

# **Environmental Criminality Analysis in Senica District**

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**Tomas Bata University in Zlín**  
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2. **Definujte základní typy monitoringu poškození environmentu.**
3. **Identifikujte základní metody pro analýzu environmentální kriminality.**
4. **Analyzujte stávající stav a ohrožení environmentu v okrese Senica.**
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## **ANOTÁCIA**

Táto bakalárska práca pojednáva o téme analýza environmentálnej kriminality v okrese Senica. Teoretická časť sa zaoberá legislatívou, ktorá sa viaže ako na otázku životného prostredia a environmentálnej ochrany, tak i na kriminalistiku. V ďalšej časti sú trestné činy rozdelené podľa typológie a v nasledujúcej kapitole je opísaný monitoring stavu životného prostredia. V praktickej časti sú najskôr opísané metódy analýzy a je predstavený okres Senica. Potom sa pristupuje k toxikológii a samotnej analýze environmentálnej kriminality. V poslednom rade tu je zahrnutá kapitola s vyšetrovacími postupmi a návrhy na zlepšenie vyšetrovania alebo prevenciu environmentálnej kriminality.

Kľúčové slová: životné prostredie, kriminalistika, trestný čin, vyšetrovanie

## **ANNOTATION**

This bachelor thesis discusses the topic of environmental criminality analysis in Senica district. Theoretical part is oriented toward the legislative section connecting with the matter of environment and environmental protection, and with criminalistics. In the next part crimes are separated according to the typology and in the next chapter monitoring of environment condition is described. In practical part there are initially represented analysis methods and Senica district is introduced. After that, toxicology and environmental criminality analysis come up. Lastly a chapter with investigation processes and suggestions for investigation improvement or environmental criminality prevention are included.

Keywords: environment, criminalistics, crime, investigation

## **ACKNOWLEDGEMENTS**

I hereby declare that the print version of my Bachelor's/Master's thesis and the electronic version of my thesis deposited in the IS/STAG system are identical.

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## INTRODUCTION

The topic of environmental criminality is, in this moment, very actual and grows with importance of resolution. This subject was chosen because the author is interested in criminalistics and also in environment protection. Protection of the environment is something in what should be interested every citizen and it is everyone's duty to do so. Origins of this protection are spotted even in the Constitution of the Slovak Republic.

The goal of environmental criminalistics is to eliminate formation of crimes committed on environment. If such crime happened, the aim is to find the offender and make him pay for what he has done, or oblige him to clear any consequences caused by his actions. The investigators should also help prevent the creation of these crimes.

In theoretical part of this thesis will be described legislative background of environmental criminality. This includes various laws referring to criminalistics as well as to environment and its protection. In the following part will be represented typology of crimes, which are going to be sorted by Criminal code and each crime will be briefly described. Following chapter will deal with environmental conditions monitoring. The monitoring will be later divided according to chosen requirements for this monitoring.

Practical part will include description of used analysis methods and data information. Following will be depiction of Senica district. After this is going to be a chapter about toxicology involving characteristics of selected matters, which are most probably getting in contact with the environment. All of these matters are dangerous and they leak into nature through illegal dumps. Further will be at last the part of environmental criminality analysis, with crimes sorted by year and type. Crimes against the environment will be very briefly described too. Last part will be a short survey of investigation processes, and following to that will be a chapter about problems in these processes and suggestions for its improvement. Propositions for prevention will be also located in this chapter.

The goal of this bachelor thesis is to introduce this topic to readers. Another aim is to analyze current condition of environmental criminality and find defects in actual investigating processes. If possible, the goal is also to find and define ways of prevention against these crimes, or at least for their decline and reduction.

## **I. THEORY**

## 1 LEGISLATION

Legislation stated in this bachelor thesis defines environmental offenses, codex describing environmental protection, criminal order and criminal code. These are the main laws, adjusting environmental crimes. Very important is the waste law and acts protecting land, air and water. From European Union there is added a code about integrated prevention and control of environmental pollution.

### 1.1 Law No. 372/1990 Act about offenses

This is one of the first and the most general acts regulating offenses and crimes. It is meant to keep citizens respect rights of each other, not hinder state tasks and disrupt public order. Offense is culpable action, which breaches or threatens social interests and is for offense marked in this or other law (Zákon č. 372/1990 Zb., o priestupkoch).

*„It is not taken as offense when someone averts in appropriate way straight threatening attack at law protected interests, or averts danger straight threatening interest protected by law, if this action did not cause approximately the same result as the one, threatening and not averted. Offenses on the part of environment protection are other than stated in general establishments in this law, if they cause deterioration of environment (Zákon č. 372/1990 Zb., o priestupkoch).”*

### 1.2 Law No. 17/1992 Environmental code

Environmental codex was based on the knowledge that humans and other organisms are inseparable parts of nature. This code also reminds natural mutual dependence of all living creatures. It states general principles for environment protection, duties of individual and legal persons for protection and improvement of environmental condition (Zákon č. 17/1992 Zb., o životnom prostredí).

Everyone is obliged to prevent or minimalize their negative influence on environment, assess the consequences of using the soil, natural sources, constructing or deconstructing a building. Furthermore everyone has to ensure that products manufactured or imported satisfy terms of environmental protection. Everyone who knows that there is a threat of damaging the environment or that the damage has been done, has to do necessary steps to prevent the threat or minimalize consequences and notify government management organ. The

duty to take steps is not mandatory when there is a hazard of life or health of themselves, or related person (Zákon č. 17/1992 Zb., o životnom prostredí).

Individual or legal person responsible for ecological damage is obligated to either restore natural functions of violated ecosystem or its part, or compensate in other way (refill), or pay for the recover. It is possible to use more of these possibilities at the same time. Individual and legal persons who are obligated to measure some type of emission in the air or water or monitor other effects are compulsory to publish these measurements and monitoring. The type of pollution has to be clear from the published data. The obligation to inform community immediately arises when the individual or legal person caused operational accident (crash), fire or a car accident (Zákon č. 17/1992 Zb., o životnom prostredí).

### **1.3 Law No. 300/2005 Criminal code**

Criminal codex adjusts the basis of criminal responsibility, types of punishment, types of protective measures, their saving and merits of crimes. Specifically it states the length of punishment for concrete crimes against environment. Crimes stated in this law are (Zákon č. 300/2005 Zb., trestný zákon):

- threat or damage of environment,
- unjustified waste disposal,
- unjustified emission of polluting material,
- breaching of water and air protection,
- breaching of plant and animal protection,
- breaching of tree and shrub protection,
- spreading of contagious diseases of animals and plants,
- genetically modified organisms leak,
- poaching.

### **1.4 Law No. 301/2005 Criminal order**

This is the most important law for criminalistics. It defines general conditions for initiating and proceedings of accusations. The purpose is to adjust procedures of organs active in criminal proceedings and courts so that crimes can be identified and offenders according to the law justly punished (Zákon č. 301/2005 Zb., trestný poriadok).

### **1.5 Law No. 245/2003 about integrated prevention and control of environmental pollution, later adjusted by law No. 532/2005**

This law regulates integrated prevention and control of environment pollution, rights and duties of industrial company operators, actions of public organs and informational system. Integrated prevention and control of pollution (further as IPCP) is a set of measures for prevention of pollution, lowering of emissions released in the air, water and soil, for limiting amount of waste and for evaluation and disposal of waste. The goal is to achieve high environment protection (Zákon č. 245/2003 Zb., o integrovanej prevencii a kontrole znečist'ovania životného prostredia).

This IPCP is aimed at industrially created pollution, but not at pollution created by (Zákon č. 245/2003 Zb., o integrovanej prevencii a kontrole znečist'ovania životného prostredia):

- radioactive material and ionizing radiation in the environment,
- implementing genetically modified organisms into the environment,
- companies specialized in research, development and examining of new products and manufacturing processes,
- mobile sources of pollution.

Pollution is direct and indirect implementing of materials, vibrations, heat or noise by human activities in the air, water of soil, which can be bad for human health, can negatively affect environment quality or physical possession. Material is a chemical element, his compounds except radioactive materials and genetically modified organisms (Zákon č. 245/2003 Zb., o integrovanej prevencii a kontrole znečist'ovania životného prostredia).

### **1.6 Law No. 223/2001 Waste act and modification and completion of some laws**

The following law edits activities of organs with state management and villages, rights and duties of individual and legal persons while preventing waste inception and waste disposal, responsibilities for breaching these duties in waste management field (Zákon č. 223/2001 Zb., o odpadoch).

This legislation is beside the point of these matters (Zákon č. 223/2001 Zb., o odpadoch):

- dung, straw or other natural agricultural or silvicultural material, which is not dangerous and is used in agriculture, silviculture or for energy production from these

materials in processes or ways, which do not deteriorate environment or endanger human health,

- air polluting matters disposal,
- disposal, fixation, transport and permanent deposition or carbon dioxide into geological environs according to individual decree,
- noble metal waste disposal,
- radioactive waste disposal,
- eliminated explosives and remains of explosives manufacture disposal,
- electric and electronic devices disposal,
- batteries and accumulators disposal,
- soil (in situ), including unexcavated contaminated soil and building perpetually joined to the ground,
- uninfected soil and other naturally occurring material dug out during building works, if the material is going to be used in its natural state on the place, where it was dug out,
- sediments transported within surface waters for water management purposes, for reduction of flood effects, for re-cultivation of soil, if these sediments do not expose dangerous attributes.

If not stated in individual regulations, this law refers to (Zákon č. 223/2001 Zb., o odpadoch):

- logging residues disposal,
- deposition of waste on slime pits,
- disposal with dead animals or their parts, which died by other way than killing, including animals killed for eradication of epizootic diseases purposes, which are defused by special regulation,
- side animal products disposal, exceptions are those given to be burnt,
- waste from packages disposal,
- scrap waters and special waters disposal.

### **1.7 Law No. 220/2004 about protection and usage of agricultural soil and about change of law No. 245/2003 about integrated prevention and control of environmental pollution**

This law states (Zákon č. 220/2004 Zb., o ochrane a využívaní poľnohospodárskej pôdy):

- a) protection of features and functions of agricultural soil and securing her perpetually sustainable maintenance and agricultural usage,
- b) protection of environmental functions of agricultural soil, which are: biomass production, filtration, neutralization and transformation of matters in nature, sustaining ecological and genetic potential of living organisms in nature,
- c) protection of agricultural soil measurement from illegitimate land grabbing for non-agricultural usage,
- d) progress in change of land type and progress in agricultural land withdrawal from non-agricultural purposes,
- e) sanctions for breaching responsibilities stated in this act.

### **1.8 Law No. 364/2004 Code about water and change of law No. 372/1990 about offenses**

This act defines water as vital element of environment to be irreplaceable raw material and natural asset having a strategic meaning for national safety and which shortage can cause life and health threatening situation, or threaten national general functions fulfilment (Zákon č. 364/2004 Zb., o vodách).

The code creates the conditions for (Zákon č. 364/2004 Zb., o vodách):

- universal protection of waters including water ecosystems and from waters directly dependent ecosystems in landscape,
- preservation or improvement of water status,
- purposeful, efficient and perpetually sustainable waters usage,
- rives-basin management and improvement of environment quality and quality of its elements,
- decreasing of negative effects of floods and droughts,
- securing of functional water flows,
- safety of water constructions,

- water usage considering her strategic and safety meaning for the country, for social interests, food security of the state.

It also defines rights and commitments of individual and legal persons to waters and immovable assets connected to it in protection, useful and economic usage, authorizations and duties of state water management organs and responsibilities for breaching the obligations according to this law. This law as well adjusts transport conditions of water removed from water systems from the Slovak Republic over borders for personal consumption (Zákon č. 364/2004 Zb., o vodách).

### **1.9 Law No. 137/2010 Air act**

This act adjusts the goal in air quality, valuation of air quality and information of public about the quality of atmosphere, rights and duties of persons for protection of air from bringing polluting materials into air by human activities and for reasons reduction and minimalizing of air pollution effects. It also states the conditions of justified measures, calibration, exams and accordance inspection, actions of state management air protection organs. This act is not related to emitting radioactive materials into the atmosphere (Zákon č. 137/2010 Zb., o ovzduší).



## 2 TYPES OF ENVIRONMENTAL CRIMINALITY

Typology stated in this bachelor thesis is based mainly on the specification of crimes in the Criminal code. It was adapted according to the needs of correct classification for further analysis of environmental criminality in Senica district. Every type is at first defined and then explained in more detail. It is essential to realize that all types are linked with each other. The types of environmental crimes stated in this thesis are (Zákon č. 300/2005 Zb., trestný zákon):

- damage of environment,
- unjustified waste disposal,
- unjustified emission of polluting material,
- breaching of water and air protection,
- breaching of plant and animal protection,
- poaching.

### 2.1 Damage of environment

According to § 300 of the Criminal code, damage of environment is act causing any harm to the environment by breaching juridical regulations of binding force about protection of environment or about protection of natural resources. According to the seriousness of the act the code states length of punishment. This can include very wide field of deeds. By looking at the following chapters we can figure out which deeds are not included. Every other deed damaging environment that cannot be classified in other chapter is, is automatically added to this chapter.

### 2.2 Unjustified waste disposal

Under this term we can assume that unjustified waste disposal is any waste disposal breaching the rules of waste separation and removal. In accordance to the materials in some cases it can be classified as unjustified emission of polluting material. „*Europe Union is trying to improve waste disposal in members' state, which have insufficient policy in the field of waste economy. To do so it uses economical tools, such as dump taxes, pressure on producers to accept the goods back at the end of its life cycle, and waste fees for citizens* (Prevenencia tvorby odpadu a nakladanie s odpadom, 2015, p. 1).” The EU also requests waste prevention programs from Member States, which should be based on best practice,

with enough transparency of their production. This is supposed to ensure a more integrated approach to the implementation of waste prevention (Prevenca tvorby odpadu a nakladanie s odpadom, 2015).

### 2.2.1 Illegal dumps

Illegal dumps are the biggest issue from the field of unjustified waste disposals threatening environment. The impacts on the environment can be measured, and have been measured in Slovakia mainly by prof. P. Eliáš. He also led many bachelor theses concerning the impacts of wild dumps on the diversity and phytodiversity, but they were located only in eastern Slovakia (Pauková, 2011). The matter of impacts on phytodiversity is very interesting, as well as the discipline of phytodiversity itself. It represents all aspects of diversity in relation to plants, not animals. „*This includes all levels of diversity from genes to community. The search for causing effects, often considers abiotic factors, so that phytodiversity is directly connected with ecological diversity* (Phytodiversity in Relation to Scale, 2009, p. 11).”

The phytodiversity studies results show that the appearance of ruderal communities hide unaesthetic and insanitary substratum on the dumps and near them. Another indicator of negative influence is the ratio of synanthropic and autochthonous species. This ratio reveals the forcing out of native organisms (Pauková, 2011).

## 2.3 Unjustified emission of polluting material

This includes emission of materials while breaching regulations of binding force into any natural resource. Such pollution can have far-going impact and consequences for environment in presence and future, according to venomousness and nature of released material. Some of the most toxic materials, their attributes and effects are described in the second part of this bachelor thesis.

## 2.4 Breaching of water and air protection

Into this type of crimes is included any breaching of laws protecting surface and ground water and air, and causing degradation of any type and size (Zákon č. 300/2005 Zb., trestný zákon). Political protection of national surface waters also involves the protection from agricultural nitrates. The government as well adjusts hold, manipulation and application of natural and industrial fertilizers, and modifies Right agricultural praxis codex. This

codex ensures acceptable level of nitrate pollution. Regarding to ground waters, the government determined threshold values to secure human and environmental health. There is a list of various matters, which can change or add more. It can change the matters or values according to the concrete needs. (Zákon č. 364/2004 Zb., o vodách). In the air protection legislation there is stated stationary or mobile source of pollution. To guarantee admissible level of air pollution, government stated emission limits, national emission tops, emission quotes and technical demands and conditions of running stationary sources (Zákon č. 137/2010 Zb., o ovzduší).

## 2.5 Breaching of plant and animal protection

Under this type of crime is meant breaching regulations of binding force like protection of nature and land and other regulations of binding force for protection of exemplars by regulation of their trade. That would mean for a protected plant to be damaged, destroyed, torn or dug out or collected, or that its biotope was damaged or destroyed. Moreover, protected animal would be killed, injured, caught or transported, or its biotope and habitat would be damaged or destroyed. Next a tree or shrub would be damaged, destroyed or cut down and lastly animal or plant were threatened (Zákon č. 300/2005 Zb., trestný zákon).

There are more problems causing threat to various species, most of them anthropological. They can be sorted out into five wide groups (Eliáš, 2011):

1. Changes of effective population size – different ways of human acts, from collecting of plants for healing or decorative reasons, to destroying in other human aspects.
2. Changes in population related with its economic usage – for example deforestation, usage of fungicides, new practices in agriculture or changes in economic utilization of meadows and pastures.
3. Human-related changes in ecological biotope condition – synthetic fertilizing, polluting and water eutrophication, air polluting with industrial waste products, increase of hygienic level of environment in villages.
4. Changes induced by factors other than human – climate change, natural succession changes and epidemic plant diseases.
5. Unknown reasons.

## 2.6 Poaching

Under the term of poaching we understand unjustified intervention into the rights of huntsmanship or fisherman's by hunting wild animals or fish without permission, or by hunting wild animals or fish in the time of their protection or in prohibited ways. A person can be punished also for doing such action by mass effective or despicable way, or if the person is supposed to protect environment (Zákon č. 300/2005 Zb., trestný zákon).

An actual document (Kaštier, 2013) states that in the 2013 year 41 % of Slovakia was covered by forests. At the same time the population of deer on Slovakia has so far increasing tendency, 62.8 k in spring 2013. This situation can very easily cause rise of the poaching activities. The huntsmanship along with forestry try to solve and harmonize their interests and prevent poaching or misunderstanding. They determine the goal status of deer in every game area, the range in which can these associations move.

### 3 MONITORING

There are many ways to provide monitoring and control of the environment. It can be done on several levels. National, enterprise and personal, depending on the subjects that provides the monitoring. We can also sectionalize this checking according to each element possibly polluted and according to various ways of the control. To be able to imagine it better, here is a table showing these ways.

Table 1: Monitoring division

Subjects	Elements	Monitoring of elements
State	Air	Law No. 137/2010 Cod., about air
Legal person	Soil	Governmental decree 7/2000
Individual person	Water	Notice No. 221/2005 Cod., about water monitoring

Compiled by author

#### 3.1 Subjects

As stated in previous section, monitoring is split according to subjects into three levels, national, enterprise and personal. They are furthermore stated in proper law. On the national level the monitoring is done by Ministry of environment for each year in a report about the conditions of environment on the territory of the Slovak Republic. The data are collected from involved organs of state administration and the discoveries are further publicized at the Ministry of environment, Slovak inspection of environment and as well on regional authorities of environment and on district authorities of environment (Zákon č. 17/1992 Zb., o životnom prostredí).

The enterprise and personal level can be taken as one, forasmuch as both of them are focused on entrepreneurship. These subjects, individual and legal person, have the duty to measure the amount or effect of aimed released matter of some kind according to individual regulations or published decisions. Enterprise or person is obligatory to announce results of these measurements and observation in generally understandable form and on generally easily accessible place. From the results and observing should be obvious what kind of environmental pollution the facility caused and in what relation it has to legal or allowable amount (Zákon č. 17/1992 Zb., o životnom prostredí).

### 3.2 Elements

Air is protected by ministry, inspection, district authorities in region domicile, district authorities and by each village. Acceptable pollution level is stated by emission limits, technical requirements for running stationary sources, national emission ceilings and emission quotas. Every one of these organs can toughen up emission limits and/or technical requirements and running requirements. It is possible that the limits can be breached by the operation of neighboring state. If so, the ministry can offer talks to that specific Member State with the goal to eliminate the violation (Zákon č. 137/2010 Zb., o ovzduší).

The organs protecting soil are the Ministry of agriculture and countryside progress of the Slovak Republic, neighborhood land office in region domicile and neighborhood land office (Zákon č. 220/2004 Zb., o ochrane a využívaní poľnohospodárskej pôdy). Monitoring of soil in the Slovak Republic is done by Research institute of pedology and soil protection (further as RIPSP), established by Ministry of agriculture and countryside progress of SR. They publish annual report every year since 2002, analyzing for example values of polluting and health hazarding materials in various products or the impact of different plants growing (Výročná správa o činnosti NPPC ZA ROK 2014, 2015).

Detection of amount, regime, quality of surface and ground waters and influence affecting the quality of these waters through legal person entrusted by Ministry of environment, and in case of surface waters also through manager of aquiculturing important water flows (Zákon č. 364/2004 Zb., o vodách). As the first organ of the monitoring of amount and quality of surface and ground waters is set by Slovak hydrometeorological institute (further as SHMI). The sampling of waters and sediments and harmful material analysis is done by Research institute of water management. Next to the last is State geological institute of Dionýz Štúr analyzing and controlling of waters and sediments. Lastly the administrator of aquiculturing important water flows doing water withdrawals and analyses of surface and waste waters (Vyhláška č. 221/2005 Zb., o zisťovaní výskytu a hodnotení stavu povrchových vôd a podzemných vôd, o ich monitorovaní).

### 3.3 Monitoring of particular elements

To control air conditions, entrusted organization is supposed to establish and run monitoring measurement system for constant air pollution level measurements. It is obligatory for

it to secure measurement of ozone concentrations or ozone precursor substances (Zákon č. 137/2010 Zb., o ovzduší).

The soil monitoring should be a complex system of stations, which control proxy of all general representative soil materials, geological substrata, climate regions, contaminated or relatively “clear” areas. This creates the network of 318 monitoring stations on agricultural lands and lands above upper edges of forest. The legislative basis of this monitoring is the Governmental decree 7/2000, which approved the Concept of completion of complex monitoring and informational environmental system in SR, including soil (Kobza, 2010).

To properly monitor the conditions of ground waters, it is essential to concentrate on (Vyhláška č. 221/2005 Zb., o zisťovaní výskytu a hodnotení stavu povrchových vôd a podzemných vôd, o ich monitorovaní):

- a. *„capacity of ground water flow,*
- b. *water level of ground water,*
- c. *pressure on bore head by artesian water,*
- d. *potential of thermo energy by geothermal water,*
- e. *natural and usable amount of ground water,*
- f. *physical, chemical and microbiological attributes of ground water.”*

To control data about amount and quality of surface water, it is essential to focus on physiogeographical conditions of riverside, hydromorphological characteristic of surface water shapes, amount and quality of atmospheric rainfall and snow cover, and so on (Vyhláška č. 221/2005 Zb., o zisťovaní výskytu a hodnotení stavu povrchových vôd a podzemných vôd, o ich monitorovaní).

## **II. ANALYSIS**



## 4 METHODS AND DATA

This chapter describes the methods of environmental criminality analysis used in this bachelor thesis. It is important to state that it is partly worked-out with the help of District directorate of police forces (further as District directorate of PF).

First step is summary of legislation referring to environmental and criminalistics matter, following with collection of all needed data, which come from Environmental office in Senica and District directorate of PF in Senica. These data include environmental crimes from years 2013, 2014 and 2015, analysed in this chronological order. Concrete years were chosen to achieve the most actual analyses of such criminality in Senica district. The data have character of information about the type of environmental crime, approximate place of realization of such crime and in most cases also monetary quantification of environmental damage. (Williams, 2014)

Next step is to point on the toxicological impact of certain matters, which get in contact with environment and are the result of illegal actions. In the thesis were used general methods of analysis and synthesis of data. The data have been sorted out according to the legislation to environmental crimes and crimes against environment which legislatively do not belong to environmental criminality. Then the data were evaluated according to most frequent places to hold environmental crimes (further as EC), which EC occur the most according to the division done in previous part of this thesis. (Kara, 2015)

To the investigation specified in previous paragraph are added maps with locations of EC. The last step is the valuation of current investigation practices, its potential deficiency and according to this also suggestion of possible improvement.

## **5 DISTRICT SENICA**

This district was chosen because of its affecting relationship with author and interest to analyze such state of district. Here is a look at its location, history, inhabitants and other information. This also involves economic opportunities, culture and in the end the environmental conditions.

### **5.1 Location**

This district is located in the west of the Slovak Republic and belongs into Trnava region. It borders with 4 other districts and on its west side also with two countries. From the north side it is Skalica district, on northeast with Myjava district, on east with Trnava district and on south with Malacky district. On its northwest it borders with Czech Republic and on southwest with Austria. The extent of district is 683,6 km<sup>2</sup> with 288,2 km<sup>2</sup> of nonfarm land and 395,4 km<sup>2</sup> of farmland. Usage of the whole districts land can be seen in appendices (Informačná databáza okresu Senica, 2009).

## 5.2 Layout

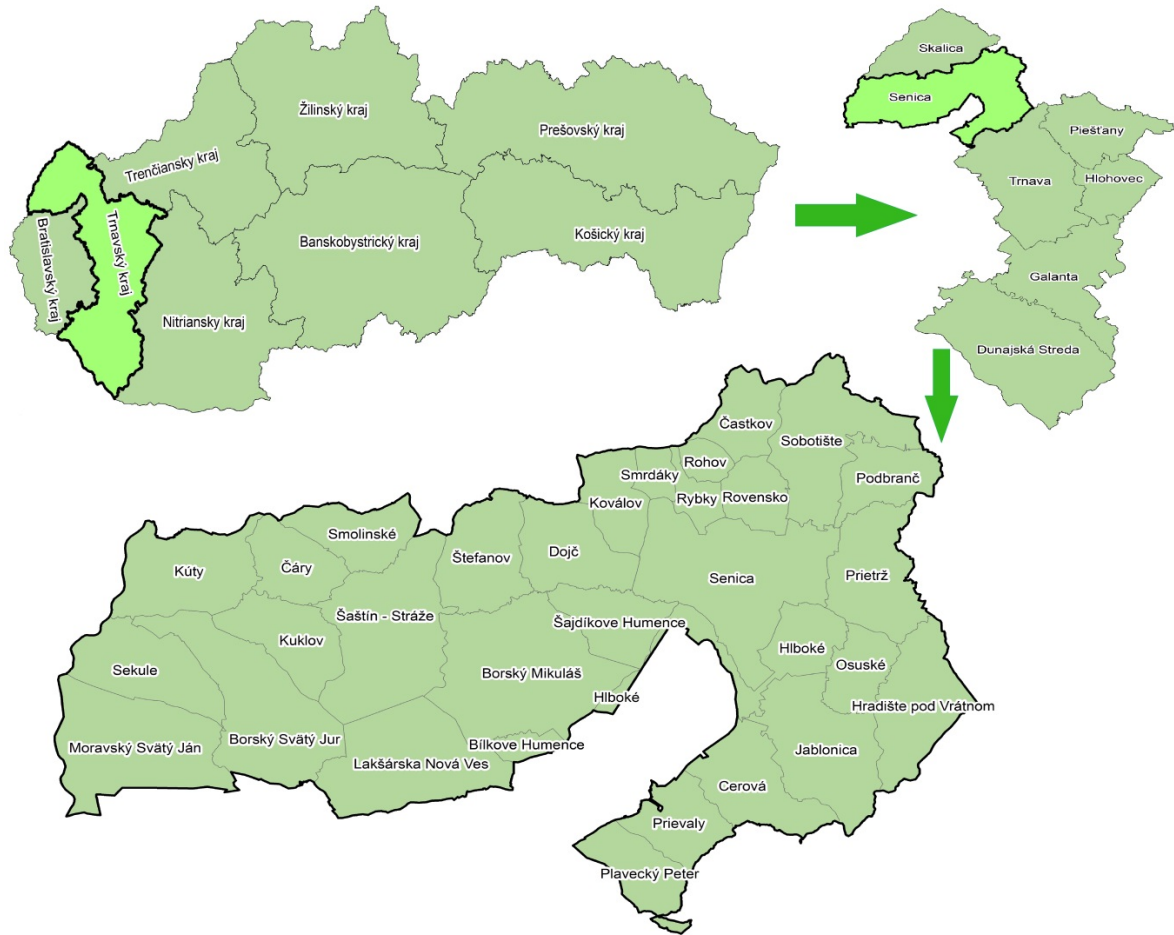


Figure 1: Location and layout of Senica district

Data source: Digital Map Work SVM 50; Compiled by author

Senica district is located in Trnava region, with 29 villages and 2 towns: Šaštín-Stráže, and district town Senica (Senica: PSČ, ŠPZ, počet obyvateľov atď., 2013).

## 5.3 Inhabitants

The archaeological proofs of prehistoric inhabitation can be found in areas of Čáčov, Prieťrž, Sobotište and Hlboké. There have been found some of the stone tools used in younger Palaeolithic approximately from 32 thousand years B. C. More intense inhabitation began in younger Bronze Age in areas of Smrdáky and Čáčov (Informačná databáza okresu Senica, 2009).

District had 60 504 inhabitants by the 2011 year, that is 88 inhabitants per km<sup>2</sup>. According to social statistics there are approximately 32 thousand habitants who are economically

active. The rest are people on parental leave, students or retirees (Informačná databáza okresu Senica, 2009). The ratio of women to men is almost even (51 % of all are women). The average age in Senica district is 38.4 years, 39.75 for women and 36.98 for men. The unemployment in this district is highest beside other districts in this region, but lower than that of entire Slovakia (Nigrovičová, 2010).

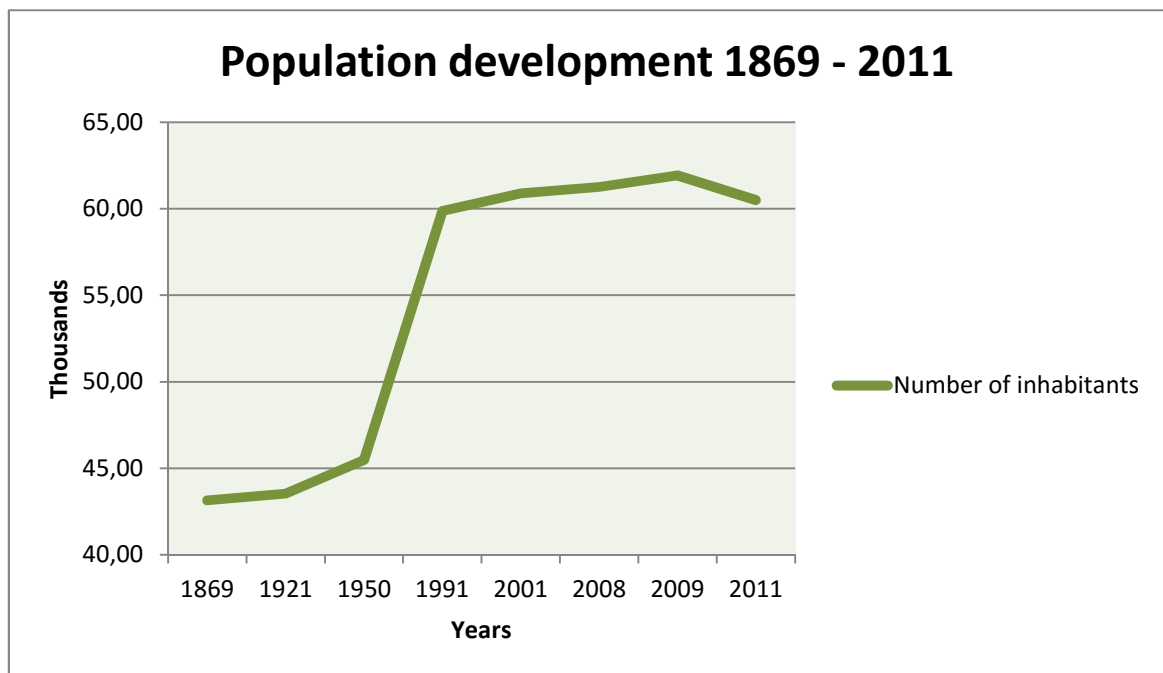


Figure 2: Population development in district Senica between years 1869 – 2011

Data source: Retrospektívny lexikón obcí ČSSR (1978), SODB (2001), ŠÚSR – Mestská a obecná štatistika, census 2011; Compiled by author

Table 2: Population development in years 1869 – 2011 introduced with base and chain indexes

Year	1869	1921	1950	1991	2001	2008	2009	2011
<b>Number of inhabitants</b>	43 144	43 536	45 489	59 873	60 891	61 265	61 931	60 504
<b>The base index</b>		1,01	1,05	1,39	1,41	1,42	1,44	1,40
<b>The chain index</b>		1,01	1,04	1,32	1,02	1,01	1,01	0,98

Compiled by author

Both base index and chain index represent the progress in certain matter. In this one, they describe the change of population number. The base index shows how much the number changed in comparison to the first value, and that is in this case the year 1869. In Senica district number of inhabitants grew by 1 % in the period 1869 – 1921. In the following years the population grew more and more, until 2011. The population in 2009 was bigger by 44 % compared to 1869, but in 2011 only by 40 %. The deduction is that 4 % of inhabitants died or left the district in those 2 years.

The chain index represents how much the population grew in comparison to the year before, not the first year. The change in first two values is the same, and in the next years it shows us the progress in last two years. Even if the population has grown a lot but its growth stagnates, the numbers are small, and can create even negative values. This we can see by the 2011 year, when the population compared with the 2009 year reduced by 3 %.

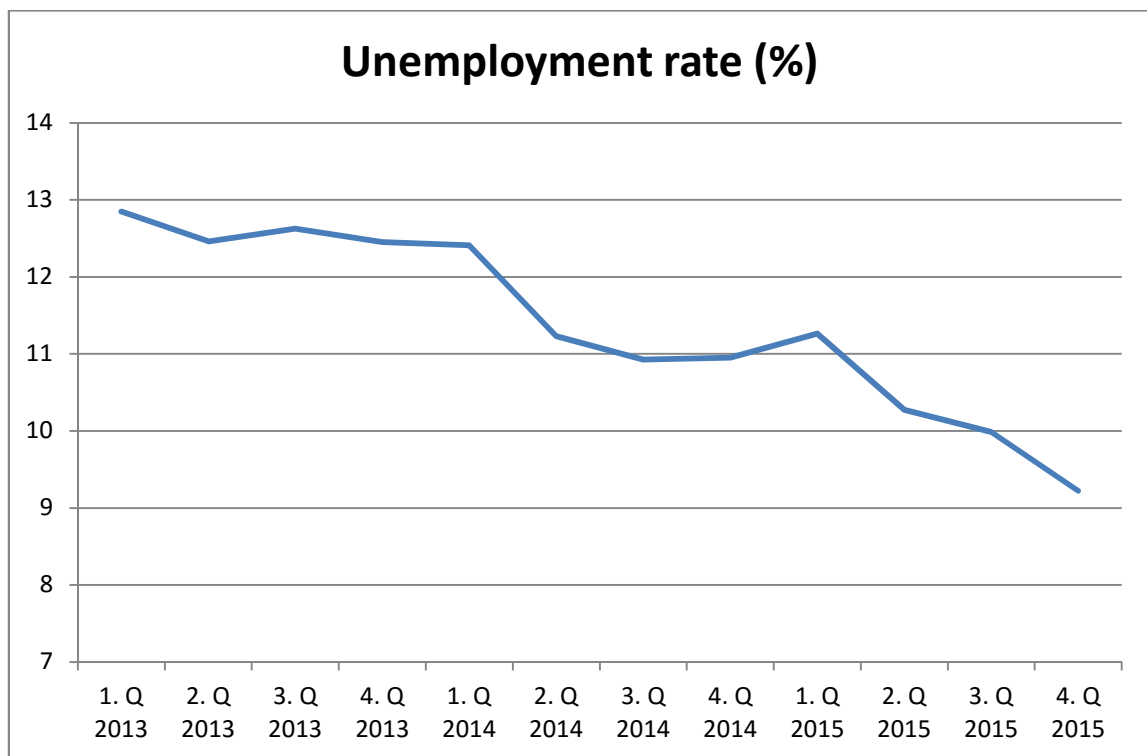


Figure 3: Senica district unemployment rate by quarters in years 2013 – 2015 (%)

Data source: Headquarters of work, social things and family; [www.upsvar.sk](http://www.upsvar.sk); Compiled by author

According to this graph the unemployment mostly declined throughout the 3 years. It is very likely that this is affected by population number change. In the view of the population

development it is possible the unemployment lapsed because of economically non-active inhabitants that might have moved out of district, or died.

The unemployment rate was approximately 2 or 3 % higher before the studied period. In that time we can see a drop in population number. We can assume that some of the inhabitants moved from the district because of high unemployment.

### 5.3.1 Employers

Majority of employers is situated in district town Senica. To the biggest companies belong: Agrostav, Arcelor Mittal Gonvarri SSC Slovakia, ArcelorMittal Construction Slovakia, DELPHI Slovensko, DEMA, Kufner Textil, Noble International Senica, OMS or Slovord (Senica: PSČ, ŠPZ, počet obyvateľov atď., 2013).

## 5.4 Economy

One of the most developed parts of economy is agriculture. "Sugar-beet, wheat and barley is grown, in higher areas there are rye, potatoes and fodder plants. Major is also fruit growing and on private lands even vine grape production is successful. With animals it is mostly beef-cattle stock, which are kept by existing agricultural companies for milk production, from which is significant Agricultural company Senica." (Nigrovičová, 2010)

Very important in the district is industry, which was also mostly mentioned in paragraph higher as the biggest employers in Senica district. The dominant company is the one producing electric and optical devices, then chemical threads production and food industry. In district is also significant metal industry, and with smaller influence building industry. During these last years in a part of Senica town has been developed an industry park, which takes in more and more big companies (Nigrovičová, 2010).

The services within the district are not very developed, but there are many providers of various services and the town invests into this part of its economy. Very well developed are the services in social services houses and facilities offering help in cases of life endangering, such as dog shelter, dormitory or emergency housing. On the other hand, the town does not have enough financial sources to repair and reconstruct some buildings. There are also very few job opportunities for disabled people (Vrlová, Poláková, 2012).

## 5.5 Culture

The most known is Basilica of Sedembolestná Panna Mária, solemnly blessed in 1764. Among already mentioned ruins of castles there is Podbranč with its ruin of Branč, build in years 1251 – 1261 as protection of business journeys. Next is Korlátko built in half of 13th century as defence of Hungarian empire western borders. Another ruin is of Ostrý Kameň castle, built probably by the end of 12th century to protect areas on Czech path (Informačná databáza okresu Senica, 2009).

District is known with its recreation areas, such as Kunov dam near Senica, recreational crib area Gazárka in Šaštín-Stráže and Tomky near Borský sv. Jur. It is also known thanks to the health spa Smrdáky, specializing in dermic and rheumatic problems treatment, and also in traumatogenic states treatment (Informačná databáza okresu Senica, 2009).

Tourism is mildly developed, the main centre is Šaštín-Stráže town, which is national pilgrimage place and has also build recreation centre close to its mining created lakes. There is also well known spa in Smrdáky, and ruins of castles (Nigrovičová, 2010).

## 5.6 Environment

Geomorphologically the district belongs mostly into Lowland Záhorie and it can be divided into Lowland Bor and Chvojnica highlands. Mineral resources are very little, with small areas used for oil production and lignite mining, but in some places also sand mining. There are a few stone quarries too, used for stone and gravel (Nigrovičová, 2010).

Pedosphere is made of proluvial-fluvial sediments, in some places with lake and swamp deposits. That means very clayed fine-grained sandstone and clay sands. Most of the soil has got character of brown soil or sand mainly in areas of Lowland Bor (Plašienka, Mikuš, 2010).

Atmospheric conditions classify district as warm area with mild winters on west side, and on east side as area of mildly arid area, and in higher places mild humid area. According to humidity it is parted as mild humid and mild arid locality. Average annual temperature is around 10 °C, but west is still warmer by 1 °C. Air polluters are mostly various incinerators located in district. According to measurements in the town Senica, the dustiness is little higher because of soil erosion and industry (Okres Senica, 2005).

Hydrosphere is created mostly by smaller streams and the whole area belongs to river-basin Morava. Main rivers are river Myjava with important feeder Teplica. Only 40 % of consumed potable water is actually gained on territory of district. There are lots of lakes and fishponds, but also dams for water accumulation: Kunov, Koválov; and the smaller ones: Petrova Ves or Radošovce. Belonging to hydrosphere is also the mineral spring in Smrdáky, containing high amount of sulphur (Nigrovičová, 2010).

Biodiversity is lively, both fauna and flora are represented by big amounts of species. Flora has lots of trees, mainly oak woods, beech woods but also locust trees. Fauna is occupied in big measures by deer, such as roebucks, wapitis or fallow-deer. Further it is wild-boar and lots of reptiles and bats, woodpeckers or sparrows (Danadová, 2014).

According to environment protection, there are 22 Natura 2000 protected areas. There are also 3 protected landscape areas, two protected areas, two national natural reservations, one natural reservation and 5 natural monuments. Protected species is one from fauna, and that is hoopoe. From flora protected species are scarlet oak and silver linden (Krumpolcová, 2006).



## 6 TOXICOLOGY

This chapter has been included because it represents the part of EC which is very hard to observe, solve and is not easily calculated. The substances which are described in this chapter are mostly prohibited in the Slovak Republic, but despite that they still appear in environment. The offenders are almost untraceable, but belong to EC.

The chapter contains the summary of the most important actions and impacts of toxic matters and how they react with environment. Only those substances were chosen which are most likely to get in contact with nature. Selection was done according to logical assumption and likelihood of their exposure. The main source of intoxication with these matters comes from poorly secured dumps, illegal dumps or burning processes.

Substances in this chapter:

- Bisphenol A (BPA)
- Dioxins
- MUSK compounds
- Organochloric pesticides
- Phthalate
- Polybrominated fire retardants
- Polychlorinated biphenyls (PCBs)
- Polycyclic aromatic hydrocarbons (PAHs)

These substances are for example stated also in Slovak Law No. 401 from 1998 year about charges for air polluting. They are membered in various tariff classes, while class No. 1 is with the highest fee. One of them belongs to first tariff class (from group of PAHs), a substance belonging to dioxins is classified in second tariff class. Biphenyl substances, brominated and chlorinated compounds are integrated in third tariff class. Substance belonging to MUSK compounds belongs to fourth tariff class. That means that even according to the government these substances are dangerous.

### 6.1 Characteristic of selected substances, their impacts and sources of pollution

All of these substances are classified as POPs – persistent organic pollutants. They are persistent – have the ability to stay unaltered in the environment for very long time, they trav-

el long distances and sometimes they create in reaction with its surroundings even more toxic compounds.

The annual reports of Ministry of environment about the condition of Slovak environment in the 2013 and 2014 show the development of this specific group of pollutants. The reports evaluate progress in the period between years 2000 - 2012 and 2000 – 2013. POPs which are monitored are PCDD/PCDF (dioxins), PCBs and PAHs. (Správa o stave ŽP SR v roku 2013, 2014; Správa o stave ŽP SR v roku 2014, 2015)

Table 3: POPs emissions change in Senica district (%)

Substance	PCDD/PCDF	PCB	PAH
2000 – 2013	-50,1	+1	+5,9
2000 - 2014	-55,8	+6,2	+47

Data source: Ministerstvo životného prostredia SR; Compiled by author

The table shows that emissions of dioxins (PCDD and PCDF) have been slowly decreasing during the observed period. The quantity of polychlorinated biphenyls in the environment, on the contrary, grew. PAHs amount grew too, but even more than the PCBs. That means the sources producing PCBs and PAHs have redoubled, increased production or released these substances in other way.

### 6.1.1 Impacts of selected substances and sources of pollution

Table 4: Review of impacts and pollution sources of selected substances

Substance	Impacts	Sources
<b>Bisphenol A (BPA)</b>	Endocrine disruptor, food chain cumulating	Waste dumps, waste water sediments, illegal dumps, burning, building materials
<b>Dioxins</b>	Carcinogenic, teratogenic, endocrine disruptors, type 2 diabetes, ischemic heart disease, acne-like skin	Improper waste burning, factories, natural fires and other
<b>MUSK compounds</b>	Endocrine disruptors, carcinogenic, teratogenic	Waste dumps, waste water sediments, wrong usage, illegal spill-

		ing, illegal dumps
<b>Organochloric pesticides</b>	Endocrine disruptors, accumulating in fat tissues and food chains, mutagenic, neurotoxic	Illegal dumps, excessive usage of pesticides
<b>Phthalate</b>	Carcinogenic, mutagenic, cause cardiovascular diseases	Waste dumps, illegal waste dumps
<b>Polybrominated fire retardants</b>	Endocrine disruptors, accumulating in fat tissues and food chains, carcinogenic, neurotoxic, mutagenic	Illegal dumps, illegal waste burning, burning, heating up, usage
<b>Polychlorinated biphenyls (PCBs)</b>	Accumulating in fat tissues and food chains, mutagenic, carcinogenic, hepatotoxic	Bad waste disposal, waste water sediments, illegal dumps, leaking from devices containing PCBs
<b>Polycyclic aromatic hydrocarbons (PAHs)</b>	Carcinogenic, mutagenic, teratogenic	Fires, volcano eruptions, burning processes, releasing from products containing PAHs

Data source: Pokoj, 2010; Environmental agents: Bisphenol A, 2016; Environmental agents: Dioxins, 2016; Blahová, 2008; OSPAR Commission, 2004; Organochlorové pesticidy, 2014; Environmental agents: Pesticides, 2015; Integrovaný registr znečišťování, DEHP; Bromované spomalovače hoření, 2014; Integrovaný registr znečišťování, PCB; Toxic substances portal: PCBs; Polycyklické aromatické uhlovodíky, 2014; Toxic substances portal: PAHs; Compiled by author

## 6.1.2 Characteristic of selected substances

This chapter describes the main features of selected substances. With every substance there is stated where they are used. That means whether they are manufactured and in what products they occur, or whether they are of natural origin.

### 6.1.2.1 Bisphenol A (BPA)

This matter is light brown and solid. This chemical is in the world manufactured in the biggest amount. It is chemically, thermally and mechanically very resistant. In the past it was used mostly in food industry (in various equipments), but also medicine, building in-

dustry, electronics or epoxy resin. After the discovery of its negative effects, the usage of bisphenol A reduced and almost vanished from food industry. (Pokoj, 2010; Environmental agents: Bisphenol A, 2016)

#### **6.1.2.2 Dioxins**

These substances are solid white or toneless crystals. They have never been manufactured on purpose and have no usefulness. They are mainly by-products in industry. Polychlorinated dibenzo-p-dioxins (PCDD) and polychlorodibenzofurans (PCDF) also belong to dioxins. (Environmental agents: Dioxins, 2016)

#### **6.1.2.3 MUSK compounds**

These are semi-volatile substances easily adsorbable on organic matters, accumulative. They are resistant against thermal degradation, photo degradation and biodegradation. They can be sorted into 3 groups according to the elements they join. These compounds can be found in cosmetics, detergents or aromatic products. (Blahová, 2008; OSPAR Commission, 2004)

#### **6.1.2.4 Organochloric pesticides**

Pesticides are certain agents or chemicals meant for killing of undesirable organisms. They are sorted into four groups: zoocides (killing animal pests), phytoncides (killing unwanted plants), fungicides (killing mushroom diseases) and bactericides. They have been used in the biggest amounts between 60's and 80's. Nowadays usage of most of them is prohibited. As organochloric pesticides belong to POP's they remain in environment but are also illegally used as the leftovers from previous years. (Organochlorové pesticidy, 2014; Environmental agents: Pesticides, 2015)

#### **6.1.2.5 Phthalate**

This is a group of approximately 40 various chemical substances with various properties and effects on the environment and human health. This group is manufactured in very big amounts. These substances pose the biggest threat to children and adolescents and they cumulate mainly in fat tissues. They are used as polymer softeners (mostly PVC), packaging materials, toys, medicinal aid, cosmetics, adhesives, ink, coating or sealing materials. They can wash out or evaporate from PVC products. 6 most common phthalate types are

completely prohibited in toys and objects for child care. (Integrovaný registr znečišťování, DEHP)

#### **6.1.2.6 Polybrominated fire retardants**

These substances contain various numbers of bromine atoms and are primarily fireproof or are supposed to slow down or reduce ignition and burning. They can be found in plastic, synthetic polymers, textile products, upholstery or electronic industry products. They are also used in building industry in various isolation material types. (Bromované spomalovače hoření, 2014)

#### **6.1.2.7 Polychlorinated biphenyls (PCBs)**

These substances are created by biphenyls variously substituted with chlorine atoms. They are highly thermostable, non-corrosive. Currently the production, usage and elimination are strictly observed. The usage was as thermal carriers in industrial devices, cooling oils in voltage transformers and other electric devices, but also as additional materials in colours and coatings, oils, lubes, waxes, glues, putties and many other products. They bio degrade very slowly. (Integrovaný registr znečišťování, PCB; Toxic substances portal: PCBs)

#### **6.1.2.8 Polycyclic aromatic hydrocarbons (PAHs)**

These substances are white or slightly yellow crystalline solid materials. They are able to create other compounds, and therefore can become even more carcinogenic. PAH are not purposefully manufactured (except for lab researches), but are included in many common products in the industry. Those are for example motor diesel oil, products made from gas tar, asphalt or other materials used during road constructions. (Polycyklické aromatické uhlovodíky, 2014; Toxic substances portal: PAHs)

## **6.2 Illegal dumps in district**

From the paragraphs above is logical that the biggest and main source of environmental intoxication are illegal dumps. As everywhere, there are a lot of these in the district. Included is also a map of these dumps. Each can be considered as source of these substances. Illegal dumps in this map are those which were reported even earlier. Those marked green are dumps which were already removed.

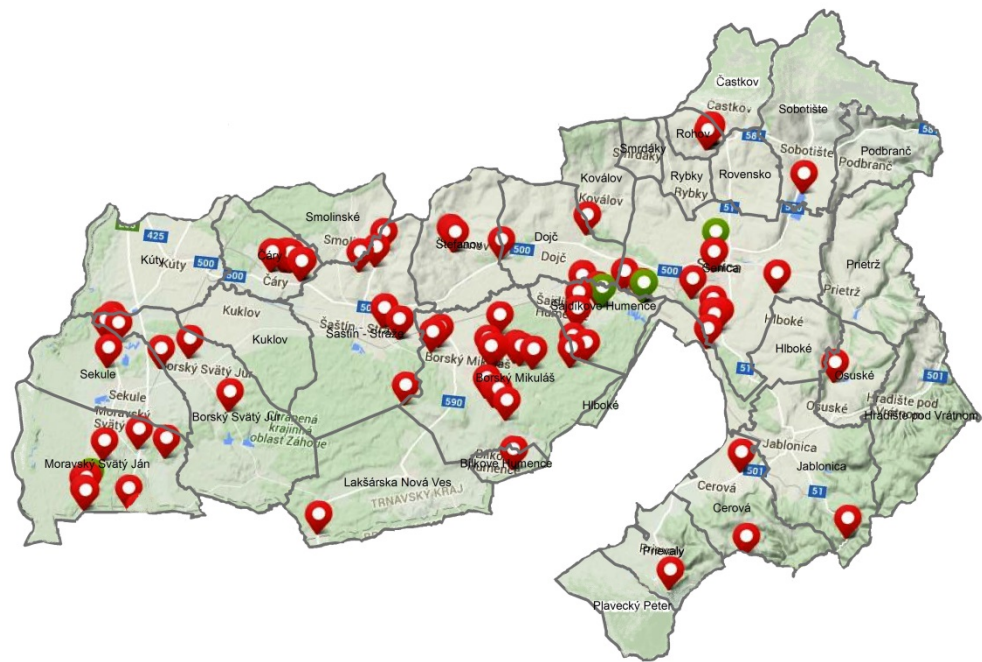


Figure 4: ILLEGAL DUMPS IN SENICA DISTRICT

Data source: www.trashout.ngo

## 7 ENVIRONMENTAL CRIMINALITY ANALYSIS

This chapter contains the analysis of environmental crimes located in Senica district throughout previous 3 years. Crimes were sorted according to the Criminal law, which states that the wood theft causing little damage is classified as theft, not environmental crime. Wood thefts causing more damage are classified as environmental crimes. This analysis is oriented on environmental crimes, but at the end of chapter are also analysed the wood thefts which caused little damage.

The crimes are also sorted according to the amount in each year, then according to the places and types. Types are stated those which occurred during the period in Senica district and are named according to the Criminal law with paragraphs:

- §300 as damage of environment,
- §302 as unjustified waste disposal,
- §302a as unjustified emission of polluting material,
- §305 as breaching of plant and animal protection,
- §306 as breaching of tree and shrub protection,
- and §310 as poaching (Zákon č. 300/2005 Zb., Trestný zákon).

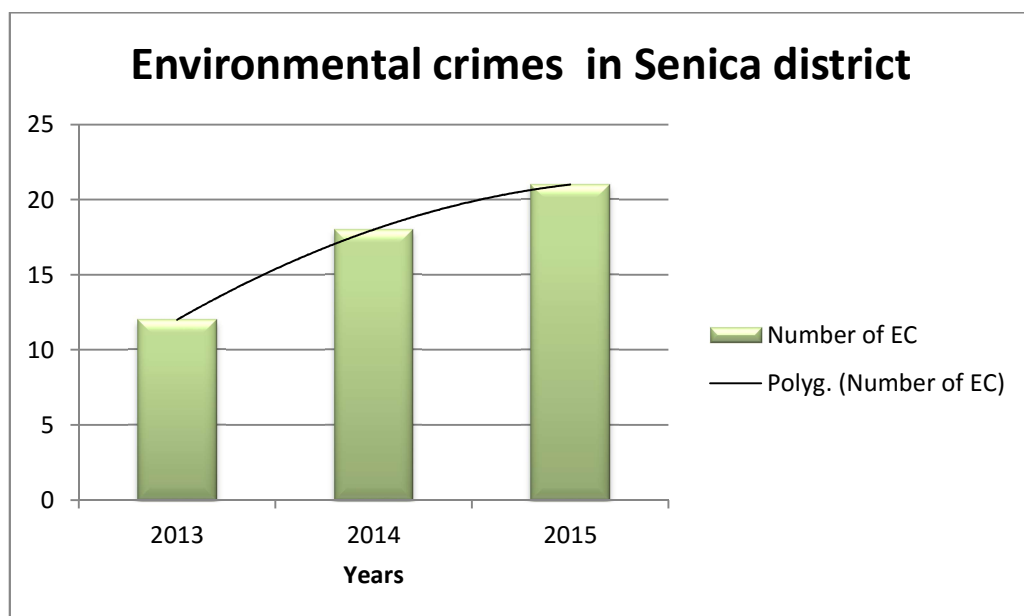


Figure 5: Environmental criminality development 2013 – 2015 with trend

Data source: District directorate of PF; Compiled by author

From the figure above we can see that the EC is rising throughout the observed period. In the year 2013 in Senica district 12 environmental crimes took place, in year 2014 it was 18

and in 2015 21 environmental crimes. This can be caused by inhabitants recognizing the difficulty in solving of certain crimes.

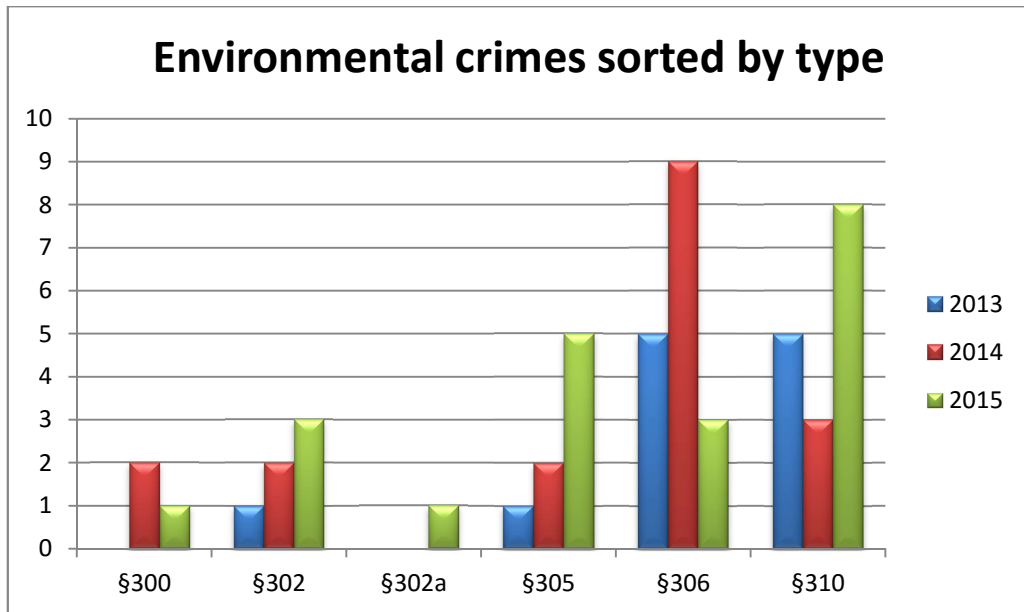


Figure 6: Environmental crimes development in Senica district 2013 – 2015

Data source: District directorate of PF; Compiled by author

This figure represents development of environmental crimes according to type of each crime. The biggest growth is seen in crimes related to breaching of tree and shrub protection and poaching. Cases dealing with unjustified emission of polluting material have the smallest amount of crimes documented within the surveyed years.

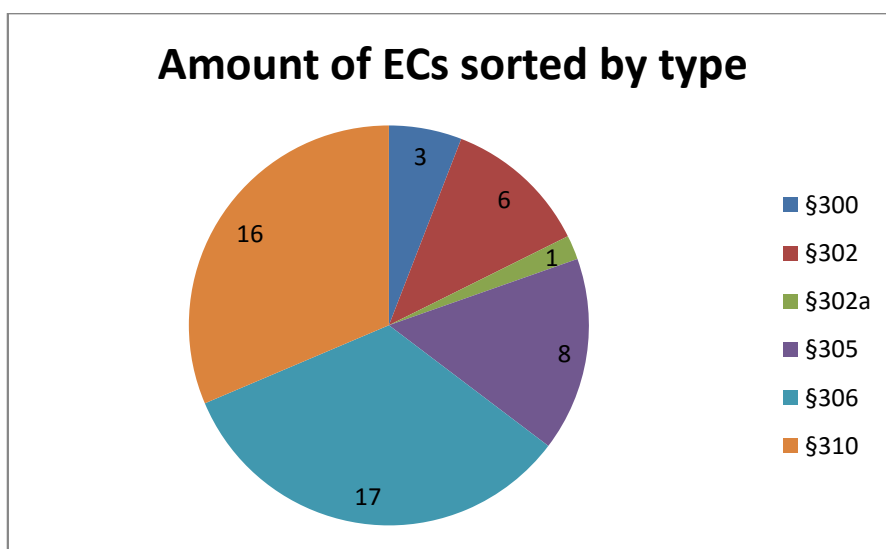


Figure 7: Environmental crimes for years 2013 – 2015

Data source: District directorate of PF; Compiled by author



In this figure is shown the ratio of specific crimes for all monitored years. In the first place with the highest amount of crimes are crimes breaching of tree and shrub protection. Second place are poaching crimes and third place is taken by crimes of breaching of plant and animal protection. It demonstrates insufficient protection and control of woodland and protected areas.

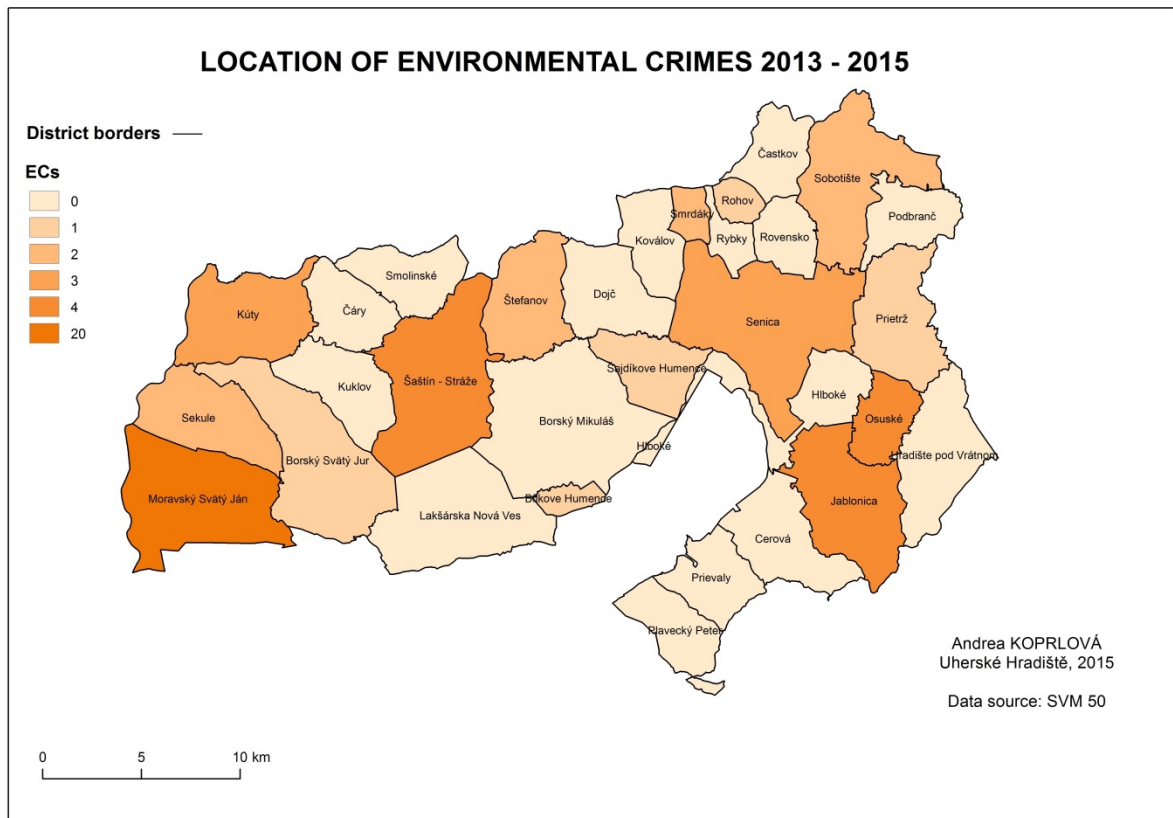


Figure 8: Location of environmental crimes altogether for years 2013 – 2015

Data source: District directorate of PF; Compiled by author

In the picture above is evident that the biggest amount of ECs was committed in a village located in southwest corner of district. This village is named Moravský Svätý Ján and most of these crimes are wood thefts which caused bigger damage to owners of the forestland.

### 7.1 Connection of environmental criminality and unemployment

It can be expected that unemployment can affect amount of crimes committed in district. In this case is obvious that environmental crimes are not directly proportional with unemployment. That is because unemployment dropped and environmental criminality rose.

## 7.2 2013

As it is obvious from the figure illustrating development of environmental criminality, the EC in year 2013 was lowest from the 3 monitored years, and that is 12 registered crimes. Now follows a figure with crimes sorted according to the type of environmental crime.

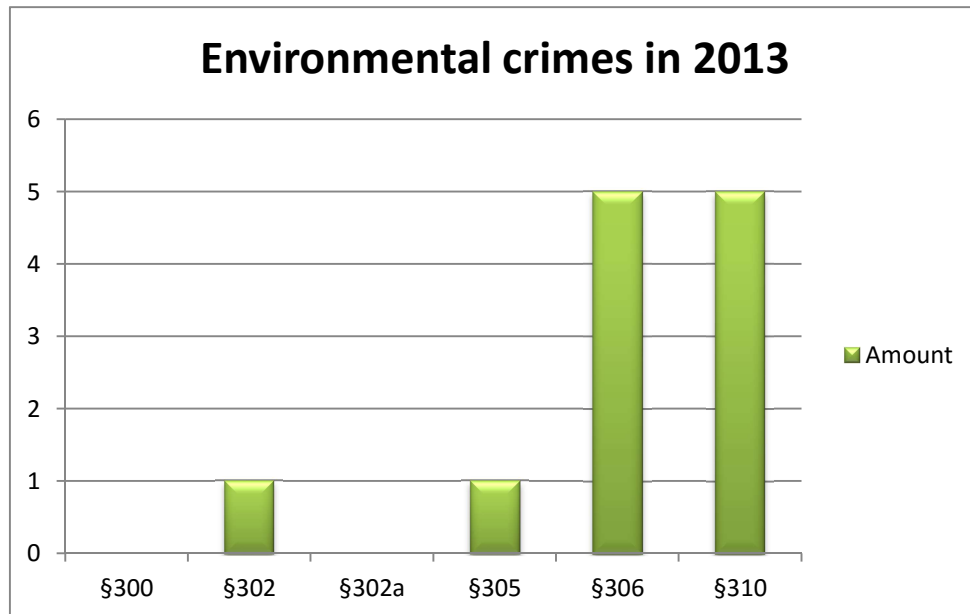


Figure 9: Review of environmental crimes committed in 2013

Data source: District directorate of PF; Compiled by author

In year 2013 there was no crime classified as damage of environment or emission of polluting materials, and one case of unjustified waste disposal and one case of breaching of plant and animal protection. On the contrary, there were 5 cases that present breaching of tree and shrub protection. Also 5 is the number of poaching crimes in the district during this year.

The case of §302, unjustified waste disposal was illegal dump contenting tyres. §305 was theft of wood in protected area of Natural Monument of Myjava river and cases belonging to §306 were all wood thefts but in non-protected areas. Poaching cases were in 3 of them illegal fishing and in 2 cases illegal killing of deer. 6 from all of these cases were done by unknown offenders.

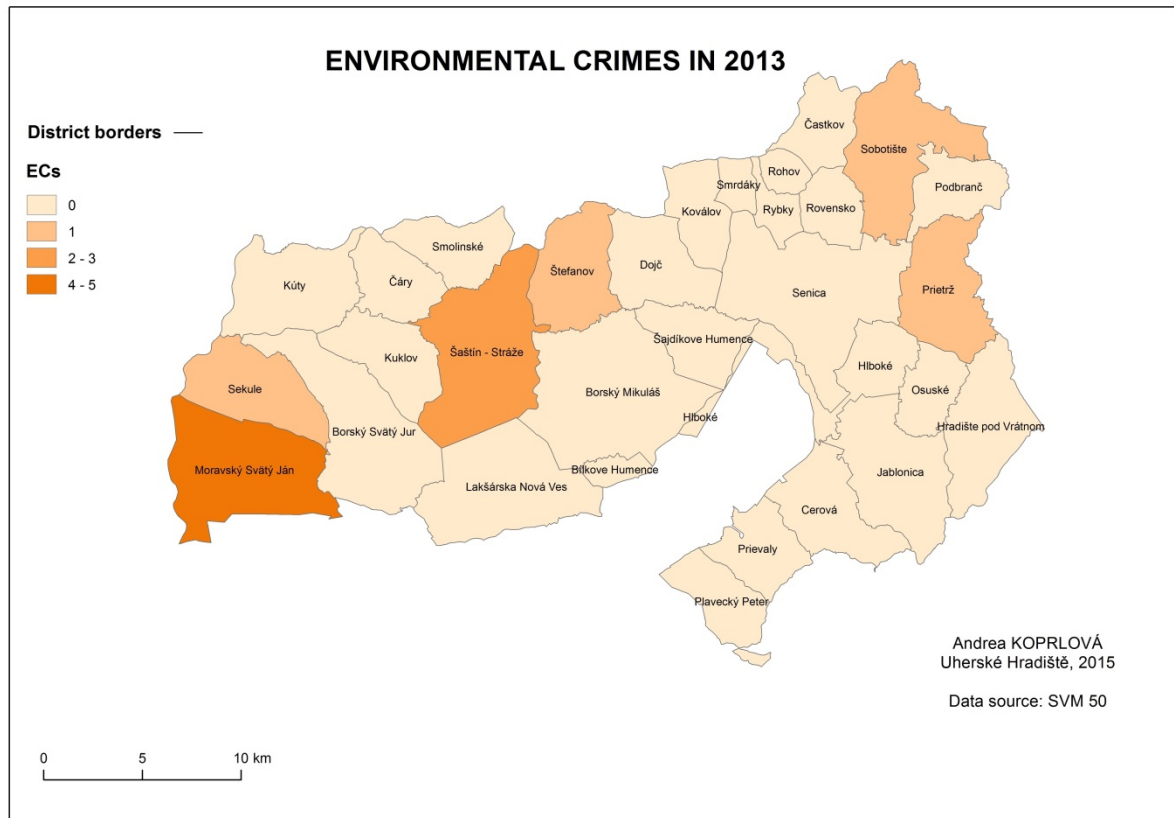


Figure 10: Location of environmental crimes in 2013 in Senica district

Data source: District directorate of PF; Compiled by author

### 7.3 2014

Environmental criminality in 2014 was made of 18 cases. It is the median among the observed years. The composition of this year cases and which types of EC grew is shown in the figure that follows.

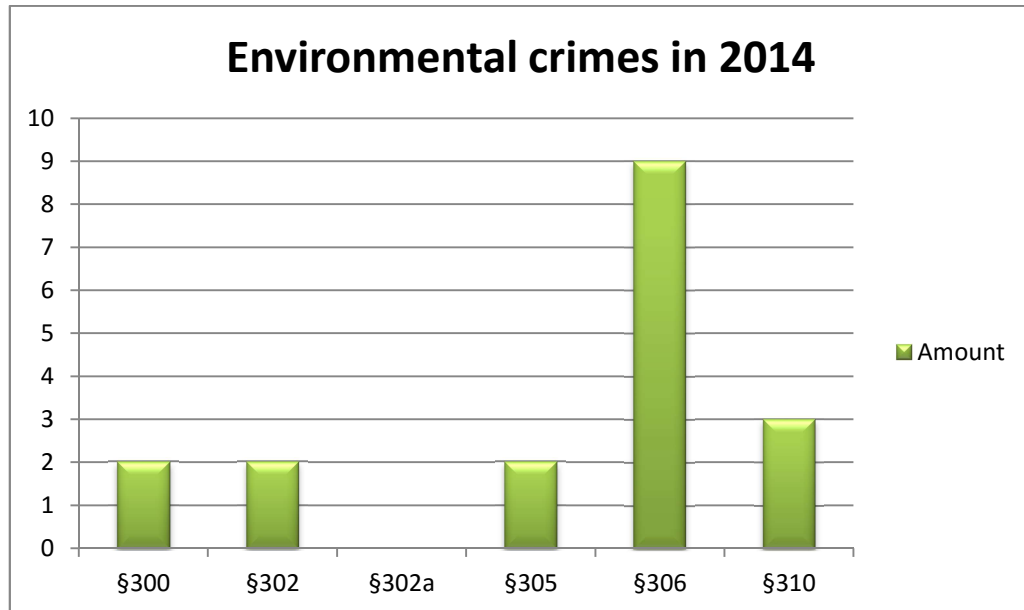


Figure 11: Review of environmental crimes committed in 2014

Data source: District directorate of PF; Compiled by author

In comparison to previous year, there were 2 cases solving damage of environment, unjustified waste disposal and breaching of plant and animal protection. Besides year 2013 there were only 3 cases in 2014 which deal with poaching. Unfortunately, there were 9 cases resolving breaching of tree and shrub protection.

The two cases about damage of environment are about illegal constructions built in Protected Landscape Area Záhorie. Cases sorted in group of unjustified waste disposal are caused by two illegal dumps, where in first case it is unknown dangerous liquid and in second case it is 400 tons of communal waste. Both cases breaching of plant and animal protection are connected to Natural Monument of Myjava river, where illegal tree cut down took place. All cases in group breaching tree and shrub protection are classified as wood thefts, causing more damage to owners of those forests. Finally the cases of poaching involve only cases of illegal fishing. Only in 3 of all cases in 2014 year were registered with known offenders.

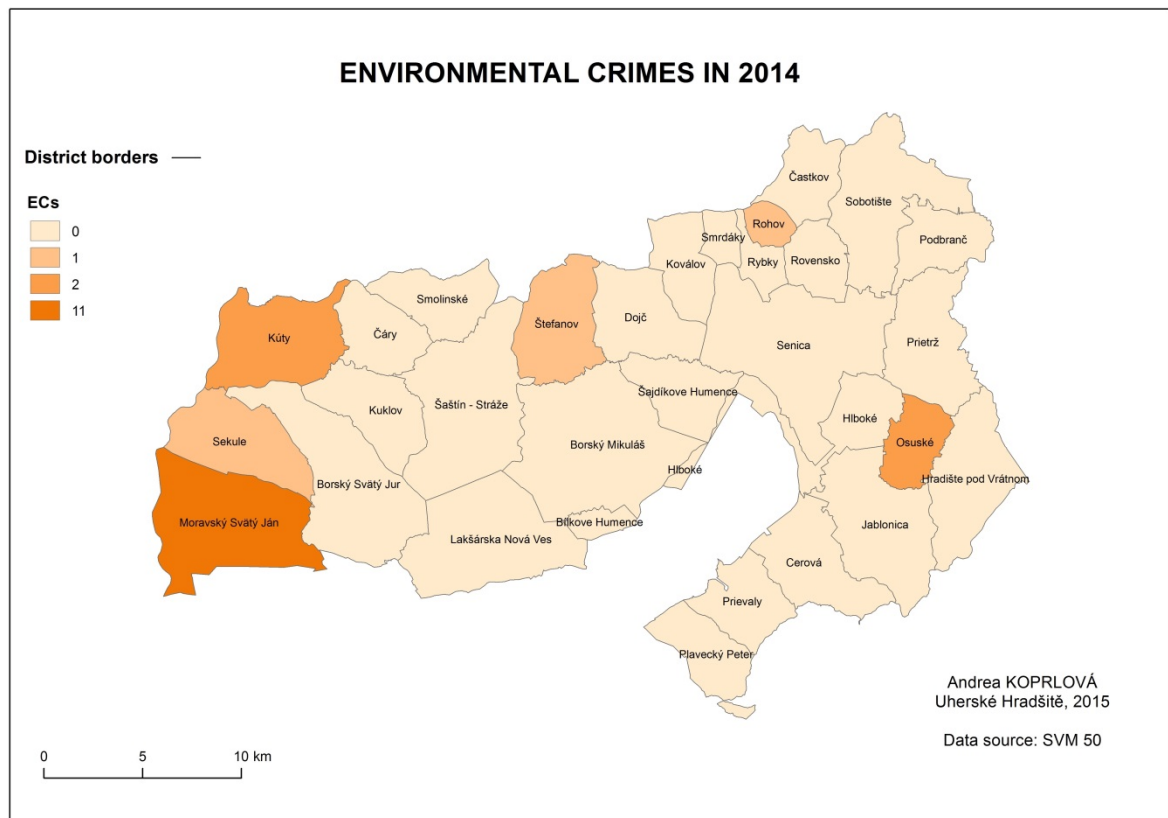


Figure 12: Location of environmental crimes in 2014 in Senica district

Data source: District directorate of PF; Compiled by author

## 7.4 2015

As it was clear at the beginning, the EC in 2015 was the highest from the studied years. Together it is 21 environmental crimes. The structure of last years' criminality is shown in following figure.

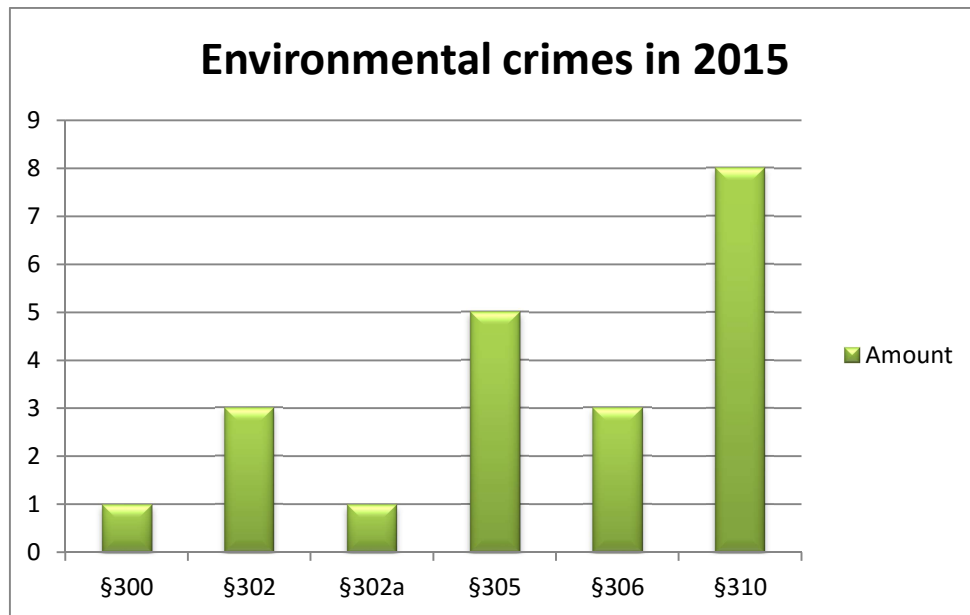


Figure 13: Review of environmental crimes committed in 2015

Data source: District directorate of PF; Compiled by author

There was only 1 crime belonging to damage of environment, and 1 crime which involved emission of polluting materials. 3 crimes were registered as cases of unjustified waste disposals and for this year only 3 cases belonged to breaching of tree and shrub protection. In the district during year 2015 occurred 5 cases dealing with breaching of plant and animal protection, but 8 poaching cases.

Case of environment damage involved illegal modification of nature, causing little damage. The crime of unjustified emission of polluting material was caused by offender who poisoned meat with prohibited and toxic pesticide and left it in the environment. Unjustified waste disposals are 3 cases of creating illegal dumps, from which one contained various types of waste, one contained building waste and the last was made of communal waste mixed with tyres. Breaching of tree and shrub protection in this year involved cases of wood thefts. Cases which were registered as breaching of plant and animal protection in 2015 were ever internationally investigated. That is because 2 of these crimes were committed in Africa, where few of districts inhabitants shot internationally protected species of white rhinoceros and detached the horns of these animals and brought them into district and sold on black market. Other 2 cases involved wood thefts in the area of Nature Monument of Myjava River, the last one involved illegal car driving through protected area. 8 cases of poaching which occurred during the year involve 5 cases of illegal fishing, one case of fox poisoning with prohibited and toxic material, one illegal kill of wild boar and a

case of killing a protected bird red kite by prohibited and toxic material. 12 of these 21 cases were committed by unknown offenders.

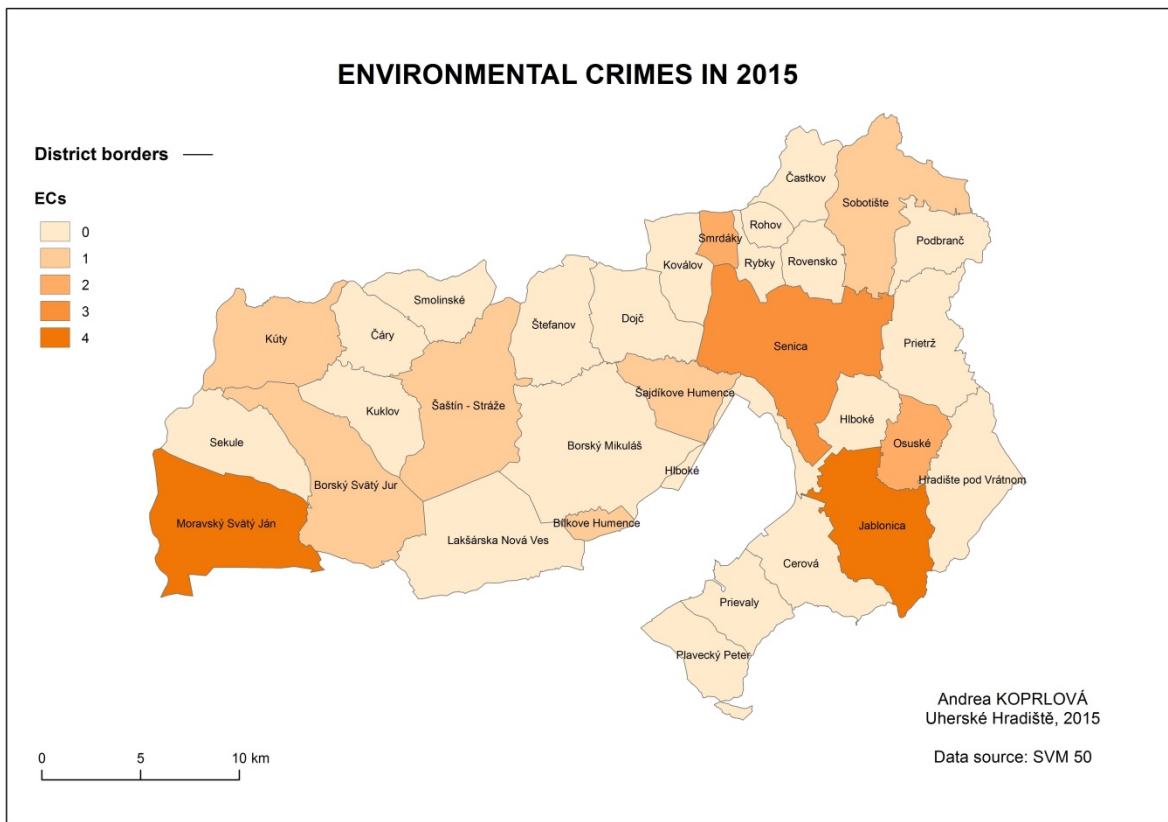


Figure 14: Location of environmental crimes in 2015 in Senica district

Data source: District directorate of PF; Compiled by author

### 7.5 Crimes against the environment

This type of crime legislatively belongs to theft, not to environmental crimes. It involves thefts of wood or other planted materials, which causes little damage to owner of the land. These crimes fall under state management of Forestry land. There were 33 cases of such crimes in 2013 and together the damage cost €863.28. In 2014 it was 11 with value of €222.74. Finally by the end of 2015 it was 20 wood thefts with damage cost €405.48. Most of these small thefts are caused by locals who are unemployed or want to use stolen materials for their own use.

## 8 INVESTIGATION PROCESS

In this chapter is very briefly described the process of investigation. There are many details which are not included here. Some of the details are in next chapter about optimization or improvement of investigating processes.

### 8.1 Main steps in investigation

At the beginning of Criminal order is stated, that no one can be prosecuted for the crime, for which he had already been convicted or freed. All state organs, villages or other legal persons and individual persons are obliged to provide cooperation with organs active in criminal proceedings. These organs are also obliged to help each other. (Zákon č. 301/2005 Zb., Trestný poriadok)

Firstly the PF or other organs active in criminal proceedings have to decide and prove, whether the act was a real crime, who did this action and why. If needed or in case there is suspicion of evidence or any other matters that could help the resolving, organs active in investigation are in right to do a house search in the place of the suspicious person. The suspicious is properly questioned and after gaining enough evidence the suspicious can be accused. Organs active in criminal proceedings resolve circumstances indicating against the suspicious or accused the same way as they resolve circumstances indicating the benefit of the accused. (Zákon č. 301/2005 Zb., Trestný poriadok)

Investigators accumulate evidence to the point they need to make a decision about the case. This person can be even taken into lockup if the resolved circumstances prove that the act against law he committed is legislatively considered a crime, and there is a possibility the accused will try to hide, affect witnesses and co-accused or will continue in his criminal activities. (Zákon č. 301/2005 Zb., Trestný poriadok)

The side which is the damaged one and is obliged to gain compensation for damage from offender can also suggest to the court to give the accused obligation to pay these compensations. In the suggestion should be stated from what reasons and of what amount is the claim enforced. Height of damages is further assessed by impartial and competent expert and can be changed. (Zákon č. 301/2005 Zb., Trestný poriadok)



## 9 SUGGESTIONS

In this chapter are stated suggestions for changes in legislation and systems. Through consultation with PF few problems have been shown. Most of them are of legislative nature and can be adjusted at least in local regulations.

Firstly the powers to evaluate whether the crime damaged the environment or not and what damage was caused belong to Ministry of environment, Environmental inspection and District authorities of the environment. These organs divide their cases according to height of the damage and according to their sphere of action, but the partition is not always easy and definite. This means there is not stated a specific organ which evaluates the damage, and such conditions may make the resolving difficult.

Furthermore in the District authorities of the environment is absent case evidence. This causes problems with the analysis and also information accessibility for public. Systems of evidence are also not connected among organs of state administration. This may cause slowing of investigation and pointless effort. This connection should be launched in the form of electronic documents. It is recommended to do so in near future.

Another problem is caused by unclear and misinforming lists of protected animals and plants. This list is formed according to the Law about environment, but for example some of its contents are missing in Law. No. 274/2009 Cod., about hunting. It is recommended to unite these legislations, of which use may end up in some cases as contradictory.

### 9.1 Prevention

There are few steps that could be taken which would improve environment condition and thereby also lower communities' costs. One of these forms is public education, which should take place mostly on schools, elementary and secondary alike. Teaching about the importance of healthy environment will lead younger inhabitants to environmental protection. This education should continue even after school in the form of edification or public lectures.

As it is clear from previous chapters, one of the biggest problems in the district are illegal dumps, which lead to various health problems. There are many ways to prevent creation of these dumps, for example increase of fines for illegal dumping, or lowering of costs for transport and elimination of wastes.

Some inhabitants are unaware that waste dumping may be illegal, therefore “No dumping” signs can be one of the solutions. Another solution for not only illegal dumps but also wood thefts can be fencing of selected areas or building of barriers in places known for crime concentration. A very good, although not very cheap, resolution can be surveillance cameras, which would help find and identify offenders. (CalRecycle, 2014)

## CONCLUSION

It can be said that the goal of this bachelor thesis was fulfilled. The topic was introduced in form of brief legislative captions and in form of classification and description of the environmental crimes typology. There were also defined various ways of monitoring sorted by subjects providing the monitoring, elements on which was the monitoring done and notices regulating this checking.

In the chapter which contains toxicology characteristics of selected matters was manifested how dangerous are these matters, which are leaking into environment. This analysis connected to the illegal dumps map demonstrates that this subject is one of the biggest problems directly affecting environmental condition in the district. This map containing approximate locations of specific illegal dumps displays how big the threat to environment is.

Environmental background of criminality in Senica district was analysed and the results have shown that the current condition is worse than expected. This analysis proved that environmental criminality in the district has an upward tendency. Crime types that grew the most were poaching and breaching of tree and shrub protection. The village which has the most crimes committed throughout the monitored period is located in southwest, named Moravský Svätý Ján.

In the part of investigation were shortly described steps of case resolving. Some major problems were also found after that in the investigating and were identified in following chapter. In the same chapter were even suggested changes and improvements to help quicken and streamline the process of resolving cases.

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## LIST OF ABBREVIATIONS

IPCP Integrated prevention and control of pollution.

RIPSP Research institute of pedology and soil protection.

SHMI Slovak hydrometeorological institute.

PF Police forces.

EC Environmental crimes.

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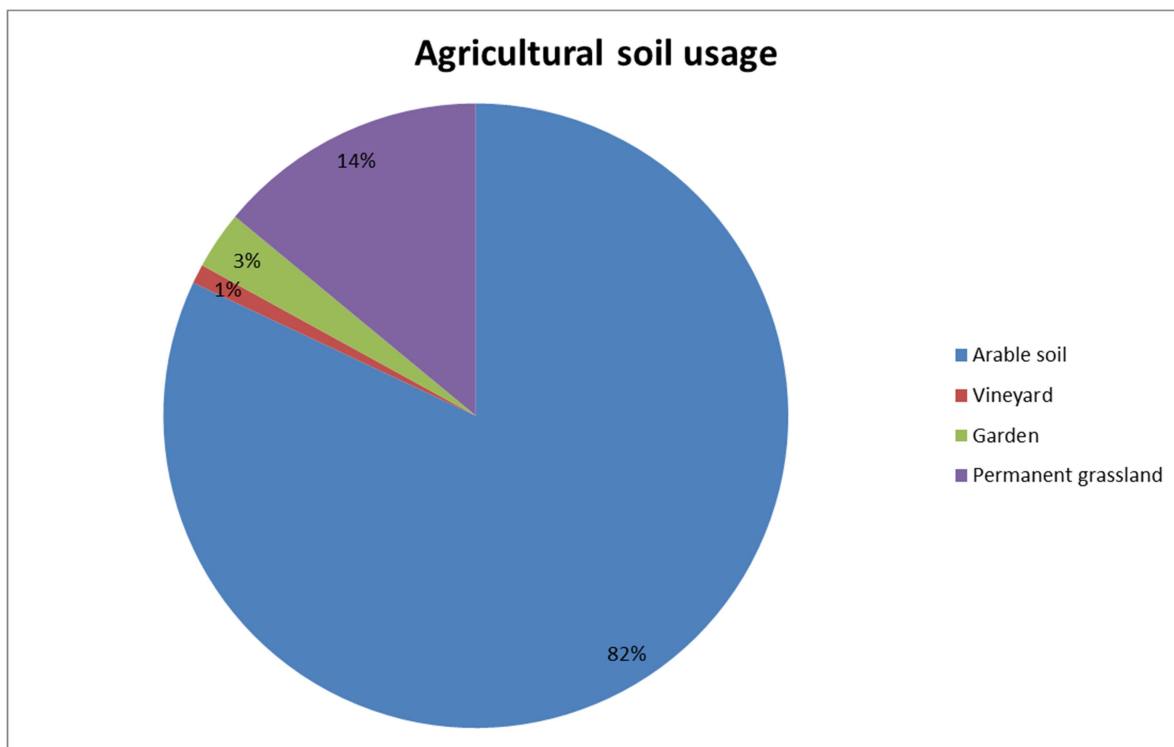
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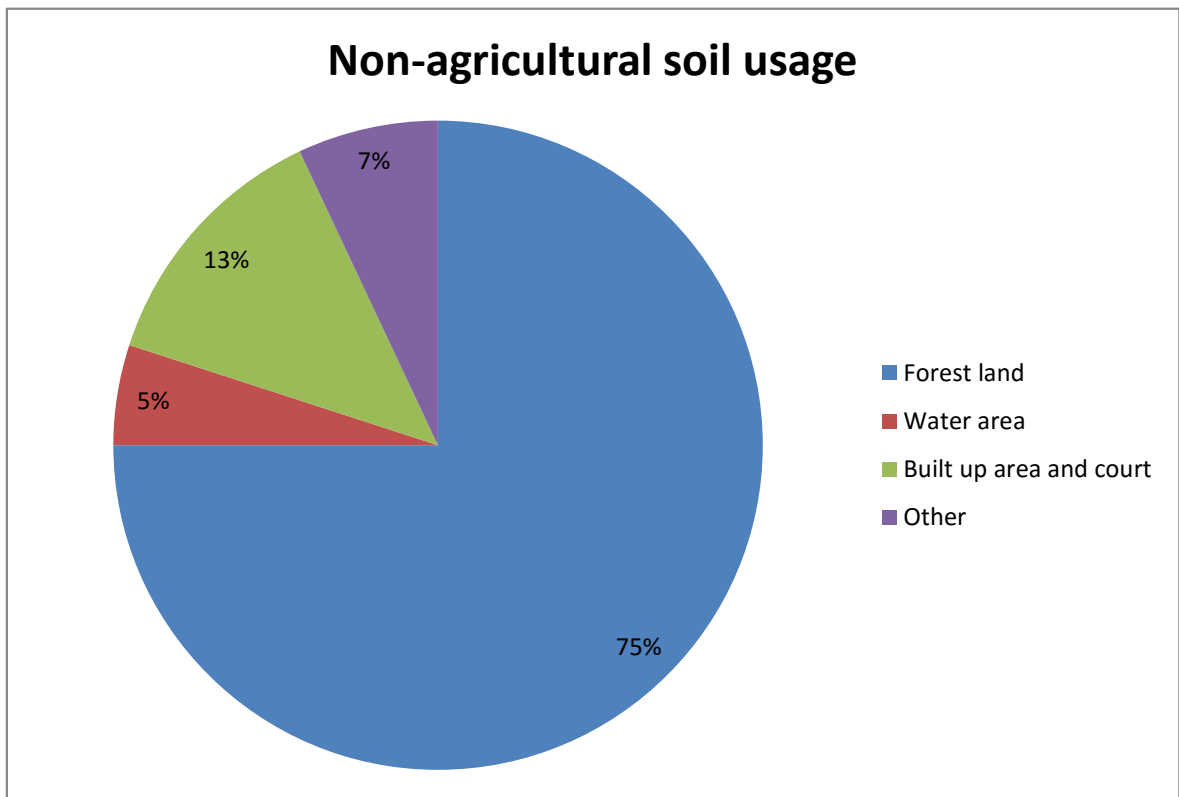
## APPENDIX P I: AGRICULTURAL SOIL USAGE IN SENICA DISTRICT



Appendix 1: Agricultural soil usage in Senica district

Data source: Informačná databáza okresu Senica, 2009

## APPENDIX P II: USAGE OF NON-AGRICULTURAL SOIL IN SENICA DISTRICT



Appendix 2: Non-agricultural soil usage in Senica district

Data source: Informačná databáza okresu Senica, 2009