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# Water Crimes and Policing

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## **Purpose:**

Water is a crucial natural resource for the survival of the human and various other species. As a result, water is becoming more and more attractive to various economic and criminal groups. Therefore, the purpose of this paper is to present crimes against water, the types of water crimes, an analysis of the situation in Slovenia and the police measures in the field of water security.

## **Methods:**

The water crimes phenomenon was analysed by applying a descriptive method, literature review, statistical data analysis and information received from the police.

## **Findings:**

Water crimes are an emerging global issue. Water crimes include diverse types of crimes ranging from the pilfering of water from pipelines, illegal waste management, water theft, river and marine pollution, manipulation of sampling methods to avoid treatment costs, fraud and illegal trafficking of water, terrorism and cyber-attacks on water management operations, illegal waste discharges from factories, and unauthorised consumption from the water network. Water crimes are hard to detect, investigate, prosecute and study. It is necessary for law enforcement officers to have knowledge related to water crimes – from natural and social sciences to other knowledge such as biology and chemistry. Further, they must have well-organised coordination and cooperation with other formal social control entities like inspectorates, institutes etc.

## **Originality/Value:**

The paper presents water crime issues and makes an important contribution to the professional and general public with respect to the prevention and formal social control of water crime.

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**Keywords:** water, water crime, environmental crime, police, policing

## **Policijsko delo na področju kriminalitete zoper vodo**

### **Namen prispevka:**

Voda je eden izmed ključnih naravnih virov za preživetje ljudi in drugih živih bitij. Zaradi tega je postala zanimiva za različne gospodarske in kriminalne skupine. Namen prispevka je predstaviti kriminaliteto zoper vodo, njene oblike in policijsko delo na področju zagotavljanja varnosti vode.

### **Metode:**

Pojem in oblike kriminalitete zoper vodo ter policijsko delo na področju obravnavane tematike smo analizirali s pomočjo deskriptivne metode, pregleda literature, statističnih analiz podatkov in informacij, pridobljenih od policije.

### **Ugotovitve:**

Kriminaliteta zoper vodo je nastajajoč globalni problem. Vključuje različna kazniva dejanja od tatvine vode iz cevovodov, nezakonitega odlaganja odpadkov, onesnaženja rek in morij, manipulacije z metodami vzorčenja v izogib stroškom čiščenja, goljufij, nedovoljenega transporta vode, terorizma in kibernetских napadov, do ponarejanja dokumentov, nedovoljenih izpustov iz tovarn in nepooblaščne uporabe vode iz vodnega omrežja. Kriminaliteto zoper vodo je zelo težko odkriti, preganjati in preučevati. Zato je toliko bolj pomembno, da imajo policisti znanje z različnih področij, od naravoslovnih do družbenih ved in drugih specializiranih znanj. Prav tako morajo imeti dobro organizirano sodelovanje z drugimi institucijami, kot so inšpektorati, inštituti in druge organizacije.

### **Izvirnost / pomembnost prispevka:**

Prispevek podrobneje predstavi problematiko kriminalitete zoper vodo in ima pomemben doprinos za strokovno in splošno javnost z vidika preprečevanja in zatiranja obravnavane tematike.

**UDK:** 351.741:[343.3/.7:502.51]

**Ključne besede:** voda, kriminaliteta zoper vodo, ekološka kriminaliteta, policija, policijska dejavnost

## **1 INTRODUCTION**

Although more than 71 percent of the Earth is covered by water (Williams, 2016), 97 percent of that amount is salt water held in the oceans. The remaining 2 percent is freshwater locked away in snow and ice, leaving less than 1 percent available for human requirements. Moreover, freshwater is not evenly distributed. As Hill and Symmonds (2013) note, only 11 countries share 60 percent of the total amount of freshwater. For example, the Amazon rainforest has 15 percent of the total resources of water but only 0.3 percent of the world's population. Further, 873 million people lack access to safe drinking water. Brisman, McClanahan and South (2016) reported that, by 2025, 1.8 billion people will be living in places marked by water scarcity, where each person will have access to less than 1,000 cubic metres of water a year. The uneven distribution of water around the world has led to the situation in which water theft is on the rise.

Water can be described as an environmental resource damaged by a crime (e.g. surface water pollution, or fraudulent water quality reporting), the object of a crime (e.g. drinking water theft or corruption on the part of private companies involved in the economic control/exploitation of water), or the means of a crime (e.g. intentional flooding or the deliberate poisoning of a water supply). There may also be criminal threats to water management infrastructure such as terrorism and cyber-attacks (Water Crimes Project, 2016).

Water crime can be defined as "any punishable contravention or violation of the limits on human behaviour as imposed by national criminal legislation, which uses surface, and ground water, or water services, as a mean for committing other crimes" (Mattioli & Segato, 2016, p. 14). Thus, water crimes include any intentional

act that poses potential harm or damage to water. Gleick (2006) emphasises that the biggest problem is that water resources and systems are attractive targets because there is no substitute for water. Whether due to a physical supply interruption, being a natural scarcity, or entailing contamination, a community of any size lacking in sufficient fresh water will suffer greatly. We agree with Mattioli and Segato (2016) who stress that water-related crimes are often recorded under other offences like fraud (provided by public services with concessions and others), corruption, trafficking, falsification of documents etc.

Resolution 64/292 (United Nations, 2010), which was adopted by the United Nations in 2010, explicitly recognises the human right to water and sanitation and acknowledges that clean drinking water and sanitation are essential for the realisation of all human rights, and protects water as a national resource and the people that need it the most. According to the World Health Organisation, only half (54%) of the world's population can access water through a household connection to a water pipeline (Gonzalez Rivas, 2014). Despite Resolution 64/292 having been adopted, water is still a huge issue all around the world. The importance of water was evident when establishing institutional structures whose priority was to determine water allocations for extraction purposes. Besides the issue of buying land with water springs or underground water reserves, the process of privatising water management in cities is occurring as a second area, where water is seen only as a tradeable commodity.

Even though environmental crime is a high-profit/low-risk activity, crimes involving water are also hard to detect, assess, prosecute and study (Mattioli & Segato, 2016). We studied the water crime phenomenon in the Republic of Slovenia through the descriptive method. Statistical data and information received from Slovenian police reports were analysed, i.e. case study analysis. Thus, the paper's purpose is to present the phenomena and typology of crimes involving water in the Republic of Slovenia (RS), and how the Slovenian police responds when dealing with water crime and how it cooperates with other institutions. The paper first presents water crime issues from global perspectives, especially as a basic human right, and collects several definitions of water crimes. The forms of water crime are then outlined. In the third section, analysis of water crime cases in the RS in the past decade is presented and the Slovenian police's work concerning crimes against water is described. In the conclusion, the authors discuss the future situation, focusing on alternative, often also innovative, prevention and repression measures in the area of water crimes.

## **2 WATER CRIMES AND THE HUMAN RIGHT TO WATER**

Crimes against water are an emerging global issue and have significant impacts, although intelligence is scarce and information fragmented (Water Crimes Project, 2016). Identified research challenges include "the absence of an international classification of water-related crimes"; no working definition of water-related crimes; the scarcity of criminological studies; no mapping of criminal behaviour, motivation or threats; and the complexity of data collection (Water Crimes Project, 2016, p. 6). Mattioli and Segato (2016) emphasise that these new, water-related issues are steadily rising in importance.

Water-related crimes are often recorded under other offences (e.g. fraud, corruption, trafficking, falsification of documents, organised crime etc.) due to the lack of a systematic analytical approach leading to an agreed (working) definition and international classification of water-related crimes. Mattioli and Segato (2016, p. 14) define *water crime* as “any punishable contravention or violation of the limits on human behaviour as imposed by national criminal legislation, against the surface, and ground water, or against water services”. Water crime also includes any intentional act that potentially harms or damages water. Further, Mattioli and Segato, (2016, p. 14) described water-related crime as “any punishable contravention or violation of the limits on human behaviour as imposed by national criminal legislation, which uses surface, and ground water, or water services, as a means for committing other crimes”.

A wide range of types of crime against water has emerged in history. Many countries and institutions have made lists of different crimes against water. Some of them are presented below.

### 2.1 Forms of Water Crimes

Examples of diverse types of water crimes identified by the Water Crimes Project<sup>1</sup> (2016) include: pilfering of water from pipelines, illegal waste management, water theft, river and marine pollution, manipulation of sampling methods to avoid treatment costs, fraud and illegal trafficking of water, terrorism and cyber-attacks on water management operations, illegal waste discharges from factories, and unauthorised consumption from the water network. Another form of water crimes is water smuggling. It is known in the USA where rich Canadian water resources are smuggled into the country, where it is sold for enormous sums of money. For example, Kelly and Oldring (2015) described a case where 50 2 litre bottles were being sold for several hundred dollars.

Interpol’s report on environmental crime (Interpol/UNEP Environment, 2016) highlights three groups of water crimes: 1) water fraud (e.g. the alteration of sampling techniques or results to avoid treatment costs, bringing negative health implications); 2) water pollution (i.e. intentional contamination of water); and 3) water theft (i.e. the unauthorised use and consumption of water before it reaches the intended end-user).<sup>2</sup> According to statistical data from the Slovenian Police

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1 *The water crimes project is an international project funded with support from the European Commission (Directorate-General Home Affairs – HOME/2014/ISFP/AG/EFCE/7241). It is a research project aimed at providing an inventory of water-related crimes in Europe, the first report on water crimes in Europe, and the first strategic analysis in Europe on crimes against water resources. The organisations working on the project come from four countries: Italy, Hungary, Spain and Slovenia. The partner that is responsible for coordinating the Water Crimes Project is SiTI – Istituto Superiore sui Sistemi Territoriali per l’Innovazione, Italy. The other partners are RiSSC – Centro Ricerche e Studi su Sicurezza e Criminalità (Italy), REC – The Regional Environmental Center for Central and Eastern Europe (Hungary), UDC – University of Coruña (Spain), and FJCS-UM – Faculty of Criminal Justice and Security of the University of Maribor (Slovenia). More information about the project is available at its webpage: <http://www.watercrimes.eu/>*

2 *It is estimated that between 30 and 50 percent of the global water supply is illegally purchased. Regions experiencing chronic water stress (e.g. Southern Europe, Africa) and marginalised deprived areas (e.g. slums in India, Bangladesh or Brazil) are particularly vulnerable. Local communities are therefore forced to find alternative solutions to fulfil their daily water needs. In Africa, the number of unregulated wells skyrocketed from 2 million to an estimated 23–25 million in a decade. While this reflects poor water management, this practice also leads to the major degradation of water resources (Interpol/UNEP Environment, 2016).*

and the Inspectorate of the Republic of Slovenia for the Environment and Spatial Planning, water pollution also prevails in Slovenia. Despite the prevailing cases of water pollution, criminals involved in water fraud and water theft jeopardise the integrity of the existing supply chain. Moreover, water crimes intersect with other criminal activities, such as fraud, document forgery, corruption, bribery, misappropriation of funds that also include organised criminal groups (Interpol/ UNEP Environment, 2016). Gleick (2006) cautioned that plausible threats hold the potential to cause not just fear and anxiety but societal disruptions and disarray. The best defence against such threats is “public confidence in water management systems, rapid and effective water quality monitoring, and strong and effective information dissemination”, which can help ensure public confidence and calm (Gleck, 2006, p. 483).

The uneven distribution of water around the world has led to the situation in which water theft is on the rise. Moreover, the re-conceptualisation of water as a tradable commodity has increased its prices and placed it in fields of interest given the potential profit for organised crime. Water theft includes the illegal acquisition of natural water courses as well as piped or harnessed water, both of which are described as ‘non-revenue water’, meaning water that is ‘lost’ before it reaches the intended consumer. Loss of water through theft can occur in a variety of ways, including damaging or removing water meters and physically installing a connection to water distribution pipes as well as stealing aid tanks (The Global Initiative, 2014). Water scarcity and smuggling are often seen in North Africa (e.g. Nigeria, Mozambique, Kenya, Sudan, Chad) and the Middle East (e.g. Israel, Jordan) (The Global Initiative, 2014), and from Canada to North America (Kelly & Oldring, 2015).

Despite the huge interest in water, transparency in the water sector is often limited, thereby opening the door to corruption. The World Bank (2016) estimates that criminal and/or corruption in the water sector causes between 20 and 40 percent of lost revenues. Petty bribes to government officials and water suppliers are used to falsify meter readings, avoid disconnections and conceal illegal connections. The growing demand for water only serves to reinforce these corrupt practices and enforce a sense of discretionary power among officials, consequently weakening a country’s rule of law (The Global Initiative, 2014).

The involvement of organised crime has flooded the private sector and also reaches into many aspects of public services, such as waste management and disposal, construction and maintenance, material supply in the healthcare sector, transportation etc. (Savona, Riccardi, & Berlusconi, 2016). Sergi and South (2016) argue that such involvement often results in corruption, pollution or (semi) completed projects that are inadequate or dangerous. Ruggiero and South (2010) named these criminal activities ‘dirty collar crime’.

A recent Australian study by Barclay and Bartel (2015) provides further insight into different crimes against water, namely: 1) *water theft* (including the pumping, impoundment or diversion of water from irrigation channels, river systems, dams or groundwater bores without a licence or in contravention of licence conditions that cause changes to flows and reduce water access to neighbouring farms, livestock and riparian zone management); 2) *water contamination* (industrial contamination,

contamination due to depletion of underground and surface water sources, degradation of soil, contamination of surface and ground water through fertiliser/chemical or effluent run off from farm land, destruction of wildlife habitat, and reduction of biodiversity); 3) *waterway diversion* (referring to water theft through the illegal damming of waterways, filling of tankers and deep drilled water bores); 4) *unauthorised taking of surface or ground water*; 5) *violation of water compliance and enforcement*; 6) *water-related corruption*; 7) *water-related terrorism*; and 8) *water-related consequences of other forms of illegal or unregulated activity* (e.g. the impact of toxic chemicals and hazardous waste materials being swept up in flood waters and polluting freshwater systems, or the storage of legacy mining waste, stockpiling of tyres, repositories for chemical wastes and so on can be indirectly implicated in water-related crime insofar as how this occurs may violate relevant regulatory regimes and thus contribute to greater harm than might normally be expected).

The Water Crimes Project (2016) elaborated seven water crime categories: 1. water corruption, 2. water organised crime, 3. water pollution, 4. water theft, 5. water fraud, 6. water terrorism, and 7. water cyber-attacks. Water corruption is like grand corruption, which involves political decision-makers, the exploitation of natural resources, international cooperation, and large-scale investments and large procurement contracts (e.g. past cases of forced water privatisation in India, Brazil, Africa and even Europe); and petty corruption, which people can experience every day referring to the payment of sums of money to gain access to water services or to avoid controls and fines (The Global Initiative, 2014). Water organised crime is the activity of criminal organisations that have taken the control of the management of the water or water services within a certain territory. Water pollution is offences against the natural environment and, especially, directly against water quality. Under this type of water crime, we also include deliberate contamination of drinking water. Water theft, intended to reduce the quantity of water, is carried out by consumers in the water supply system to provide an economic advantage by physically altering the supply system. Water fraud, composed by fiscal artifices aimed at adulterating the registered water consumption and achieving an illicit gain. Water terrorism is intended, like the threat of terrorist attacks on the water sector, against the quality (e.g. poisoning) or availability (e.g. an attack on critical infrastructures) of water (Congressional Research Service, 2010). It might also include taking control of water services to illicitly finance terrorist activities. Another scenario for a terrorist attack on domestic water supplies involves physical attacks on water infrastructure, such as using conventional explosives to damage dams, pipelines or treatment plants. This could lead to the deaths of thousands of people, along with damage to property, damage to commercial fisheries, and the loss of freshwater supply and hydroelectric power. Water cyber-attacks can occur by way of intrusion into an ICT system, manipulation of information or networks, data destruction etc. of water management companies. It includes ransomware and malware attacks. Gleick (2006) also suggests that the risk of a cyber-attack on the supervisory control and data acquisition systems and networks employed by water agencies to control intake and release are more than just academic and theoretical, and thus calls for the probability of such water-related terrorism and its consequences should one occur to be reduced.

The three most common water crime cases identified in European countries (The Water Crimes Project, 2016) are deliberate contamination of drinking/ground water, water pollution and water theft (losses in the public water supply system). These cases cover 86 percent of European countries.

Environmental criminal groups have found an ideal business in which to make an easy profit, especially due to the loopholes in national environmental protection legislation and the huge differences in this field among countries. This also applies to water. As long as climate change, conflict and poverty continue to aggravate the Earth's dwindling water supply, crimes against water (especially water theft and water smuggling together with forced water privatisation (Eman & Humar, 2017) and violation of water quality regulations) will remain a reoccurring and ever more intense global problem. Gleick (2006) recommends protecting water systems through a combination of physical barriers, extensive biological and chemical monitoring and treatment, and the development of smart and rapid integrated response strategies. The Global Initiative (2014) stressed that whilst ever water crimes are still viewed as petty offenses or small crimes within a national context rather than as transnational organised crime issues, it is unlikely they will ever be effectively resolved.

### **3 WATER CRIME IN THE REPUBLIC OF SLOVENIA**

Slovenia has rich water resources but they are not distributed evenly across the country. Water resource management in Slovenia is introduced in line with the Water Framework Directive (Direktiva Evropskega parlamenta in Sveta 2000/60/ES, 2000). The priority is to eliminate adverse effects on waters, providing appropriate quality water for humans and natural ecosystems, and maintaining biodiversity. The first classification of surface water intended for the abstraction of drinking water in Slovenia was prepared in 2002 and also published in the Official Gazette of the Republic of Slovenia. Further, in 2002 the Water Act (Zakon o vodah [ZV], 2002) defined water as a public natural good. Since then, water is a public good, administered by the state (Agencija Republike Slovenije za okolje, 2008). The Environment Protection Act (Zakon o varstvu okolja [ZVO-1], 2006) regulates the protection of the environment against burdens, which is a precondition for sustainable development, and within this framework lays down basic environmental protection principles, environmental protection measures, environmental monitoring and environmental information, economic and financial instruments for environmental protection, public services for environmental protection and other related issues (Banjanac, 2013). Some other regulations are important for water safety and security in Slovenia: Regulation on the drinking water supply in Slovenia (Uredba o oskrbi s pitno vodo, 2012), Rules on the drinking water supply (Pravilnik o oskrbi s pitno vodo, 2006) etc. The protection of drinking water resources is the subject of regulation by Ministry of the Environment and Spatial Planning and the municipalities. In 2016, the

Republic of Slovenia became the first country in the world to include the human right to water<sup>3</sup> in its Constitution.

Slovenian police reports on cases documented and investigated between 2005 and 2015 show that water crimes were dominated by water pollution offences (85%). Typically, the object of the offence is drinking water and free water in nature such as rivers, lakes and ponds. Potential dangers for the water sector are groundwater pollution, pollution of streams and rivers by factories, water theft from the pipeline system and the privatisation of water resources. In most cases, the perpetrators are unknown. The biggest challenge is posed by a dark figure of crime against water because many cases go unreported.

The reports of the Environmental Inspection Service together with the database of criminal offences against the environment, space and natural resources investigated by the Slovenian police reveal that water crime (in most cases involving water pollution, intensive agriculture, industrial emissions, uncontrolled wastewater discharges etc.) is the prevalent environmental offence in Slovenia (Eman & Meško, 2013; Eman, Meško, Dobovšek, & Sotlar, 2013).

Criminal offences involving water are listed in the category of offences against the environment, defined in section 32 of the Criminal Code of the Republic of Slovenia (Kazenski zakonik [KZ-1], 2008). According to the statistics, water crimes are not very frequent in Slovenia, as seen in Table 1 below.

**Table 1:**  
**Number of water crimes\***

	Year											Total
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Burdening and destruction of environment	12	9	14	57	31	33	21	47	34	42	25	325
Marine and water pollution by ships	/	/	/	0	0	1	0	/	/	1	/	2
Contamination of drinking water	0	4	4	3	0	2	4	5	5	/	/	27
<b>Total Criminal offences against environment, space and natural goods</b>	12	13	18	60	31	36	25	52	39	43	25	354
<b>All criminal offences in the Republic of Slovenia</b>	133	116	145	201	169	196	152	180	100	254	/	1,646
	90,354	88,197	81,917	87,463	89,489	88,722	91,430	93,833	87,474	68,810	61,574	929,263

\*Number of water crimes, crimes against the environment, and all criminal offences in Slovenia from 2006 to 2016 (source: Ministrstvo za notranje zadeve, Policija, 2016)

3 Article 70a of the Constitution of the Republic of Slovenia (Right to Drinking Water): "Everyone has the right to drinking water. Water resources shall be a public good managed by the state. As a priority and in a sustainable manner, water resources shall be used to supply the population with drinking water and water for household use and in this respect shall not be a market commodity. The supply of the population with drinking water and water for household use shall be ensured by the state directly through self-governing local communities and on a not-for-profit basis" (Ustava Republike Slovenije, 1991).

Table 1 shows the number of crimes involving water is low in Slovenia. According to the data presented in Table 1, water crimes represent a small share (one-quarter or less) of all criminal offences against the environment. If we compare the number of all criminal offences reported in the Republic of Slovenia in the last ten years with the number of water crimes that were reported, the percentage share is minimal (0.04%). The contamination of drinking water and pollution of rivers, lakes etc. (included in the group “Burdening and destruction of environment and space”) also occurs (5 to 10 crimes a year). In Slovenia, the object of crime is most frequently drinking water or free water in nature, such as rivers, ponds etc. The pollution of free water sources is the most common water crime in the Republic of Slovenia. The perpetrator mostly remains unknown (Eman, 2016). Some river sections are still loaded with excessive amounts of industrial and municipal wastewaters and are therefore substantially polluted or even over-polluted. Problems are also found in groundwater, which is the main source of drinking water in Slovenia. Groundwater is polluted with nitrates and pesticides and, on a local level, also with chlorinated organic solvents. The highest level of pollution is registered in the north-eastern region of Slovenia and near Celje (Agencija Republike Slovenije za okolje, 2008).

### 3.1 Police and Crimes Against Water in the Republic of Slovenia

The story of water security can be told in terms of both historical and contemporary dimensions of conflict. Brisman, McClanahan, and South (2016) pointed out that the growing population has increased the burden on our water supply. The Earth’s population has never been higher than today, and in many places people are using water at unsustainable rates. This is why the police have acquired an important role in ensuring safety and security in the fields of the environment and water.

The legal water protection system in the Republic of Slovenia is well regulated. Jurisdiction over ensuring clean drinking water has been transferred from the state government and the Ministry of the Environment and Spatial Planning to the municipalities (local governments). Water as a source is both a natural public good and a public asset.

Police work in the water crime field is developing and the police are adapting to the challenge of investigating environmental crime, like elsewhere in Europe. Their work is to detect and investigate water crimes and prepare different policies<sup>4</sup>. In the area of environmental crime, the General Police Directorate devised the so-called eco campaign and emphasised all the problematic aspects of ecological crime. One of the General Police Directorate’s tasks was to prepare training in the area of environmental crime, which was implemented in 2015 and 2016. According to Eman, Meško and Ivančič (2012), the Slovenian police has published instructions on investigating a water pollution crime scene for police officers,

<sup>4</sup> *Preparing and prepositioning different policies is one of the roles of the Slovenian police. The police propose measures and actions with which they want to achieve a social situation that will make people feel safe and finally make the work of the police easier.*

and prepared two internal acts of great assistance in the procedure of handling and investigating criminal acts against the environment. The General Police Directorate also participated in the last amendment to the Environment Protection Act (ZVO-1, 2006), where it examined the proposed changes and gave its opinion that was taken into account. Further, with the occurrence of new water crimes cases the police is constantly adapting to the challenges of investigation, because water is a 'living source' that moves and changes constantly, so the investigation and collection of proof can sometimes be demanding. Moreover, environmental crime is according to the manner of police work often related to other crime forms; for example, theft and fraud fall within the investigation of property crime while the depletion of natural resources is often related to higher economic interests and thereby to corruption and other forms of white-collar crime.

According to information provided by the Slovenian police, the cooperation between the police and the Inspectorate of Environment and Spatial Planning is good. They have to cooperate every time a water crime case is reported. The operational cooperation between the police, the Inspectorate of Environment and Spatial Planning, the municipalities and other institutions is facilitated by the Resolution on the National Programme on the Prevention and Suppression of Crime for the period 2012–2016 (Resolucija o nacionalnem programu preprečevanja in zatiranja kriminalitete za obdobje 2012–2016 [ReNPPZK12-16], 2012). It has also helped increase cooperation with non-governmental environmental organisations, and the use of measures of situational prevention of crime against the environment. The protection of drinking water resources is also regulated by Ministry of the Environment and Spatial Planning and the municipalities. The challenges of ensuring a safe water supply in rural areas have been effectively met by the Institute of Public Health of the Republic of Slovenia and its local action plans. The Ministry of Health and the Ministry of Environment and Spatial Planning are both responsible for supervising the implementation of the local action plans.

In addition to the police's work with other entities, and noting that their coordination is well organised, it is necessary for law enforcement officers focusing on environmental crime to have working knowledge of various fields, from the natural and social sciences through to specialised knowledge (Murray & Tedrow, 1992) in areas like chemistry, physics, biology and new technologies. White (2009) stressed that our knowledge and interest in this field may well be growing, but the more we know the less secure we seem to be regarding the knowledge we have about environmental crime.

Eman and Meško (2014) emphasise that different types of crime prevention methods are needed to address specific environmental crimes (a multidisciplinary approach) where a combination of natural and social science can be used. Knowledge and awareness of environmental problems and dangers that may threaten us are the key to better preventive measures and the development of effective methods for detecting and investigating environmental crime. Pavšer, Franca and Kontić (2016) stress that such crimes must be addressed in collaboration with all the entities responsible for prevention. The training of police must enable them to carry out high-quality prevention and law enforcement. It is also necessary

for police officers to become aware that the greatest problem of water crime is the harm it causes to humans, flora and fauna.

Education and training of the police constitute an important link in protecting the environment and preventing further environmental damage. General programmes and training modules that directly contribute to the better, more effective and more efficient prevention, detection and investigation of environmental crime should be prepared (Pavšer et al., 2016).

The results of a study by Pavšer et al. (2016) reveal a lack of awareness, particularly in terms of the education of police officers and managerial staff. Deficiencies are found in knowledge of individual current topics, thematic sets, and techniques for investigating environmental crime. The existing technical literature is deliberate and only to some extent sufficient for the investigations of criminal police, appropriate manuals with environmental thematic sets are missing. Such sets include water pollution, air pollution, and hazardous waste in addressing environmental crime. The education of police investigators and higher-ranking positions is required (Pavšer et al., 2016).

Another problem in police investigations of water crimes is the rarity of these crimes because they do not occur on a daily basis, meaning police officers are not very familiar with and used to investigating them. Moreover, water crimes can constitute ordinary water thefts or water pollution cases that will occupy uniformed police officers, while other water thefts and frauds could have the characteristics of sophisticated crime forms for which criminal investigators will be responsible. An additional issue for the Slovenian police, apart from the lack of employees in this field, is the equipment. Water pollution cases in particular generally involve toxic and hazardous compounds (i.e. chemicals or waste) that call for sophisticated protective equipment (Dobovšek & Praček, 2011). This equipment is quite expensive and so it is very hard for the Slovenian police to provide enough supplies of good equipment for police officers and related analyses. Moreover, chemical analyses of collected evidence are also expensive and, in any event, the National Forensic Laboratory is not qualified and accredited for such analyses so the police must obtain them from other institutes and laboratories, and pay for them. Given the very high costs of such analysis, police chiefs prefer to not order these analyses. In this way, certain big cases remain unsolved due to resource issues.

## 4 CONCLUSION

“The water problem is not simply one of neglect and mismanagement. It is a problem, actively constructed through harmful human intervention.” (Whelan & White, 2005, p. 142)

Water is a natural resource that is vital for life, social and economic activities as well as the functioning of the ecosystem. It is a strategic resource for the future of the entire world. Drinking water represents a problem for many countries. The lack of water is linked to the overexploitation of natural resources and is the result of global warming (White & Heckenberg, 2014). Population growth could trigger a huge global crisis related to water. Therefore, we must be even more aware

of water crimes because such acts have a considerable effect on the quality and quantity of water. As noted by Johnson, South and Walters (2016), water should be a public good, the common heritage of people and nature, as well as a fundamental human right. Moreover, water must be provided to everyone continuously and in a sufficient quantity for personal as well as household purposes.

In the light of what we presently know about water crimes and the potential drivers of increases in such crimes, there is an important need for research in this area. Further, Johnson et al. (2016, p. 160) suggest that green criminology and environmental protection should focus on “legal and governance frameworks that prioritise the human right to water and ecological sustainability over private interests”. In addition, a guarantee should be given to those countries in possession of rich water resources that they will not become the targets of other countries or water conglomerates while, on the other hand, one option could be a well-thought-out arrangement whereby these countries can help people coming from water-scarce areas. Regarding the quality of water, constant, controlled monitoring by both governments and society must be introduced. Various cases from history show that water companies have violated the standards in the pursuit of profit (e.g. Thames Water in Adelaide), causing people to no longer trust them.

We must bear in mind that water crimes can affect water quality, water scarcity and water insecurity. Accordingly, Gleick (2006) recommends protecting water systems through a combination of improved physical barriers, more extensive real-time biological and chemical monitoring and treatment, and by developing smart and rapid integrated response strategies.

Slovenia is rich in water resources and, despite the low number of water crimes, it is crucial to also focus on this area. The police’s work in this field is good and the cooperation with the Inspectorate of the Environment and Spatial Planning is proceeding very well. Therefore, we suggest that education be increased on the local level and for officers at individual police stations. It is necessary to upgrade the general educational programmes and training in the field of environmental protection with contemporary issues of water crimes, due the current insufficiency (i.e. constantly changing crime cases and new modus operandi). Further, water is a living natural resource that flows its own way, therefore a manual on biological and chemical treatment in the event of water crimes (i.e. water pollution or contamination) and integrated response strategies would make police responses to water crime much more easily and effectively.

Finally, it is important to raise people’s awareness around the world as enhanced awareness can bring about major changes. Most people do not think about the problem early enough, but unfortunately it is then often too late to solve the problem because enormous damage has already been done. We must begin to protect the planet for the following generation(s), and, in doing so, we must reduce the use of chemicals and other substances that pollute water resources and the environment in general.

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