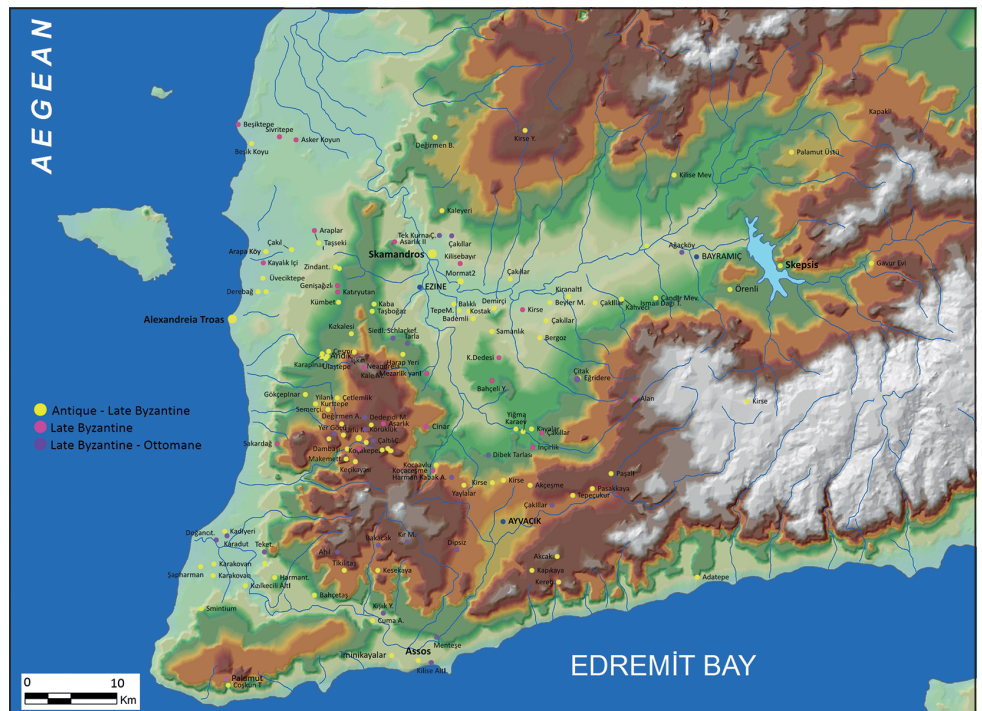


Fig. 7 Middle-late Byzantine settlements. – (Map B. Böhlendorf-Arslan).



These coastal settlements were therefore probably hit twice: seismic vibrations created a tsunami whose water mass completely destroyed the buildings that had already been damaged during the earthquake. This may be the reason why only a few settlements exist in the middle and late Byzantine period along the coast, both in zone 1 as well as zone 2. Apparently, only the larger cities such as Alexandria Troas and Assos survived on the coast, and even these show a clear

break in their settlement history. After this earthquake, Assos was never again settled within its ancient city walls. Instead, the inhabitants are thought to have settled on the north side of the hill²⁰. A similar interruption in the cityscape and continuity of settlements can also be observed in Alexandria Troas. Excavated areas in the city show continuity into the early Byzantine period then, after a hiatus, traces of settlements appear again in the later middle Byzantine era²¹.

20 Böhlendorf-Arslan, Forschungen 238. – Böhlendorf-Arslan, Assos 224f. – Böhlendorf-Arslan, Sixth century Assos 243.

21 Japp, Pottery Alexandria Troas 55-72.

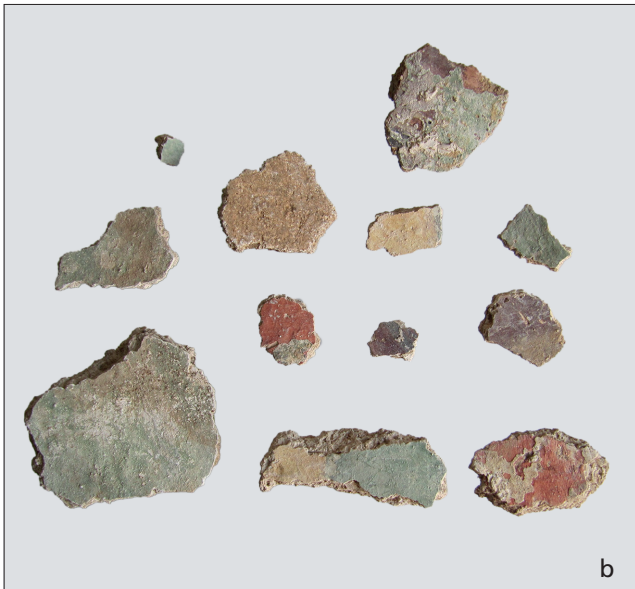


Fig. 8 Apse (a) and fresco fragments (b) of a late Byzantine church in Kaleyeri near Akköy/Ezine. – (Photo B. Böhlendorf-Arslan). – 2 scale 1:2.

Besides the relocation of settlements from the coast towards the hinterland, we observe certain concentrations of settlements in the southern Troad which are surely connected to the economic livelihood of the inhabitants. The valley of the Skamandros River and its tributaries was a popular settlement area throughout its entire history. Until the 7th century, the wide central basin of the middle reaches of the Skamandros was densely settled (fig. 1). Villages and towns were often located less than even 1 km away from each other. In the area comprising roughly 20 km² between the villages of Balıklı and Türkmenli east of today's district center Ezine, 39 settlements to the left and right of the river have been detected. Of these, 13 were settled solely up to the 7th century, and only three were newly-founded in late Byzantine times. The large number of settlements lasted

into the early Ottoman period; however, the highest habitat density can clearly be dated to the 6th century (fig. 6). At this time, the fertile areas of the valley were surely used for intensive cultivation.

The number of settlements declines slightly in the middle and late Byzantine periods (fig. 7). Instead of 136 recorded early Byzantine locations, there are only 105. In zone 1 and zone 2 we find large gaps, indicating that the coastline was not continuously inhabited. In the delta of the Skamandros River in zone 3, the density of settlement decreases towards the headwaters in the east; here we find only scattered locations. After the 8th century, settlements are concentrated mostly in zones 3 and 4. The villages mostly remain on the slopes of mountains²²; as the mountainous area away from the coast offers adequate protection due to its topography.

Local industry and emergence of conurbations

In many of the settlements, their economic basis can be reconstructed by finds and observations. Inhabitants of coastal settlements likely supported themselves with fishing, trade and by supplying large and small ships that had to seek shelter even in small harbors during bad weather. Finds of mortars and grinding stones indicate agricultural establishments. Large basins and press stones were used for making wine. A concentration of spinning tools and loom weights on the surface reflects the production of textiles. Furthermore, in the Troad numerous deposits of mineral resources such as silver, ores, alum, and various stones are located. Written records and the landscape itself also indicate additional economic activities; for example, the trade and processing of purple murex and valonia oak for textile dyes, the production of charcoal, trade in timber, and the mining of salt and other products²³.

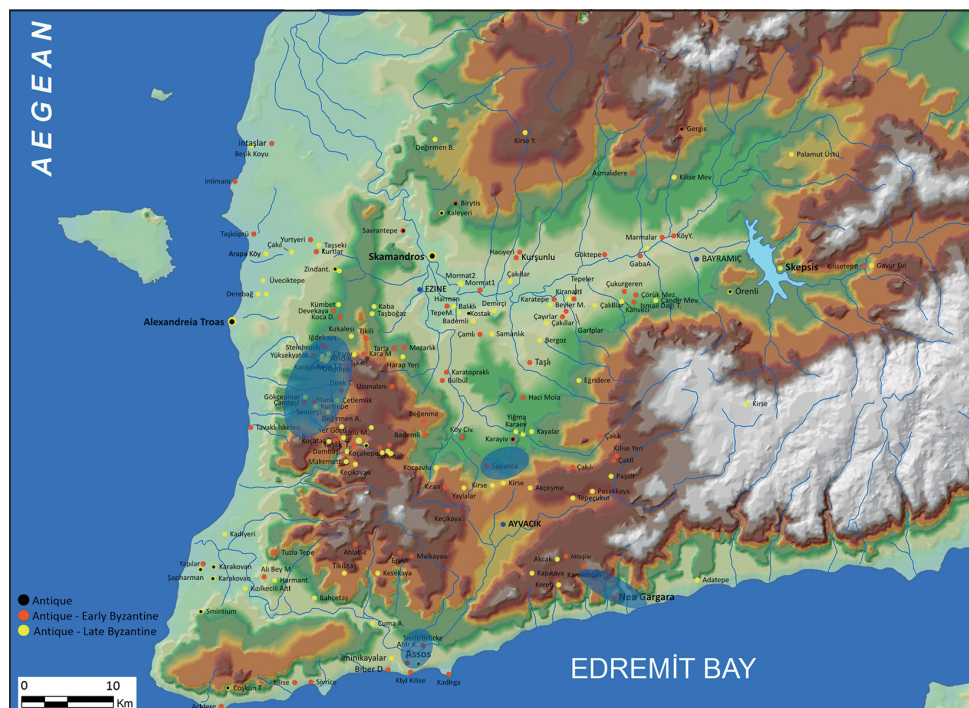
Agriculture was one of the most important sectors of the economy. Locations in the delta of the Skamandros and its tributaries and those on the lower course of the Satnios (zone 3) were therefore generally inhabited continuously (figs 2. 6. 7). In the moderately-high mountains of zone 4, spindle whorls were found, which were used to spin wool thread from the fleece of sheep, the animals which were most likely to have been kept in this area. Wool was probably spun all the time. Therefore, it is not possible to assign a certain period to wool production in locations with continuous surface finds. A large number of spinning whorls and weaving weights were found in Kaleyeri about 5 km east of Berytis near Akköy in the Ezine region²⁴. Kaleyeri is a fortified settlement with a surrounding wall in the hinterland of the bishopric of Skamandros. Inside the fortification wall there is a church whose apse is clearly visible in the terrain. Around

22 See for example the Byzantine settlements on the slope of the Sakardağ mountain or Asarlıktepe: Böhlendorf-Arslan, *Naturraum Troas* 288 f. fig. 7; 290 f. fig. 9.

23 Belke, *Bithynien und Hellespont 305-348*. – Böhlendorf-Arslan, *Ländliche Siedlungen* 64-71. – Böhlendorf-Arslan, *Naturraum Troas* 279-283.

24 See Kaleyeri: Böhlendorf-Arslan, *Bizans Dönem Yerleşmeleri* 433. 443 fig. 2-3.

Fig. 9 Quarry areas in the southern Troad. – (Map B. Böhlendorf-Arslan).



the apse, fragments of frescoes indicate a decorated church (fig. 8). Scattered throughout the city, especially concentrated on the plateau northwest of the church, numerous spinning whorls and weaving weights were found. Kaleyeri seems to have produced wool on a large scale, since the survey yielded several dozens of loom weights. Therefore, the available data points to the economic basis of the settlements in this area being stockbreeding. In this mountainous region sheep and/or goats were kept, whose fleece was then spun into wool and thread with tools and then woven into textiles.

The villages surrounding the diocese of Skamandros seem to have been the location of various workshops. In the Byzantine village of Tek Kurnalı there was probably a glass furnace since glass slag was found in the inhabited areas²⁵. In nearby Akköy, a regionally important pottery-making workshop was active in the Ottoman period²⁶; which appears to have had a precursor in the late Byzantine era. The clay for this pottery was obtained from deposits near the village²⁷.

Another picture emerges from the regions that made products for a specialized market and predominantly exported the goods. Such products are linked to demand and the political and economic stability of the buyer. The economic basis of a settlement which was possibly founded entirely for the production and/or processing of such a product is therefore very dependent on the market. We can observe this, for example,

in the northwest of the survey area in the hinterland of Alexandria Troas. The rather flat foothills covering 42 km² are made of high-quality granite, which is spherically weathered and dominates the landscape with its peculiar shapes. This granite was quarried during Imperial Roman times until the early Byzantine period. The rock was cut on site into smooth columns or stone blocks, which were then transported over a paved road to the port of Alexandria Troas and loaded onto ships to be sent around the Mediterranean²⁸. Often, adjacent rock formations were used, so the quarries were located within a perimeter of 1 or 2 km.

Of these quarries, five quarry areas have been mentioned in publications so far²⁹. In the field surveys, we located eighteen quarries in five quarry areas where columns and blocks were cut in large or small quantities (fig. 9)³⁰. Smooth columns were often cut in these quarries, which were of different sizes depending on the site and the geological formations existing there. They range from very large columns with a length of nearly 11.54 m and a diameter of 1.5 m in Yedi Taşlar to small columns with a length of nearly 3 m and a diameter of 0.40 m from the broad quarry of Andikkaya. Besides columns, fountain basins and block stones were also produced³¹. Production in most of these quarries must have begun early in the 2nd century, because most of the Troad granite was used in Rome for buildings of the Severian period³². According to

25 A glass workshop was also located in Troy: Rose, *Troy 266 f.* fig. 11.22.

26 Akarca, Çömlek. – Tekkök-Biçken, Akköy. – Uysal, Akköy.

27 Tekkök-Biçken, Akköy 97 f.

28 Pensabene/Domingo/Rodà, *Distribution of Troad Granite.* – Pensabene/Rodà/Domingo, *Troad Granite.* – Williams-Thorp, *Roman Granite Trade 81-87.* – Ponti, *Marmor Troadense 292.*

29 Ponti, *Marmor Troadense 290.*

30 Böhlendorf-Arslan, *Ländliche Siedlungen 67 f. 78 f.*

31 Böhlendorf-Arslan, *Ländliche Siedlungen 67. 78 f.* fig. 20. – Böhlendorf-Arslan, *Bizans Dönem Yerleşmeleri 435 f. 444 f.* fig. 6.

32 Pensabene/Domingo/Rodà, *Distribution of Troad Granite 613-616.*

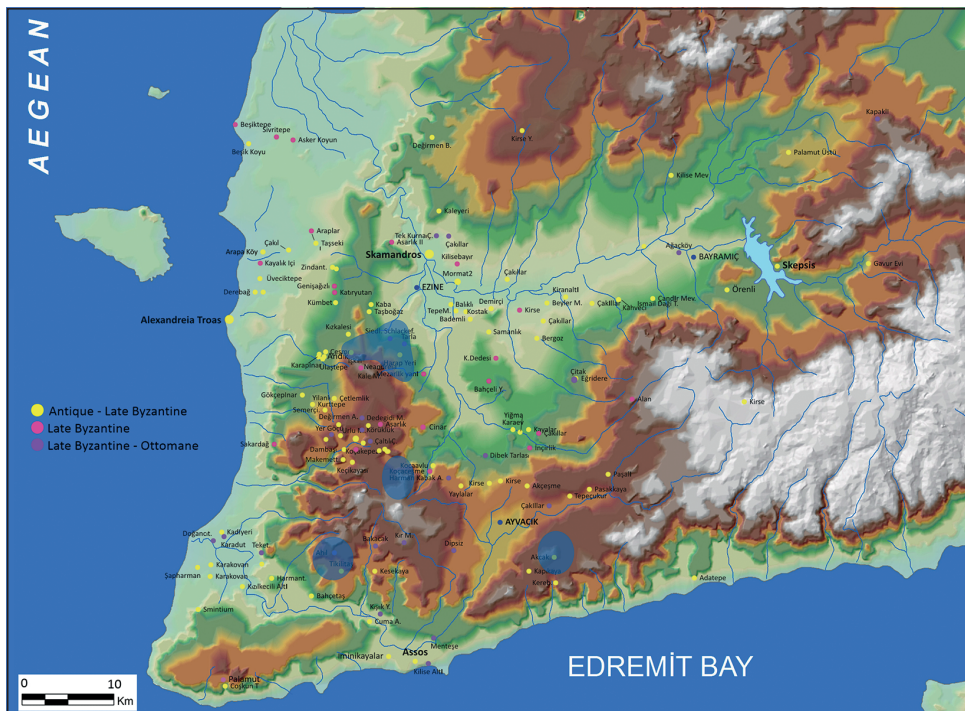


Fig. 10 Areas of ore mining in the southern Troad. – (Map B. Böhlendorf-Arslan).

the dating of building elements from these quarries that were delivered around the Mediterranean, the highest demand for Troad granite was in the 4th century³³. In Theodosian times the mining of granite in the Troad was under state control, and at the beginning of the 5th century the quarries were still being taxed³⁴. The miraculous salvage of a ship loaded with granite by Bishop Silvanus in the port of Alexandria Troas also falls into this period³⁵. In the forthcoming periods, granite quarrying decreased as demand gradually diminished. Nevertheless, granite was still being hewn in Byzantine times. Nearby and in close proximity to all quarries located so far there are settlements which indicate the quarrying of stones up to the 6th century³⁶. The quarrymen apparently lived in the settlements directly adjoining the quarries, and all these settlements were still inhabited at least until the end of the 6th century³⁷.

The area around the quarries in the western foothills of the Ida mountain range was densely populated. Settlements on the northern slopes were especially close together³⁸. Most of them can be connected to the quarrying of granite. The settlement belonging to the famous Yedi Taşlar quarry near to the today's village of Koçali is located 350m northwest of the quarry. Besides some foundations of houses, a church and graves were also found. The architectural sculpture and surface pottery date the church to the 6th century³⁹. The

settlements adjacent to the quarries are of various sizes. The larger ones have the dimensions of small towns and appear to have been furnished with churches, baths, prestige buildings, and large and small domestic buildings⁴⁰. Most of these settlements were abandoned near the end of the 6th century or in the 7th century. Probably they were deprived of their economic basis after granite ceased to be exported due to the general political situation. As a result, the inhabitants moved away, and the settlements fell into decay. On the other hand, 22 settlements that were better-protected or located higher up in this region endured until the late Byzantine age⁴¹.

The valley of the Satnious River is less densely populated. This valley appears to be too narrow and offers less economic benefits. A significant concentration of settlements appears only in the delta near the modern town of Tuzla, the ancient Tragasai⁴². Fourteen settlements were located in its vicinity; three of these are early Byzantine, eight were settled from the early to late Byzantine period or early Ottoman times, and three were newly-founded in the late Byzantine era. The economic basis of the settlements near the Satnious River must be considered differentially. The villages on the upper reaches of the Satnious probably kept cattle and cultivated small gardens. Here the river cuts steeply into a forested region. A large wine press in Pasaklıkaya indicates the pro-

33 Lazzarini, Determinazione della provenienza 246. – Russel, Roman Stone Trade 225-228.

34 Codex Theodosianus XI 28,9 and 28,11.

35 Sokrates Scholastikos, Historia 7,37.

36 Böhlendorf-Arslan, Bizans Dönem Yerleşmeleri 435f. 444f. fig. 6-8. – Böhlendorf-Arslan, Bizans Yerleşmeleri 113-115. – Böhlendorf-Arslan, Ländliche Siedlungen 77-79 fig. 19-20.

37 Enver Yavuz links the end of mining to four C14 dates of sediments that »cover the ruins of Alexandria Troas« (Yavuz, Marmor Troadense 509). He assumes that the quarrying activity ends with the collapse of Alexandria Troas. Al-

though he dated four samples from Alexandria Troas, the C14 date (late 3rd century) as the end of the city cannot be correct, as abundant 6th century pottery is found everywhere in the city area (Japp, Pottery from Alexandria Troas).

38 Böhlendorf-Arslan, Ländliche Siedlungen 64 fig. 1; 76f. fig. 16.

39 Böhlendorf-Arslan, Bizans Dönem Yerleşmeleri 435. 444 fig. 5.

40 Böhlendorf-Arslan, Ländliche Siedlungen 77-79 fig. 18-20. – Böhlendorf-Arslan, 2010 Bizans Dönem Yerleşmeleri 435f. 444f. fig. 6-7. – Böhlendorf-Arslan, Bizans Yerleşmeleri 113-115.

41 Böhlendorf-Arslan, Ländliche Siedlungen 72-75 fig. 16-17.

42 Böhlendorf-Arslan, Ländliche Siedlungen 64 fig. 1-2.

duction of wine⁴³. The river opens out in the area of Assos and forms a fertile plain here, which was certainly used for growing grain, not only in ancient times but also in the Middle Ages. West of Assos, the Satnious River again flowed through a narrow valley. The plain of Tragasai, today's Tuzla, gradually silted up in early Byzantine times due to sediments carried by the river⁴⁴. Sometime in the late Byzantine era, Tragasai was replaced by the harbor settlement of Scorpiata, which was apparently located further west in what is now a completely flooded plain⁴⁵. In Late Antiquity and Byzantine times, Scorpiata was a harbor city through which trade in salt, alum and other goods was conducted. By the 15th century the port no longer existed, and ships were loaded on a sandy beach⁴⁶.

In the hinterland of Tragasai and Scorpiata, wine was cultivated in Byzantine times, as a preserved wine press found there shows⁴⁷. Overall, such wine presses were recorded in five settlements of the surveyed area. These consist almost always of a rectangular basin and a low pit, which might have held a pithos or larger vessels. The basin was always connected to the pit by a cut channel. Besides Assos, the other settlements with such presses are situated in the moderately-high mountain regions of zones 3 and 4, which have an ideal climate for growing grapes. It is difficult to date the wine presses since these locations were settled from the 5th/6th century into the 13th century. The wine press of Assos was built into the Hellenistic agora west of the stoa and dates to the 6th and 7th centuries.

It appears that during the middle and late Byzantine period there was a high demand for metal ore. There is evidence that it was also extracted in the Troad (fig. 10). In the proximity of a Byzantine settlement near the modern village of Kiziltepe (meaning »Red Mountain«), it seems that during the Byzantine era iron ore was dug in fall shafts, which are funnel-shaped depressions. The ore gathered this way was smelted in the adjacent settlement. The settlement in the spot called Harap Yeri (»field of ruins«) is situated on a flat hill on the edge of fertile terrain used for agriculture and was connected to Alexandria Troas by the ancient paved road. Harap Yeri was settled from the 6th to the 14th century, but the focus of activity seems to have been in late Byzantine times⁴⁸. Mining is also detected in the neighboring village of Üsküfcü. A French traveler, Chevalier de Clairac, described smelting operations in the neighborhood of Üsküfcü in the middle of the 18th century, when 150 Greek workers extracted silver from ore⁴⁹. This smelting area had older roots. Although the heyday of mining ore was in the 18th century, the settlement itself (and thus probably the mining) dates back to the 13th century⁵⁰.

In a total of 15 settlements, accumulated metal slag from smelting ore, was found. Nearly all of these settlements are located in zones 4 or 5, which means in a moderately-high mountainous area, usually on shallow plateaus. Many settlements with slag show continuity of settlement and were therefore inhabited from the 4th to the 14th century. An exact dating of metal production in these places is not possible. However, beside Assos none of the early Byzantine settlements showed traces of slag, but three of the late Byzantine locations did exhibit residues.

In the southern Troad, alum, which was necessary in the Middle Ages for tanning leather or coloring textiles, was mined in two places. The settlements near the mining sites date to the middle-late Byzantine period⁵¹.

Conclusion

Conducting a surface survey does not allow for wide-spread collection of visible finds. Hence in our survey, the middle Byzantine period is quite elusive. Additionally, the sequence of normally datable table ware has large gaps in the 8th and 9th centuries, and the coarse ware cannot be precisely dated. Furthermore, it is not logical that all settlements with early and late Byzantine material were resettled again after long uninhabited years during the 12th and 13th centuries. Very often in Turkish villages, we find reused middle Byzantine architectural elements in the surroundings of Byzantine settlements. We can therefore assume that locations with early and late Byzantine finds present a continuous settlement history.

From the 4th century onward, a substantial increase in settlements in the southern Troad can be observed. Villages and small towns appear to have been directly connected with the economic exploitation of the region. Besides fishing at the coastal sites and agricultural production, a particularly important activity was also the quarrying of granite and limestone, detectable especially in the hinterland of Alexandria Troas and Assos⁵². Many of the small settlements associated with the quarries were abandoned after the end of the 7th century.

Especially settlements in the protected, moderately-high mountainous areas and the wide river deltas survived into the late Byzantine era. Several new villages were even established. The economic basis of these locations appears to have consisted of agriculture and livestock breeding. Most likely, during this time there was also an increase in the mining of ores, alum and salt which were either processed or sold in supra-regional trade as raw material.

43 Böhlendorf-Arslan, *Ländliche Siedlungen* 64-66 fig. 3.

44 Böhlendorf-Arslan, *Ländliche Siedlungen* 82 fig. 2.

45 Belke, *Bithynien und Hellespont* 991 f.

46 Fleet, *European and Islamic Trade* 86 n. 61.

47 Böhlendorf-Arslan, *Ländliche Siedlungen* 82.

48 Böhlendorf-Arslan, *Ländliche Siedlungen* 69-71. 81 fig. 9.

49 Laporte/Cavalier, Clairac 69 f. fig. 47-48.

50 Böhlendorf-Arslan, 2009 *Ezine, Bayramiç ve Ayvacık* 266. 272 fig. 10.

51 Böhlendorf-Arslan, *Ländliche Siedlungen* 80 f. fig. 22.

52 See for the limestone quarry at Akçin: Böhlendorf-Arslan, *Ländliche Siedlungen* 67-70 fig. 8.

Until the 6th or 7th century, the inhabitants preferred to settle on the coast or in the coastal hinterland. While the basis of their economy was primarily fishing, trade and agriculture, the quarrying of granite, andesite or limestone was also important. In the following centuries, the populace chose to move away from the coast into the interior of the southern Troad, preferably on the moderately-high mountain slopes above the floodplains. The river deltas were used for

farming and the sparsely-wooded forests on the mountains as grazing land for goats and sheep. In the late Byzantine period the mining of ore, alum and salt gained importance. The role that each harbor city played in trade up to the late Byzantine period still needs to be investigated. The port of Assos was still intact in late Byzantine times and was therefore frequented by merchant ships until the late Ottoman period.

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Zusammenfassung / Summary / Résumé

Veränderungen von Besiedlung und Wirtschaft in der südlichen Troas (Türkei) vom 4. bis ins 15. Jahrhundert
Durch den mehrjährigen Survey wurde eine dichte Besiedlung der Troas nachgewiesen, die die Anzahl der Siedlungen heute bei weitem übersteigt. In der Spätantike und frühbyzantinischen Zeit lagen viele der Siedlungen an der Küste. Von diesen wurden ab dem 7. Jahrhundert zahlreiche Dörfer aufgegeben. Die Bewohner bevorzugten nun die Randlagen der fruchtbaren Flusstäler im Landesinneren. In der Spätantike und frühbyzantinischen Zeit lebte die Bevölkerung vom Fischfang, der Landwirtschaft sowie vom Handel und Abbau von Granit und anderen Gesteinen. In der spätbyzantinischen Zeit kam neben der Viehhaltung und Landwirtschaft noch der Abbau von Erzen hinzu.

Changements dans l'occupation et l'économie de la Troade méridionale (Turquie) du 4^e au 15^e siècle

Les prospections menées ont révélé une occupation dense de la Troade qui dépasse largement le nombre d'agglomérations actuelles. Beaucoup d'entre elles se situaient sur la côte dans l'Antiquité tardive et à l'époque byzantine précoce, mais les villages furent abandonnés dès le 7^e siècle. Les habitants préférèrent alors s'installer à l'intérieur des terres, en bordure des vallées fluviales fertiles. Dans l'Antiquité tardive et à l'époque byzantine précoce, la population vivait de pêche, d'agriculture, ainsi que de commerce et de l'exploitation du granit et d'autres pierres. A l'époque byzantine tardive, l'exploitation minière s'ajouta à l'élevage et l'agriculture.

Traduction: Y. Gautier

Changes in the Settlements and Economy of the Southern Troad (Turkey) from the 4th to 15th Century

The surveys conducted show a pattern of dense settlement in the Troad, which far exceeds the number of settlements today. In Late Antiquity and early Byzantine times, many of the settlements were located along the coast. Of these, the villages were abandoned from the 7th century onwards and the inhabitants preferred peripheral locations in the fertile river valleys of the interior. In Late Antiquity and the early Byzantine era, the livelihood of the inhabitants consisted of fishing, agriculture, quarrying and trade. In the late Byzantine period, in addition to livestock farming and agriculture, there was also the mining of ore.