

# Environmental Change and Involuntary Migration: Environmental Vulnerability and Displacement Caused by the 2014 Flooding in South-Eastern Europe

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# Ecology and Justice



## Contributions from the margins

Edited by Mladen Domazet



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**Environmental Change and Involuntary Migration:  
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# Environmental Change and Involuntary Migration: Environmental Vulnerability and Displacement Caused by the 2014 Flooding in South-Eastern Europe\*

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## 1. Introduction

In 2015, over a million refugees and other forced migrants came to Europe, mostly by two dangerous sea routes, the so-called Eastern Mediterranean and Balkan routes (UNHCR, 2016). Most of these global flows of displacement, which today amount to more than 65 million persons, have in the past few years surpassed the number of persons displaced all over the world during and after World War II. Current geopolitical processes, which act as the pressing factors of displacement and cause involuntary migration on a global level, are primarily linked to the conditions of instability and the general presence of violence in almost all continents of the world, from West and North Africa through the Middle East all the way to Central and South-East Asia. However, along with the well-known political and economic causes of migration and forced displacement in the world, which include wars and other armed conflicts, terrorism and persecutions, socio-economic deprivation, poverty, and general lack of prospects, it is becoming increasingly evident that environmental change in the broader sense of the word, and climate change more narrowly, can be equally significant causes or macro-drivers of migration and displacement. In the period to come, this acute crisis and its processes will pose before the EU numerous social, economic, humanitarian, and security challenges, as the number, scope, and intensity of displacement flows caused by environmental factors in the 21<sup>st</sup> century are bound to become even more intense in numbers, size, and

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\* This paper is partly based on various revised and adapted sections of the author's doctoral dissertation (ŽUPARIĆ-ILJIĆ, 2015).



impact, as various research results quite unambiguously indicate (ADGER et al., 2003; ADAMO, 2010; FORESIGHT, 2011, GEMENNE, 2011).

In the light of these processes, this paper starts from the perspective of previous studies on forced migration in order to discuss the effects and impacts of environmental change on people and their habitats as one of the possible and increasingly important causes or macro-drivers of involuntary displacement in the world. Following a description and analysis of the global numbers indicating the size and degree of involuntary environmental migration, we shall also discuss its preconditions, which necessarily include the issues of environmental risks, environmental vulnerability, threat and resilience, as well as environmental (or climate) and social justice. As a case study, we have analysed the evacuation and temporary environmental displacement during and after a natural disaster, namely flooding in the regions of Croatia, Serbia, and Bosnia and Herzegovina in May 2014, concluding with some guidelines for the future reduction of environmental threat and increase of environmental resilience in these three countries.

## **2. Environmental Change and the Impact of Environmental Risks on Human Habitats and Societies**

Scholars generally agree that modern climate change is different from natural climatic variability, since it results to a considerable extent from human activity, which alters the Earth's climatic system (MASLIN, 2009; HENSON, 2011; IPCC AR5, 2014). Since the late 18<sup>th</sup> century as the time of the emergent Industrial Revolution, the impact of man on climate and the environment has increased significantly. It is with human activity that the chemical composition of the atmosphere has changed, causing a more intense global warming than that which would have ensued naturally, without human influence.

According to the reports of the Intergovernmental Panel on Climate Change (IPCC V, 2014), climate change implies a series of interconnected geophysical, climatic, and meteorological factors and results from both natural and anthropogenic influence. It is manifested by a constant increase in the atmospheric concentration of greenhouse gases, a rise in average global temperature (the so-called "global warming"), a reduction of ice and snow covers, a rise in the global sea level, and an alteration of precipitation patterns. Presently these are manifested in the form of increasingly frequent and intense, even extreme climatic, hydro-meteorological, and geophysical events (IPCC V, 2014). Beside all these, in this text we use "environmental change" predominantly to imply a series of additional interconnected factors, which are partly consequences of the aforementioned climate change

and partly phenomena *sui generis*. In other words, environmental change is a consequence not only of natural climatic variability, but also of ecological imbalance, or rather direct degradation of the environment caused by the human factor, including technological disasters such as various developmental projects. All these transformations differ in their speed, frequency, intensity, duration, as well as the impact they have on human societies and migration patterns.

When describing and analysing the transformations and variability of environment, we use the collective term “environmental change” to denote the totality of transformations in the natural and societal (human) environment on planet Earth (both globally and locally) caused by natural (geophysical, climatic, ecological, biological and/or biochemical) events and processes, or human (anthropogenic) impact on the environment. In that sense, the term “environmental change” is understood as a higher generic term subsuming the term “climate change”. Thus, environmental change would imply and include the following: a) extreme weather events and natural disasters (temperature extremes, cold or hot, drought and the related fires, volcano eruptions, earthquakes, tsunamis, floods, landslides, and storms – whirlwinds, hurricanes, typhoons, monsoons, and tornados); b) ecological imbalance and degradation caused by the human factor (deforestation, erosion, soil exhaustion and soil desertification, sinking and submersion of coastal and island land owing to the increase in sea level, and finally - water, soil, and air pollution); c) technological disasters (industrial accidents and contamination, atomic and nuclear catastrophes, environmental pollution resulting from developmental projects). Even though there is an overlap of effects, impacts and outcomes of climate change and environmental change, the former is a subset of the latter. Climate change refers primarily to the changes in atmospheric and hydrologic processes driven by anthropogenic influences, whilst environmental changes in general contains the aspects of category (c) above: the technological disasters and specific high-impact by-products.<sup>1</sup>

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1 Hence, following the argumentation in Cifrić (2000), we understand ‘environment’ as the unity of ‘natural environment’ and ‘societal (human) environment’. The natural environment is a given reality of nature on this planet, including physical (living and non-living) world, ecosystems and the entire biosphere. On the other hand, societal (human) environment is a socially constructed space within which human interventions i.e. anthropogenic impacts on the natural environment are carried out, through social life and societal processes. In this sense, societal environment also includes technical and technological sphere of human activity, while the totality of natural and societal (human) dimensions of the environment, both frame living conditions of human beings and society.

Human interference with the environment is ever more evident, and numerous reports lead to conclusions about the reverse impact (with outcomes which are often irreversible!) of environmental change on the present and future ecological, economic, political, demographic, and other social issues. It is important to note that the nature of these events or processes, as well as their scope, intensity, and duration, determine the type and degree of environmental threat, which becomes a driver for migration and displacement.<sup>2</sup> In the period from 1992-2012, as many as 4.4 billion persons in total were affected by environmental adversity or disaster, mostly by flooding, drought, or storms (UNISDR, 2012). In the period from 2008-2014, the annual average number of persons affected by some type of catastrophe was around 210 million, with variations ranging from 95.3 million in 2013 to 245.7 million in 2012 (IDMC/NRC, 2015:9). Based on the data provided by IPCC, Tacoli (2009) has argued that of all types of environmental change, it is the rising sea level, extreme weather events (such as heatwaves and storms), and fluctuations in the available freshwater (e.g. droughts) that will most likely lead to migration and displacement of populations.

Some areas in the world are more prone to episodic environmental events, others to the processual ones. It has been predicted that environmental change will most significantly affect the societies in the Asian-Pacific region (LACZKÓ and AGHAZARM, 2009; IPCC V, 2014). According to the data provided by Guha-Sapir et al. (2014), Asia and the Pacific are the areas that have suffered most environmental hazards, and it is highly likely that such events will continue to occur in the future. In the thirty-year period (1974-2003), about a half of the environment-related events and disasters occurred there, and these are also the areas where natural disasters have resulted in the highest mortality: thus, as many as 85% of global deaths caused by disasters have happened in this area (EM-DAT/CRED, 2014).

Floods most often occur in the areas of Central, South, and South-East Asia (an especially vulnerable area is the Ganges delta, with a population of 125 million, mostly impoverished, and a density of ca. 200 persons per

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2 Our 'definition' of environmental change is to some extent inspired by three types of catastrophes, proposed by Hamm (2011; quoted in CIFRIĆ, 2013: 92). In regard to the proposed classification we point out that some of manifestations of environmental change cannot be defined unambiguously as pertaining exclusively to one of the above categories. In some occasions they might be a result of a series of natural and anthropogenic factors, Fukushima Daiichi disaster being just one example. Therefore, seldom we find a clear-cut, ideal-type distinction of different environmental events and processes in reality. Consequently, we could rarely establish direct and definite causality between one mode of environment change and specific migration response to it.

km<sup>2</sup>), Africa (the region of the Great Lakes, central and south-eastern Africa), Central America, and the western part of South America. In 2009, more than 80% persons affected by extreme weather events (such as tropical storms) were located in Asia and Oceania, partly Africa (EHRHART et al., 2009:2, FORESIGHT, 2011). The greatest risk of stormy winds has been observed in southern Asia (Bangladesh, the coasts of India, Vietnam), the eastern coast of Africa (particularly Mozambique and Madagascar, Tanzania), Central America, and the Caribbean. The threat of drought is present primarily in the Sub-Saharan Africa, southern Asia (especially Afghanistan, Pakistan, and some parts of India), and in some parts of South-East Asia (especially Myanmar, Vietnam, and Indonesia). This means that the regions of Sub-Saharan Africa, the Horn of Africa, and South and South-East Asia are at risk from all three threats and environmental risks (drought, flooding, and storms) and may therefore be considered, tentatively speaking, as areas of increased or extreme exposure to and threat from environmental change.<sup>3</sup>

Differently put, the populations that are most acutely exposed to environmental risks live in: a) underdeveloped countries; b) dry or semidry areas; c) coastal and fluvial regions (GLOBAL HUMANITARIAN FORUM, 2009; OXFAM, 2009). These populations are most vulnerable because of their overall poverty, as well as exposure to drought and desertification, or the consequences of rising sea level and flooding. There are several variables that the scholars take into account when calculating environmental vulnerability: sex, age, ethnicity, cultural factors, and socio-economic status (class). This last factor can cause further social stratification and additionally increase the vulnerability of populations that are already insecure, especially at the local and regional levels. In that sense, exposure to risks and socio-economic inequality determine and intensify each other. Garcia-Acosta (2007:130) has emphasized that one should use the term “differential (environmental) vulnerability” as it indicates that social groups are not equally exposed to risks and have different means of coping with environmental emergencies, which is why the effectiveness of their response to these risks varies as well.

The negative consequences of environmental change affect the survival chances, wellbeing, and personal safety of people, making them environmentally vulnerable. However, environmental change may also create ad-

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**3** Environmental vulnerability apparently occurs in the geographic areas marked by the lines of global economic power and inequality, which separate the lands of (Global) South and North. In this way, environmental vulnerability mirrors the socio-economic one, indicating that environmental change is far from democratic, as it affects various social groups differently.

ditional vulnerability in individuals and communities that have been previously affected by various types and degrees of social and economic threat, deprivation and injustice (WILLIAMS, 2011). The character and severity of the impact of environmental change varies depending on the event, and is detrimental to the degree in which the capacity for adaptation in the vulnerable population has been diminished by the adverse impacts of change. Vulnerable groups are often the first and most severely affected segment of the population. The same goes for those who had already become forced migrants and refugees, as they are or will become vulnerable in multiple ways because of the complex factors of stress and threat, political, social, economic, and environmental combined.

As the level of environmental hazard often overlaps with various levels of socio-economic threat it is then convenient to ascertain that issues of environmental justice are closely connected to those of social justice. In their endorsement of “environmental justice”, A. Antypas et al. have argued that it refers to a situation in which members of a minority social group find themselves in an unfavourable position, or threatened on the local, regional, or national level by environmental threats or hazards (ANTYPAS et al., 2008). They can also be victims of violation of their basic human rights, if that violation is a result of environmental factors, and systematically deprived of access to information or to the legal system, and/or participation in decision-making on issues referring to the environment.<sup>4</sup> In that sense, marginal social and ethnic groups (especially the indigenous ones) may be “environmentally discriminated” as their living conditions are threatened and degraded through exposure to high environmental risks and hazards.

In her report to the UN, Ksentini (1994) has indicated that the right to environmental protection is closely related to the right to development, and that the poor citizens of underdeveloped countries often suffer from simultaneous violation of their basic human rights, right to development,

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4 Antypas et al. (2008:8-10) have argued that the conditions for environmental justice are met when environmental risks and hazards are evenly distributed, without direct or indirect discrimination on all levels of responsibility; when access to natural resources is evenly distributed; and when access to information, participation in decision-making, and access to the legal system regarding environmental issues is granted to all. Thus interconnected, the fields of human and environmental rights are a subject of the so-called political ecology, which, among other things, investigates the basic human and environmental rights (the right to life, health, and environment), environmental justice (the right not to be environmentally discriminated on account of one's group characteristics), and procedural justice (the right to information and access to the legal system regarding environmental issues).

and right to a quality environment. In other words, as V. Shiva (2008) has stated, there is no social justice without environmental justice, and vice versa. Here we understand these overlapping categories of environmental and socio-economic justice as a right of all human beings to adequate means of existence and satisfying quality of life within their natural and societal environment, with assurance of (renewable) resources for sustainable livelihoods not just immediate survival.

The populations of all geographic areas and all societies depend to a greater or lesser extent on the resources of their ecosystems. Based on the data provided by IPCC IV (2007) and IPCC V (2014) it has been emphasized that global warming will create an additional pressure to use the available resources in order to mitigate the consequences of these changes. An aspect that deserves special attention is the impact of environmental change on the availability of fresh water and the consequences this may have on the populations. Access to fresh water or the lack of it is not only a “potential” source of conflict, which may lead to displacement as a consequence. It has already created and keeps creating tensions in some parts of the world, wherever several countries depend on the same sources of water – especially in Africa, the Middle East and South-East Asia. According to the predictions of IPCC V, the availability of fresh water will continue to diminish progressively in many parts of the world (IPCC V, 2014:19).<sup>5</sup>

Rising of the sea level implies an additional reduction of water owing to the salinization of fresh-water resources. If the predicted rise of the global sea level of at least one meter takes place before the end of the century (CULLEN, 2010), that will expose the island and coastal populations to the risk of losing their habitat and land to erosion and intense flooding, which means an increased degree of threat and exposure to environmental risks. Anthoff (quoted in STERN 2007:82) has estimated that 145 million persons will be threatened if the sea level rises for a single meter, most of them living in southern and eastern Asia.

Not everyone is equally affected by ecological imbalance and environmental degradation. The adverse impacts of these changes are not felt equally among the populations of various countries or even within the same population (AHTONEN et al., 2012:13). The already marginalized social groups must bear a disproportional burden of environmental change in both the “underdeveloped” and the “developed” countries, for example, which has become evident in the consequences of Hurricane Katrina in

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**5** Warren et al. (quoted in BARNETT and WEBER, 2010:12) have suggested that before the end of the century, between 800 million and 1.8 billion persons will be exposed to water-related stress. They have also estimated that up to 600 million persons may be threatened by famine before 2080.

the USA (GEMENNE, 2010).<sup>6</sup> Agnew (2012) has argued that some groups are “more exposed” to the consequence of climate change because they live in the areas of high environmental risk (e.g. risk of flooding). Some are “more sensitive and more vulnerable” with regard to climate change because their means of sustenance are narrowly linked to their ecosystems (e.g. peasants, fishermen, cattle breeders). Some, again, have a limited capacity of “adapting to” and “recovering from” adverse change, i.e. they lack environmental resilience (e.g. the poor).

Environmental risks are also related to demographic factors and the issues of sustainable development. A considerable part of present and future urban growth in Africa and Asia consists in the increased expansion of slums, which are regularly located in very sensitive places. Thus, instead of “developing”, rural-urban migration can simply mean translocating the vulnerable and impoverished populations from one place to another, from rural areas to towns and cities (BLACK et al. 2008:23). Thus, being environmentally vulnerable goes hand in hand with socio-economic deprivation and social precariousness, insufficient hygienic conditions, low standard of living, and bad quality of life in general. Owing to these reasons, sociologists and urban planners may consider rural-urban migration not as a motor for development, but on the contrary: as a burden or obstacle to development. Nevertheless, from the perspective of a poor rural family, it remains a positive factor, as it is expected to bring gain to individuals, families, and households (DE HAAS 2007).

Thus, environmental change may, yet need not, generate mobility and migration directly and immediately. In case of natural or technological disasters, it quite directly influences the emergence of migration and displacement. In case of ecological imbalance and environmental degradation, it motivates migration largely indirectly, through threats to food supply and health, as well as through the degradation of land and fresh water resources,

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6 However, not all parts of the population in developed countries show equal environmental resilience. In case of Katrina, a hurricane that struck New Orleans in 2005, the system of dykes and flood protection failed (GEMENNE, 2010). The flooded areas mostly affected the lower parts of the delta, inhabited largely by an Afro-American population of a lower socio-economic status. Fussel, Sastry and VanLandingham (2010) have concluded that the consequences of the hurricane and the flooding have disproportionately affected various population strata, since those who suffered most were also those who had been socially vulnerable before the disaster. The wealthier, white population showed greater environmental resilience owing to their better living circumstances, financial means, and social contacts, which made the relevant information more accessible to them and gave them the possibility to leave the affected area, something that not everyone who is environmentally vulnerable will be able to do.

the habitat, and the means of sustenance (VÖRÖSMARTY et al., 2000; IPCC IV, 2007). Environmental change differs in its frequency and intensity of occurrence, as well as its degree and the way it influences migration and displacement, which is the topic of our next chapter.

### 3. Environmental Change as a Driver of Migration

Environmental change acts as an inducement to and driver of migration, bringing about the emergence of global (in)voluntary migration, which can be called environmentally induced migration. Environmental factors are expected to induce migration flows in the 21<sup>st</sup> century with an increased frequency. Nevertheless, environmental change is rarely the only factor (e.g. in case of natural disasters) and is mostly only one among many (albeit an increasingly important and frequent one), acting as a motor or motivator in making the decision to move or flee (BLACK et al., 2011; CASTLES, 2011). Adversities and catastrophes as episodic and short-term events, as well as ecological imbalance and degradation as long-term processes, influence the lives of millions of people all over the world. Environmental change varies not only in the frequency and intensity of occurrence, but also in the way it motivates migration and displacement. Competitiveness and antagonism over using natural resources and possessing sources of energy are among the main reasons of (political) conflict in the world. However, from a long-term perspective, “episodic” environmental change (such as natural disasters) today generates an equal or even greater number of victims and displaced persons than political conflicts around ideologies, resources, and territories. A report by IDMC/NRC (2014) estimates that in 2001 the global number of persons displaced for environmental reasons surpassed for the first time the number of those displaced for political reasons.

However, not all geographic areas are equally exposed to the adverse consequences of change, and not all population strata are equally vulnerable to or resilient against environmental stress and environmental risks. Among those affected by change, not all have responded to environmental events or processes with migration or forced displacement. Recent data on the number of displaced persons around the world, as seen in the table, confirm that sometimes the number of those displaced because of environmental change even surpasses the number of those displaced for political reasons. Displacement for environmental reasons (natural disasters) is extremely variable, from 14.9 million in 2011 to 42.3 million in 2012, with an average of ca. 26.4 million displaced persons per year (IDMC/NRC, 2015:9). The data in Table 1 reveal another trend: whereas the extent of environmental displacement varies from year to year (with the largest number by far in 2010), the last few years show an increase of internally displaced persons



owing to armed conflicts and general violence, which primarily refers to the prolonged war in Syria.

**TABLE 1**  
*The total number of refugees and internally displaced persons in the world, 2008-2015*

	2008	2009	2010	2011	2012	2013	2014	2015
Refugees in total*	16.03	16.05	16.4	16.37	16.34	17.9	19.5	21.3
Internally displaced persons (because of armed conflict or general violence)	26	27.1	27.5	26.4	28.8	33.3	38.2	40.8
Internally displaced persons (because of natural disasters)	36.5	16.7	42.4	15	32.4	22.3	19.3	19.2
<b>TOTAL NUMBER (in millions)</b>	<b>78.53</b>	<b>59.85</b>	<b>86.3</b>	<b>57.77</b>	<b>77.54</b>	<b>73.5</b>	<b>77</b>	<b>81.3</b>

*SOURCE: Župarić-Iljić (2015:85) – author’s adaptation of UNHCR and IDMC/NRC data (\*includes Refugees under the mandate of UNHCR-a, and Palestinian refugees under the mandate of UNRWA)*

In global proportions, most persons displaced due to natural disasters in the period 2008-2013 were in China, India, the Philippines, Pakistan, Bangladesh, Nigeria, and the USA, with 81% of all displacement cases located in Asia (IDMC/NRC, 2014a:31). In 2013, the most massive displacements, both absolutely and relatively (with regard to the ratio between the number of displaced person and the total population number) took place in the Philippines (7.2 million), China (5.9), India (2.1), and Bangladesh (1.1). Two super-typhoons (Haiyan and Trami) in the Philippines alone displaced as many as 5.8 million persons, while floods in China and India displaced more than a million persons in each respective country. Of all disasters, storms and floods were most prominent by far, displacing more persons than any other event (20.7 million or 94%) (IDMC/NRC, 2014a:31). In 2014, Asia was still the locality most affected by natural disasters, with as many as 16.7 million displaced persons, which amounts to 87% of all persons displaced due to natural disasters, while environmental displacement in both American continents was in the second place with 1.6 million displaced persons (8.3% of the total number) (IDMC/NRC, 2015:30). In Africa, the

most affected areas were Ethiopia and Sudan with ca. 770.000 displaced persons (4%) and in 2014, Europe had a disproportionately large number of environmentally displaced persons (190.000), primarily due to flooding in the Balkans.

Based on various analyses of the present threat, the scenarios and projections of future environmental displacement range from 10 million to more than a billion persons in this century (GEMENNE, 2011). Such alarming prospects (even though not entirely scientifically based) have drawn the attention of politicians and the public to the increasing and more massive migration of people motivated by environmental and climatic change. Some scholars emphasize that one should not forget that such migrations are rarely caused by environmental reasons alone; instead, they occur in combination with other economic, social, political, demographic, and other factors (BLACK et al., 2011).<sup>7</sup> Even the definition of environmental migrants and the estimates of their present number, as well as projections about this number in the future, are a matter of scholarly debate. The same goes for the classification of (in)voluntary environmental migrants, as well as the issue of responsibility for the protection of the so-called “environmental refugees”, as they do not receive adequate protection within the international refugee regime.

Researchers focusing on the estimates about the number of persons displaced for reasons of environmental change (EACH-FOR, 2008; WARNER, 2010; GEMENNE, 2011) particularly emphasize that it is not quite clear how far one can go with the predictions concerning the number of persons who will react to environmental threat by temporarily or permanently leaving their place of residence. If environmental change threatens human habitats, migration can be only one possible strategy in responding to that threat. It is often difficult to predict how many persons will move or be forced to migrate, and in which directions, as pointed out by Black et al. (2011). Scholars have also indicated the relatively high degree of immobility in the human population, which is supported by the statistical data of only 3% international migrants in the world (IOM, 2015). For this reason, the present data do not indicate that people will leave their places of residence or migrate in large proportions motivated exclusively by en-

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7 In the light of terrorist attacks, the world climate summit in Paris has warned of numerous global risks and challenges in terms of safety, social (in)equality, and environmental justice as the diversifying factors (co-) acting as the macro-drivers for migration, regardless of which expert projections and predictions on the future flows of displacement will actually come true. Even if the projected numbers and scenarios prove incorrect, the predictions as such might nevertheless have an impact on the future environmental and migration policies.

vironmental change; nevertheless, the trend is present and will probably continue to increase in the future, judging from the relevant reports on the global environmental situation (STERN, 2007; IPCC V, 2014; IDMC/NRC, 2014a).

Norman Myers, one of the most prominent advocates of the so-called alarming/catastrophic predictions on the impact of environmental change on the emergence of forced migration, argues that most migrations in the future will be motivated by natural disasters or environmental imbalance. These migrations would involve between 50 million (estimate for 2010) and more than 200 million persons forced to migrate before 2050, some of those possibly seeking safety in Europe (MYERS, 2002). The latter projection has been generally accepted and is often cited as the number of “environmental refugees” in the 21<sup>st</sup> century. On the other hand, Black et al., (2013:34) have warned that such large numbers of persons affected by environmental change, as well as predictions of environmental displacement, are methodologically imprecise, since they mostly refer to the displaced persons at the “peak” of the environmental disaster and during emergency actions (evacuation), rather than in a long-term perspective, including the time after the displaced persons’ return, which can happen relatively soon. As these authors have argued, environmentally displaced persons are rarely in the situation of “prolonged displacement” that very often characterizes the (classical) refugee experience.

Disasters in terms of water and temperature extremes are usually related to sudden environmental events that require prompt reaction. In such unexpected natural or technological catastrophes, immediate flight of the population rarely includes active or efficient strategies of planning or decision-making (BOANO, ZETTER and MORRIS, 2008). Forced migration takes place as the sole promising option of saving lives, without special preparation and in a state of urgency. Since natural disasters are more conspicuous as the causes of forced migration than slow and gradual environmental degradation, the appropriate response is faster as it appears more urgent. Migration caused by environmental degradation is rarely planned, even if ecological imbalance and environmental degradation were planned and intentional. Links between gradual environmental change and migration are often filtrated through economic circumstances or economic deprivation, far more than it is the case with urgent migration and forced displacement caused by a natural disaster. Bates (2002) has indicated that poor populations are more likely to live in marginal ecosystems and are usually most sensitive to environmental damage, which is why they are frequently forced to migrate. They are also the least likely to be able to return soon to the setting they had to leave.

Furthermore, migration is only one possible answer to environmental risks and stress. However, not everyone exposed to that risk and stress will respond by moving away (BLACK 2001; MCLEMAN and SMIT, 2006; ADAMO 2008). It may seem inaccurate to speculate about the number of people who will probably be forced to migrate owing to environmental change in the future. Brown (2008) has argued that predictions of possible threats and displacement owing to environmental reasons are complicated by three factors. Firstly, the scope and size of forced environmental migration will depend on the growth and distribution of the global population, which will expand significantly in the course of the 21<sup>st</sup> century. This trend will be especially present in underdeveloped countries, where it will go hand in hand with the high rate of growth in urban population (UNFPA, 2009). Secondly, there is a manifest methodological, particularly statistical flaw related to establishing the actual numbers of migrants in the world, particularly acute when it comes to internal migration, which accounts for most of migration flows. Since most migrations caused by environmental change are actually internal and most forced environmental migrants remain within the territory of their own countries, the problem is even more manifest and complex. Lastly, since the climate system is rather inert, the consequences of present activity will be felt long into this century, as Brown has argued. In his opinion, the impact of climatic and environmental change as a motor of forced migration depends on at least four factors: “the quantity of future greenhouse gas emissions; the rate of future population growth and distribution; the meteorological evolution of climate change; the effectiveness of local and national adaptation strategies” (BROWN, 2008:27).

In other words, the consequences of environmental (climate) change in the next 50 years are largely predetermined. The effects of environmental change will only confirm some of the existing global migration patterns. Geographic areas that are particularly sensitive and vulnerable as to environmental stress will continue to be the sources of migration, especially rural to urban, as it has happened in case of the impact of drought in Sahel. Migration between the neighbouring regions and countries will continue to follow the established migration networks, as in case of migration to the USA during the prolonged drought in rural Mexico (BROWN and MCLEMAN, 2013:3). All that will happen afterwards is a matter of speculation, but if the present trends do not change, it is quite probable that the environmental situation will further deteriorate. The frequency and intensity of natural disasters is thus likely to increase in various regions, including South-Eastern Europe, such as the flood that struck parts of Croatia, Serbia, and Bosnia and Herzegovina in May 2014.

#### 4. Environmental Vulnerability and Displacement as a Result of Flooding in South-Eastern Europe

Floods are among the most frequent natural disasters today, and they are on the increase. Even though earthquakes are the most devastating, and very often the one with highest number of immediate casualties, form of natural disaster, floods have the positively highest impact factor regarding vulnerability and displacement potential. As many as 47% of the total number of 246 million persons affected by all natural disasters (according to the annual average of 2002-2011) were those affected by floods, followed by droughts (29%), storms (16%), earthquakes (4%) and extreme temperatures (4%) (UNISDR and CRED, 2013). Prolonged and abundant precipitation, followed by a sudden rise in the water level of rivers and their overflowing from riverbeds are bound to cause flooding of catastrophic proportions. The areas of South Asia and the Pacific (partly also Central America and the Caribbean) are especially threatened by stormy seasonal monsoons and floods. Most of them occur in India, China, and Bangladesh, which are among the countries with the highest demographic density, as well as relatively high poverty rates, which decreases the adaptive capacity of the population.

In May 2014, such a natural disaster of large proportions happened “in our own backyard.” The flood that affected parts of Croatia, Bosnia, and Serbia took human lives and caused huge material damage, which is still being estimated and repaired. The disaster also caused a considerable number of evacuations and short-term (environmental) displacements. Images of evacuations and devastated homes in the media reminded of the displacements and refugees during the 1990s, especially because in Bosnia and Croatia the disaster affected areas that had suffered damage and loss of lives during the war.

The flooding was caused by an increased and huge quantity of precipitation (rain), which started on May 13 and lasted until May 18, 2014. “The cause of increased precipitation was a powerful and lasting cyclone with its centre above South-Eastern Europe. It was preceded by a very moist period, which saturated the soil in the fluvial region of the Sava.” (DHMZ, 2014:7). All this resulted in a fast rise of the water level in the Sava and its tributaries – the rivers Una, Vrbas, Bosna, and Drina – in its middle and lower fluvial region. Owing to their confluence, the Sava reached previously unrecorded values and the highest water level since the beginning of systematic records” (HRVATSKA VODOPRIVREDA, 2014).

As evident from Fig. 1, the rivers overflowed the banks, especially in eastern Croatia, northern and north-eastern Bosnia, and western Serbia, flooding numerous settlements in a very short span of time. In Croatia, the most severely affected area was the extreme east of the region of Sla-

vonja, i.e. the Vukovarsko-srijemska County (the area at the triplex border with Bosnia and Serbia). Additional threatened areas were located in other Croatian counties, but there the environmental hazard was not manifested as a devastating risk in the form of a natural disaster. In Croatia, Hrvatske vode (the public water management company) were in charge of organizing defence measures, but they failed to prevent the catastrophe despite the highest level of flood protection measures.

FIGURE 1

“Deadly flooding across Croatia, Bosnia, and Serbia”



SOURCE: [www.digitaljournal.com/news/world/mine-explodes-in-bosnia-as-floods-clear-up-begins/article/384322](http://www.digitaljournal.com/news/world/mine-explodes-in-bosnia-as-floods-clear-up-begins/article/384322)

It has been estimated that more than 2.5 million persons were directly or indirectly affected by the consequences of flooding, including mudslides (RELIEFWEB, 2014). This number includes more than half a million children, as well as a certain minor number of internally displaced persons and refugees from the period of warfare in the 1990s (in Bosnia and Herzegovina, and in Serbia).

In Serbia, the flooding affected the largest number of persons, including 23 who drowned. Among the 1.6 million persons affected, around 32000 were evacuated from their homes, whereby most found shelter with their

relatives in unaffected areas. Around 5000 persons were accommodated in reception centres organized as temporary shelters by the Serbian government and the Serbian Red Cross (UN SERBIA, 2014:15). In the area that was most severely affected (the municipalities of Obrenovac and Lazarevac), there is Roma population comprising about 11% of the total population, a particularly vulnerable group that suffered severely; another such group were the asylum seekers in the flooded reception centres in the Obrenovac area.

In Bosnia, more than a million persons in ca. 60 municipalities were affected by flooding. Among these, 25 dead and over 90 000 evacuated and displaced persons have been recorded. Around 43000 homes were flooded, and because of landslides ca. 1900 houses in mountainous areas were damaged, most of them irreparably. As many as 2610 landslides were reported (RELIEFWEB, 2014:2). Severe damage was inflicted to the infrastructural and communal system, which still partly affects the health and the quality of life of people there, especially owing to environmental stress related to the pollution of fresh water and sanitary facilities (IDMC/NRC, 2014C:4).

In Croatia, around 38000 persons were affected by flooding, mostly in the extreme east of the county, in Vukovarsko-srijemska County, although the consequences of flooding could also be felt elsewhere: in the fluvial area at Slavonski Brod, as well as during the overflow of the Orjava River near Požega. However, the area that was most severely affected was that of Županijska Posavina, in three municipalities: Gunja, Drenovci, and Vrbanja. In fact, the flood was not caused directly by the river overtopping the levee along the Sava River due to the high water levels, but by breaks in the levees in localities near Rajevo Selo and Račinovci.<sup>8</sup> Besides Gunja, these villages were completely flooded and their entire population had to be evacuated, as well as the population of other, partially flooded villages.

In Croatia, two persons died in the water torrent when the levee broke. Estimates speak of more than 13000 evacuated persons, with 8321 persons registered as having been accommodated in ca. 150 locations (VUZS, 2014). Accommodation was organized in improvised reception centres in the vicinity, in various institutions such as sports halls of primary schools in nearby villages, or in families. Red Cross took care about the evacuated

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8 Models of prevention or structural adaptation to flooding by means of building dams and levees seem to lead to something that Etkin (1999, quoted in BLACK et al., 2013:39) has termed "risk transference", which means that these defence measures are based on a system that would actually result in rarer, yet highly hazardous disasters instead of the more frequent, low-risk ones. In other words, the present-day system of dykes has actually unnaturally limited the periodic overflowing of rivers, which would otherwise self-regulate the water surplus in their riverbeds.

persons by providing food, sanitary equipment, and other humanitarian aid, as well as psychosocial help and assistance (DUZS, 2014:28).

Besides human suffering, the flood caused interruptions in the energy supply network and severely damaged the infrastructure, including the lack of fresh water and the loss of cattle and agricultural assets. More than 8500 acres of arable land were devastated and more than 8000 domestic animals, among them 5500 head of cattle, were dislocated (VUSZ, 2014). More than 1000 animals died, which caused a threat of infectious diseases. The total direct damage has been estimated to almost 300 million Euro. Nevertheless, that is considerably less than the estimated total damage in Serbia, which amounts to 1.5 billion Euro (UN SERBIA, 2014:16), or Bosnia and Herzegovina, where it has been estimated to over 2 billion Euro (RELIEFWEB, 2014).

**TABLE 2**

*Comparative overview of the consequences of flooding in May 2014*

	<b>Croatia</b>	<b>Bosnia and Herzegovina</b>	<b>Serbia</b>
Total number of persons affected by the consequences of flooding	40.000	1 million	1.6 million
Deaths	2	25	23
Number of evacuated persons	8.321 (13.000)	90.000	32.000
Number of long-term displacements (November 2015)	260	670	560
Particularly vulnerable social groups	Children, women; Roma; persons displaced during the wars in the 1990s; paupers; asylum seekers		
Damage estimates	300 million Euro	>2 billion Euro	>1.5 billion Euro
Number of restored homes (November 2015)	2.018/2.279	29.905/43.249	19.780

**SOURCE:** DUZS (2014), UN Serbia (2014), Reliefweb (2015), IDMC/NRC (2015), *author's adaptation*

The key predictor for the return of environmentally displaced persons has been identified in the type of aid at the disposal of the community threatened by environmental stress and/or affected by an environmental disaster (ADAMO, 2010). Owing to the overall solidarization of Croatian citizens and other countries, the collected financial and humanitarian aid reached the victims of flooding, i.e. evacuated and displaced persons. Among the



2689 flooded houses and 529 buildings that had to be demolished, 1811 houses and some twenty public buildings were listed after the flood for state-financed restoration. According to the governmental report, 969 family houses were restored before mid-December 2014 and 284 buildings were cleared away (OMBUDSMAN, 2014:9). A year after the flood, 1557 houses were completely restored.<sup>9</sup>

After the water receded (before the end of 2014), around 600 families returned to Gunja, which is more than a half of the total number of village households. Some of them moved into their restored or half-restored houses, while others awaited the completion of restoration works in makeshift housing (modified cargo containers or trailers). Such ‘trailer camps’ for temporary accommodation had been established in Gunja in mid-July 2014 (for ca. 350 persons), Račinovci (for 200), and the village of Padež, part of Rajevo Selo (for 100), while ca. 160 persons were accommodated in social welfare centres. However, voices could be heard that “the quality of accommodation in trailer camps was far from acceptable and especially inadequate for the accommodation of vulnerable groups – large families with children, elderly persons, or persons with health conditions” (OMBUDSMAN, 2014:9). There are likewise indications that the state failed to adequately define priorities in house restoration, as the element of general vulnerability was not taken into account.

The area affected by flooding had been structurally highly vulnerable before in terms of economic, social, and demographic parameters. In this situation, it was struck by a relatively significant natural loss (depopulation), as well as a mechanical outflow of the population (emigration). In the territory of three Croatian municipalities that were most severely affected, there were 12846 resident persons according to the census of 2011, which was a decrease of 27% compared to the situation of 2001, when there were 17631 residents (DZS, 2014). These three municipalities were areas of special public care as significantly underdeveloped according to the economic, structural, and demographic criteria. They also had a significant unemployment rate (the entire county being among those with the highest unemployment rate in Croatia) and a considerable number of persons living on social welfare (OMBUDSMAN, 2014). This was a significant obstacle to the return of labour (e)migrants and this weather event could act as an

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**9** Black et al. (2013) have demonstrated that the phase of clearing, restoration, and reconstruction can lead to increased economic activity in the area affected by an environmental disaster. In this case, one of the rare positive consequences of flooding was that the local population (a considerable percentage being unemployed) could obtain jobs, at least temporary, through the model of public works on the clearing and restoration of their own or their neighbours’ houses as well as the local infrastructure.

additional impetus to make the decision on temporarily or permanently emigrating from the region.

Access to information, and especially participation in decision-making process related to adapting to environmental change (or reacting to natural disasters), are two important factors of environmental justice, as we endorse in Antypas et al. (2008). Both rights had been compromised by the Croatia's state bodies during the preparation, reaction and restoration phase in regards to flooding. This is reflected in the fact that some of local Croatian citizens who are inhabitants of the flooded localities, being disappointed by process of determining liability for a breakage of the dike, had announced they would have sued the Republic of Croatia as the possible culprit for the damage caused, before the European Court of Justice.<sup>10</sup> Hence, as emphasized in Čaldarović (2012:171), there is always a need for effective, prompt and correct information which is conveyed to public about all possible outcomes before, during and after the realization of environmental hazard. These information could add to environmental resilience, mitigation and adaptation potential for communities affected by a disaster.

It is important to stress that parts of Bosnia and Herzegovina affected by flooding had suffered far worse during the war in the 1990s, which had forced many to move away in order to seek shelter and safety. Presently, the situation (especially in Bosnia and Herzegovina) is still burdened by the problem of war-displaced populations, who remain in the state of "prolonged displacement" despite all the efforts to take direct measures of defence against flooding as well as *post ante* mechanisms that would create the conditions for the return of evacuated and displaced persons. Thus, the areas affected by flooding were the very same parts of Croatia and Bosnia and Herzegovina which had been devastated during the war, which means that many houses that had been restored and rebuilt after the war were now demolished again by flooding and landslide. Beside these hazards, there was an additional danger in many areas that the remaining landmines may get activated (RELIEFWEB, 2014:3).

Furthermore, environmentally motivated migration and displacement can occur before, during, or after the natural disaster (in the phase of recovery and restoration). Black et al. (2013) have drawn attention to the fact that the trauma of environmental disaster can lead to the emergence of "post-disaster migrants", who are forcibly immobile during the disaster, but move away later on. As for the flood of 2014, it would be interesting to see how many of those who returned home after short-term displacement actually abandoned the idea of repairing their homes and decided to move

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10 Please see: <http://www.glas-slavonije.hr/269637/1/DORH-suti-poplavljeni-iz-zupanjske-Posavine-obratili-se-Europskom-sudu>

away permanently from the flooded area. These considerations seem all the more important as these are the areas that are otherwise socio-demographically and socio-economically vulnerable, as they are, as mentioned before, characterized by accelerated trends of natural and mechanical depopulation, primarily owing to the unfavourable economic situation, high unemployment rate, and general lack of prospects.

Owing to these reasons, the population of these areas have a reduced resilience against suffering, their vulnerability being enhanced by adverse social, economic, demographic, and occasionally political factors, intensified by insufficient structural revitalization after the war of the 1990s. Whereas in Croatia and in Bosnia and Herzegovina the areas affected by flooding were mostly multi-ethnic areas with post-war returnees, in Serbia it was partly the areas with population that had been displaced before, having been forced to settle here from Croatia or from Bosnia and Herzegovina during the war. Thus, segments of the population affected by flooding had been in the situation of having to leave their homes twenty years before, and the natural disaster may have incurred an even greater damage than during the war. Another vulnerable social group were the asylum seekers from Asian and African countries, who had fled from persecution (and perhaps partly from environmental hazards?) and now had to be evacuated from Serbian reception centres at Obrenovac and Banja Koviljača. All these issues need further research focusing on the links between environmental change and displacement, including the data referring to our case.

## **5. Concluding Remarks – Environmental Justice and Coping with Environmental Vulnerability and Displacement**

In this chapter we discuss diverse natural and societal factors contributing to global environmental change and the way they influence modes of coping with environmental threats. Anthropogenic degradation of the environment in the form of general air, water, and soil pollution has direct consequences for health and the quality of life. Until recently, it could be claimed that high-degree concentration of industrial pollution in the developed regions of the world implied the contamination of the entire ecosystem and the biosphere. Today, this threat has extended to those underdeveloped countries that seek to reach the level of industrial development characteristic of the so-called “developed countries”. The problem is worsened by the fact that these countries do not possess the new, “cleaner” technologies with reduced mechanisms for the emission of detrimental gases and other pollutants, but are based on the “old” industries that the developed countries have largely abandoned or made “greener”, that is, ecologically more acceptable and environmentally less detrimental. Of-

ten the old, dirty industries have been exported to the underdeveloped countries, along with the waste, which these were willing or even forced to accept in return for financial gain. This poses a particular sort of global environmental injustice related to power issues of international community and presumably environmentally oppressive character of 'richer' countries towards 'less developed' countries of the periphery (in Wallerstein's world-system terms).

Environmental justice does not concern only the issues of responsibility and sharing the burden of environmental change, but also the issues of exposure to the consequences of that change for those living in the regions of high environmental risk (e.g. regions prone to flooding, and the population strata more vulnerable to its impacts). Environmental justice also refers to the right to change these circumstances, be it through an *in situ* adaptation or by regular and supported migration away from such areas, as a sort of *ex situ* adaptation. By using the example of flooding in 2014, we have shown how adaptation measures can be implemented primarily as a response to environmental threat in a moment of crisis, that is, reactively, without an anticipating strategy that would increase environmental resilience and decrease environmental vulnerability. Environmental displacement that took place during that natural disaster was largely forced, resulting from necessity, spontaneously and arbitrarily, only partly facilitated by governmental actions in the evacuation phase. An organized and publicly directed process was initiated only later, after the water receded and in the phase of recovery, reconstruction, temporary accommodation, and the processes of organized return of the population. Thereby it becomes clear that in both phases certain parts of the population (the poor, minorities, previously displaced persons) were more environmentally and socially exposed, as well as more vulnerable, than others, both in the phase of evacuation as in that or return, or while waiting to return.

We showed that some parts of local population had been deprived of access to prompt and valid information about the environmental risk during different phases of the disaster and its aftermath. In the same manner affected citizens were not included in decision-making process in the phase of preparing evacuation, and only participated partially in the process of planning restoration. Often inadequate accommodation for vulnerable groups such as children, elders, persons with disabilities, as well as misplaced priorities in house restoration, are indicative of the insensitivity of state administration concerning different degrees and modes of personal and structural socioeconomic and environmental vulnerability.

For all of these reasons, environmental migration and displacement must be viewed as a heterogeneous phenomenon, which may include different categories of persons migrating for reasons of environmental

change. With regard to the degree of control over the situation and the degree of vulnerability, these categories can include, on the one side, those who are “voluntarily mobile” – individuals and groups resembling regular migrants, with a high degree of control and a low level of vulnerability or sensitivity to real or perceived threat – and, on the other side, those who are “forced to migrate”, and who have very little or no control and are in a situation of high vulnerability (ADAMO, 2010). If these two poles represent the extremes of the spectrum, it is very probable that between them there are those who are compelled to move and indeed leave the area, as well as those who are forced to move, but stay, since they have insufficient economic or social resources to organize and carry out their migration.<sup>11</sup>

We are ending this paper with a summary of EACH-FOR (2009:22-23) research on the situation in the Balkan countries regarding their potential to adapt to environmental change and the possible guidelines to increase their adaptation capacity: The degree of adaptability to environmental degradation is relatively low, in a situation where an increasing part of the local population is affected by environmental change, especially flooding. Researchers have not observed any higher degree of interconnectedness between environmental change and long-term displacement, except for the short-term one owing to natural disasters in some regions. A solution would be to invest additional resources in further development of measures for environmental protection and measures that would aim at reducing the impact of environmental stress on certain parts of the environmentally vulnerable population, such as ethnic minorities (especially the Roma), the poor, rural population, and other vulnerable groups. Adaptation strategies should aim at investing more into defence measures against flooding and the related landslides, as well as the prevention of industrial pollution. Regarding the recent war devastation, the need of finding solutions

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11 An important observation by Barnett and Weber (2010) concerns the need of “pondering” over various factors that are at work in migration decisions, as equal climatic or environmental circumstances need not have equal consequences in various areas affected by the events or processes. Climatic variability with the natural disaster of prolonged drought, although it may appear almost identical in various areas, does not affect the agricultural regions of northern Ethiopia and central Australia in the same way, be it in terms of migration potential or in terms of life quality. Whereas in Ethiopia it will most probably result in migration, in Australia it will not. Migration because of drought primarily occur in Ethiopia owing to the higher degree of vulnerability in its population owing to poverty and institutional failure to deal with the situation, rather than the extreme climatic event *per se*. Environmental (climate) change may be a trigger of migration, but poverty and famine are its actual causes (BARNETT and WEBER, 2010:6).

for the problem of “pollution” of the ecosystem by remaining landmines is especially acute.

The analysis of floods in Croatia, Serbia, and Bosnia and Herzegovina has clearly shown the necessity of developing measures that would aim at increasing environmental resilience and reducing environmental vulnerability in the local population threatened by sudden environmental change, such as flooding. This ought to be done in order to prevent involuntary environmental migration and efficiently facilitate migration understood either as a short-term evacuation measure or as a more permanent adaptable strategy for coping with the future environmental change and challenges. Thereby it is important to see that working on any form of increasing environmental resilience should imply diminishing environmental injustice and establishing fair models of reduction of both environmental and social vulnerability of the population exposed to environmental hazards and socioeconomic deprivation.

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Political ecology is a research approach that combines the disciplinary tools of ecology as well as political economy to address the relations between humans and nature, and various outcomes of social and cultural norms that determine different human communities' access to nature. Political ecology seeks explanations and interpretations of the phenomena resulting from the human-nature interaction, such as conflicts over resources, which appreciate both the ecological processes and the political power struggles. Aspects of political ecology rooted in commons research, materialism, feminist development critiques, environmental history, post-colonial studies and science and technology studies are reflected in different chapters of this volume. As the average global warming exceeds 1°C, many of the world's most vulnerable people's resilience responses are already overwhelmed. The Anthropocene is upon us, bringing the catastrophic outlook to the present, not some distant future. The catastrophic outlook anchors the idea of progress in the idea of catastrophe, the fact that things just cannot go on as they are.

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