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## THE ASSESSMENT AND MANAGEMENT OF FLOOD RISKS ACCORDING TO EUROPEAN AND LITHUANIAN LAW

Violeta Vasiliauskienė\*

\**Mykolas Romeris University, Faculty of Public Security, Department of Law  
V. Putvinskio 70, LT-44211 Kaunas, Lithuania  
Telephone (+370 37) 303655  
E.mail: [v.vasiliauskienė@mruni.eu](mailto:v.vasiliauskienė@mruni.eu)*

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**Annotation.** The article deals with the provisions and implementation of Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks. The publication outlines the stages of setting up of flood risk management plans. The first state of flood risk management system is the preliminary flood risk assessment, where the states assessed the previous floods and indicated the possible flood risk territories in their river basin districts. The second state was the setting up of the flood hazard and flood risk maps, which contain various information pieces about the different territories susceptible to flood risks and hazards. These two steps, besides being the basis of subsequently prepared flood risk management plans, raised the awareness of the society regarding the possible floods and their consequences. The third stage – the compiling of flood risk management plans – is under preparation. During this stage the European Union Member states should indicate particular objectives of flood risk management and measures to implement them. This stage is almost completed in Lithuania, because the prepared project of flood risk management plan already contains most of the information and measures indicated in the Flood directive.

**Keywords:** flood risk management, river basin districts, flood hazard maps, flood risk maps.

### INTRODUCTION

Europe suffered over 100 major damaging floods in four years only – between 1998 and 2002, including the catastrophic floods along the Danube and Elbe rivers in 2002. These floods caused some 700 fatalities, the displacement of about half a million people and at least € 25 billion in insured economic losses.<sup>1</sup> Even though the institutions of European Union had already instituted provisions of a related field – that of water quality management in 2000 by passing a comprehensive act – Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (hereinafter referred to as *Water Framework Directive*)<sup>2</sup>. This act establishes a common framework to all European Union for water protection and management, seeking to protect and revive water ecosystems, to reach good quality of water bodies and to establish

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<sup>1</sup> European Environment Agency, *Mapping the impacts of recent natural disasters and technological accidents in Europe* [interactive] 22 Mar 2004. [accessed 2015-04-12] [http://www.eea.europa.eu/publications/environmental\\_issue\\_report\\_2004\\_35](http://www.eea.europa.eu/publications/environmental_issue_report_2004_35).

<sup>2</sup> Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. [2000] OJ L 327/1.

other measures in the field of water policy. But the regulation of floods was touched upon only indirectly in this legal act, therefore a new legal act was required to particularly regulate the abovementioned field. The mentioned act is the Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks<sup>3</sup> (hereinafter referred to as *Flood Directive*). Flood events have the potential to undermine the EU's drive towards sustainable development. Moreover, the frequency and severity of severe flood events is likely to increase significantly in the future due to global warming. The transboundary nature of many of Europe's most important river basins, means that co-operation at EU level can bring important added value to the efforts of individual Member States.<sup>4</sup>

The question of floods is relevant as well in Lithuania where the most occurrences of extreme floods take place in Lower Nemunas and in its delta. But other territories also have suffered from floods, for example, the Middle Nemunas, where the floods occur mostly due to ice-hummocks.<sup>5</sup> Therefore the implementation of the Flood Directive is very relevant to Lithuania also.

The main **purpose** of the present publication is to reveal the process of the development of flood risk management plans according to the Flood Directive and to show their implementation in Lithuanian legal system. This topic is very pertinent as the Flood Directive is in the process of implementation at the moment of writing of this publication. Neither in Lithuanian legal publications, nor in the European legal journals on environment this topic is not discussed widely, therefore the present publication is original in legal discourse. Mostly discussed topic in this research area is the public participation in the process of flood risk management. The **methods** of research used for the present publication were the historical method, the method of legal analysis of documents, teleological method and others.

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<sup>3</sup> Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks [2007] OJ L 288/27.

<sup>4</sup> Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. *Flood risk management - Flood prevention, protection and mitigation*. (COM(2004) 472final of 12.7.2004). [interactive] <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52004DC0472>.

<sup>5</sup> Levickaitė, R. Potvynių Lietuva: žemėlapis, kuris atskleidžia didžiausias grėsmes. *GRYNAS.lt* [interactive] 17 March 2014 [accessed 2015 04 10] <http://grynas.delfi.lt/gamta/potvyniu-lietuva-zemelapis-kuris-atskleidzia-didziausias-gresmes.d?id=64298312#ixzz3X1oEVGCB>

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## THE FLOOD RISK MANAGEMENT SYSTEM IN THE EUROPEAN UNION

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The main aims of the Flood Directive are to set a framework and obligation for the Member States to take action in this field in order to reduce the risk of adverse consequences of floods on human health and life, the environment, cultural heritage, economic activity and infrastructure<sup>6</sup>. Therefore the purpose of Flood Directive is “to establish a framework for the assessment and management of flood risks, aiming at the reduction of the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in the Community.”<sup>7</sup> Thus the system of rescue from the consequences of floods is gradually replaced by the integrated flood risk management system, which allows adopting comprehensive view in the particular field.

The Flood Directive provides the definition of flood and flood risk. Article 2 of the Directive defines flood as “temporary covering by water of land not normally covered by water. This shall include floods from rivers, mountain torrents, Mediterranean ephemeral water courses, and floods from the sea in coastal areas, and may exclude floods from sewerage systems.” Flood risk means “the combination of the probability of a flood event and of the potential adverse consequences for human health, the environment, cultural heritage and economic activity associated with a flood event.”<sup>8</sup> The Flood directive uses two different terms – flood hazard and flood risk. The term flood hazard means the probability of the occurrence of flood itself, and flood risk, as it is mentioned above, its adverse consequences. Therefore it is possible that in a particular, for example, non-inhabited territory there is flood hazard, but there is no flood risk.

The floods affecting European Union Member states are of different nature, such as river floods, flash floods, urban floods, and floods from the sea in coastal areas. The damage may also vary across the countries and regions of European Union. Therefore the Flood Directive does not provide for specific action programs, but rather for the general obligation to develop flood risk management plans and lists relevant factors to be taken into account.<sup>9</sup>

Article 17 of the Flood Directive sets forth the term of implementation of the Directive before 26 November 2009. In Lithuania, this Directive is implemented by a Resolution of Lithuanian Government of 25 November 2009 “Regarding the order of the evaluation of flood

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<sup>6</sup> Flood Directive, op. cit 3, recital 3.

<sup>7</sup> Ibid, Article 1.

<sup>8</sup> Ibid, Article 2.

<sup>9</sup> For example, Flood Directive, op. cit. 3, Article 7.

risks and flood management” (hereinafter referred to as *Government resolution of 2009 on floods*)<sup>10</sup>, which outlines the main guidelines for the implementation of the aims set out in the Flood Directive. This resolution is based on Article 5 (2) of the Civil safety law<sup>11</sup>, but the law itself does not contain any provisions on the flood management issues. Thus the main act implementing the Flood Directive is the abovementioned Government resolution. The institution designated responsible for the implementation of the Directive in Lithuania is the Ministry of Environment. It is assigned with the duty to implement all the stages of flood risk management (they will be outlined below).<sup>12</sup>

**Table 1.** The deadlines for transposition of Flood Directive. Source: <http://europa.eu>.

Issue	Deadline	Reference
Entry into force	26.11.2007	OJ L 288, 6.11.2007 Art 18
Transposition	26.11.2009	Art 17
Reporting format Preliminary Flood Risk Assessment	22.12.2009	Art 11
Administrative arrangements to be in place and to be notified to the Commission	26.5.2010	Art 3
Cut-off date transitional measure (availability of existing tools)	22.12.2010	Art 13
Preliminary flood risk assessment	22.12.2011	Art 4 & 5
Public participation process starts (publication of mechanism and timetable for consultation)	22.12.2012 *	Art 9.3 & 10
Flood hazard and risk maps	22.12.2013 **	Art 6
Flood risk management plans	22.12.2015 ***	Art 7
2 <sup>nd</sup> Preliminary Flood Risk Assessment, specific requirement on climate change Commission's first implementation report due.	22.12.2018	Art 14.1 & 4
2 <sup>nd</sup> Flood hazard and risk maps	22.12.2019	Art 14.2
End of 1 <sup>st</sup> flood risk management cycle 2 <sup>nd</sup> Flood Risk Management Plans, specific requirement on climate change. 3 <sup>rd</sup> Water Framework Directive River Basin Management Plans.	22.12.2021	Art 14.3 & 4

**Review /update every 6 years thereafter**

**Reporting to the Commission : 3 months after**

\* = coordination with article 14 (WFD) requirements

\*\* = date of 1st review of pressure and impact analysis under the WFD

\*\*\* = date of 1<sup>st</sup> review of WFD river basin management plans

<sup>10</sup> Lietuvos Respublikos Vyriausybės 2009 m. lapkričio 25 d. nutarimas Nr. 1558 „Dėl potvynių rizikos vertinimo ir valdymo tvarkos aprašo patvirtinimo“. *Valstybės žinios*, 2009, Nr. 144-6376.

<sup>11</sup> Lietuvos Respublikos civilinės saugos įstatymas. *Valstybės žinios*, 1998, Nr. 115-3230; 2009, Nr. 159-7207.

<sup>12</sup> Lietuvos Respublikos Vyriausybės 2009 m. lapkričio 25 d. nutarimas Nr. 1558 „Dėl potvynių rizikos vertinimo ir valdymo tvarkos aprašo patvirtinimo“. *Valstybės žinios*, 2009, Nr. 144-6376, Articles 2.1 and 2.2.

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## THE ADMINISTRATION OF FLOOD RISK MANAGEMENT

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The provisions of Flood Directive and the system of flood management enshrined therein are closely related to the system set out in Water Framework Directive. Water Framework Directive provides that water management is accomplished by establishing river basin districts, and appoint competent authorities for the implementation of the measures set out in Water Framework Directive.<sup>13</sup> Article 3 of Flood Directive indicates that this system as a general rule is to be used also for flood management. The exceptions to this rule are also set out in the mentioned article. The Member States, if they deem necessary, may appoint different authorities responsible for the implementation of measures indicated in Flood Directive, and also identify certain coastal areas or individual river basins and assign them to a unit of management different from those assigned pursuant to Article 3(1) of Water Framework Directive<sup>14</sup>. These measures should be reported to the Commission. Therefore as it can be seen, Member States may either use the system created in the process of implementation of Water Framework Directive, or, alternatively, set up different units and designate different national authorities responsible for the implementation of the objectives of flood management. Most Member states opted for the first possibility, and in the European Union many of the RBD are international, and only a minority – national.<sup>15</sup>

In Lithuania, the system of administration of flood management is set out in the Resolution of Lithuanian Government of November 25, 2009 “Regarding the order of the evaluation of flood risks and flood management” (hereinafter referred to as *Government resolution of 2009 on floods*)<sup>16</sup>, which outlines the main guidelines for the implementation of the aims set out in the Flood Directive. It is indicated that the flood risk management system is analogous with the system set out for water management set out in Water Framework Directive and in Lithuanian Republic Water Law<sup>17</sup>. This means that as well as in other fields of water policy, Lithuanian flood risk management system is carried out in four river basin districts (hereinafter referred to as RBD):

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<sup>13</sup> Water Framework Directive, op. cit. 2, Article 3. It also provides that „small river basins may be combined with larger river basins or joined with neighbouring small basins to form individual river basin districts where appropriate.“

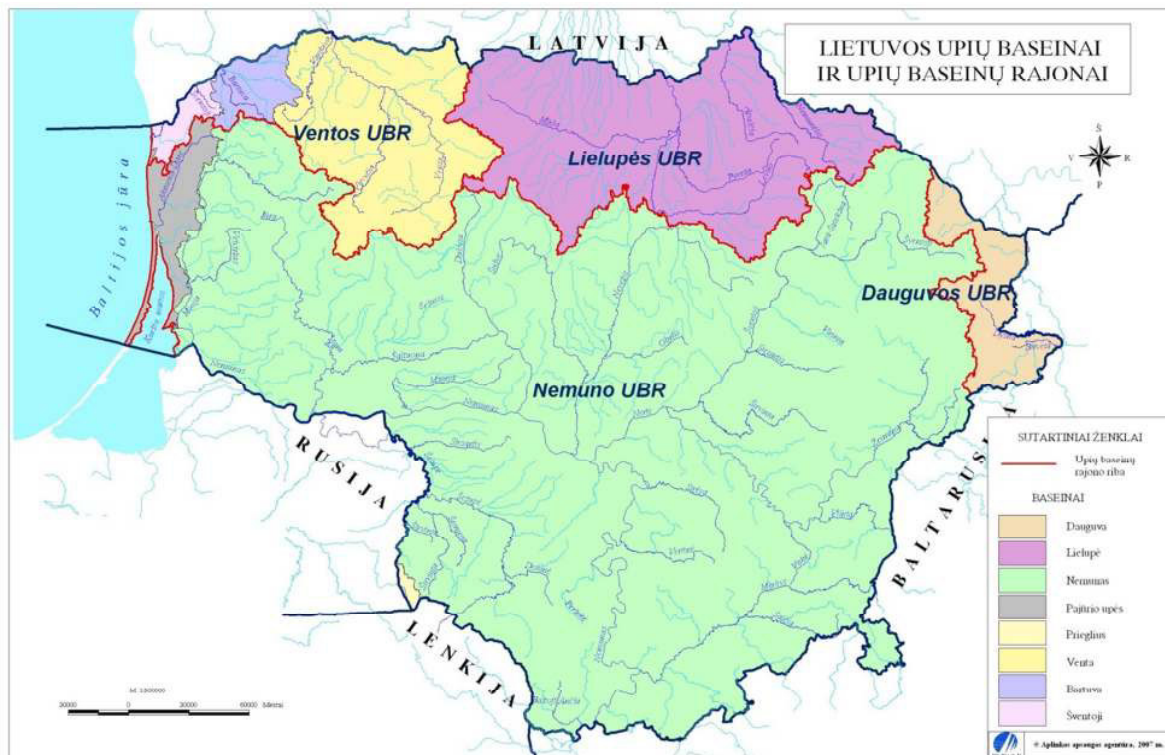
<sup>14</sup> Flood Directive, op. cit. 3, Article 3.

<sup>15</sup> European Environment Agency. *Floods Directive viewer* [interactive], [accessed 2015 04 10] <http://www.eea.europa.eu/themes/water/interactive/floods-directive-viewer>

<sup>16</sup> Lietuvos Respublikos Vyriausybės 2009 m. lapkričio 25 d. nutarimas Nr. 1558 „Dėl potvynių rizikos vertinimo ir valdymo tvarkos aprašo patvirtinimo“. *Valstybės žinios*, 2009, Nr. 144-6376.

<sup>17</sup> Lietuvos Respublikos vandens įstatymas. *Valstybės žinios*, 1997, Nr. 104-2615; 2003, Nr. 36-1544.

- 1) Dauguva RBD, which covers part of Dauguva river basin, which is in the territory of Lithuanian Republic;
- 2) Lielupė RBD, which covers part of Mūša (Lielupė) river basin, which is in the territory of Lithuanian Republic;
- 3) Nemunas RBD, which covers the part of Nemunas river basin, which is in the territory of the Lithuanian Republic, also Lithuanian seaside river basins (except for the basins of Šventoji and Bartuva rivers), part of Prieglius river basin, being in the territory of Lithuanian Republic, part of Curonian Lagoon, which is in the territory of Lithuanian Republic, and the coastal waters of Baltic sea, which are in the territory of Lithuanian Republic;
- 4) Venta RBD, which covers the parts of Venta, Bartuva and Šventoji river basins, which are in the territory of Lithuanian Republic.<sup>18</sup>



**Picture 1.** The river basin districts in Lithuania. Source: <http://vanduo.gamta.lt>

<sup>18</sup> Lietuvos Respublikos aplinkos ministro 2003 m. rugšėjo 25 d. įsakymas Nr. 471 „Dėl upių baseinų rajonų sudarymo ir institucijos, atsakingos už jų administravimą vandensaugos tikslams pasiekti, paskyrimo“. *Valstybės žinios*, 2003, Nr. 99-4467. Article 1.

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The institutions responsible for the flood risk management are likewise the same institutions which are responsible for the RBD management, that is, the councils for the management of each RBD.<sup>19</sup>

## THE STAGES OF IMPLEMENTATION OF THE FLOOD DIRECTIVE

### *The preliminary flood risk assessment*

The first step towards flood risk management is the preliminary flood risk assessment, which is outlined in Article 4 of the Flood Directive. This Article indicates that States are to preliminary assess flood risks, based on available or readily derivable information, such as records and studies on long term developments, in particular impacts of climate change on the occurrence of floods.<sup>20</sup> This includes a preparation of at least three measures: “maps of the river basin district at the appropriate scale including the borders of the river basins, sub-basins and, where existing, coastal areas, showing topography and land use”<sup>21</sup>, secondly, “a description of the floods which have occurred in the past and which had significant adverse impacts on human health, the environment, cultural heritage and economic activity and for which the likelihood of similar future events is still relevant, including their flood extent and conveyance routes and an assessment of the adverse impacts they have entailed;”<sup>22</sup> thirdly, “a description of the significant floods which have occurred in the past, where significant adverse consequences of similar future events might be envisaged”. During this stage a Member State upon its own will may also carry out an assessment of the future floods’ potential adverse consequences for human health, the environment, cultural heritage and economic activity, taking into regard existing conditions related to flood protection.<sup>23</sup> The main aim of this first stage of flood risk management is to identify, for each river basin district, or unit of management indicated above, those areas for which it can be concluded that

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<sup>19</sup> The structure of the councils for RBD management is established in the Resolution of Lithuanian Government of March 14, 2005 „Regarding the establishment of Dauguva, Lielupė, Nemunas and Venta river basin district coordination councils and the adoption of their statutes“. (Lietuvos Respublikos Vyriausybės 2005 m. kovo 14 d. nutarimas Nr. 266 „Dėl Dauguvos, Lielupės, Nemuno ir Ventos upių baseinų rajonų koordinavimo tarybų sudėties ir nuostatų patvirtinimo“. *Valstybės žinios*, 2005, Nr. 35-1142. The personal composition of the abovementioned councils is established in the Decree of the Minister of Environment of May 31, 2005 (as amended) „Regarding the personal composition of Dauguva, Lielupė, Nemunas and Venta river basin district coordination councils“ (Lietuvos Respublikos aplinkos ministro 2005 m. gegužės 31 d. įsakymas Nr. D1-273 “Dėl Dauguvos, Lielupės, Nemuno ir Ventos upių baseinų rajonų koordinavimo tarybų personalinių sudėčių patvirtinimo“. *Valstybės žinios*, 2005, Nr. 72-2613; 2013, Nr. 33-1609.)

<sup>20</sup> Flood Directive, op. cit. 3, Article 4(1).

<sup>21</sup> Ibid, Article 4.

<sup>22</sup> Ibid.

<sup>23</sup> Ibid.

potential significant flood risks exist or might be considered likely to occur.<sup>24</sup> Therefore the main aim of this step is to indicate territories relevant for further actions in this particular field of flood risk management.

Article 4(4) of the Flood Directive stipulates that “Member States shall complete the preliminary flood risk assessment by 22 December 2011.”<sup>25</sup>

In Lithuania, the preliminary flood risk assessment was carried out according to the guidelines set out in the Government resolution of 2009 on floods<sup>26</sup>, which outlines the main guidelines for the implementation of the aims set out in the Flood Directive.

The main guidelines for the preparation of preliminary flood risk assessment set out in the abovementioned resolution properly reflect the principles set out in the Articles 4 and 5 of the Flood Directive, they include both three mandatory aspects mentioned above and the fourth aspect – that is the evaluation of future floods’ potential adverse consequences. The resolution also provides for the indication of the flood risk areas.<sup>27</sup> The Ministry of Environment was designated as the institution responsible for the preparation of the abovementioned assessment. The obligation set out in the Flood Directive to prepare the preliminary flood risk assessment was fulfilled by a decree of minister of environment of January 11, 2012 “Regarding the authorization of the preliminary flood risk evaluation report”.<sup>28</sup> According to the term set out in the Directive, this implementation was several weeks later than the term indicated therein. The document describes the river basins in Lithuania; characterizes previous floods in Lithuania, and their negative effects; indicates the territories which have high risks of floods; and also describes the possible negative effects of future floods.<sup>29</sup> The investigation carried out during the preparation of this document analyzed elemental, catastrophic and other large scale floods, it also included information on the effects of climate change on floods, indicated the possibility of future similar floods, and the risks they could pose to human health, environment, cultural heritage and economic activity.<sup>30</sup> It was established that 154 elemental or catastrophic floods took place in Lithuania from 1812 till 2010. The most common cause of floods is the melting of snow and ice-hummocks (about

<sup>24</sup> Flood Directive, op. cit. 3, art. 5.

<sup>25</sup> Ibid, Article 4.

<sup>26</sup> Lietuvos Respublikos Vyriausybės 2009 m. lapkričio 25 d. nutarimas Nr. 1558 „Dėl potvynių rizikos vertinimo ir valdymo tvarkos aprašo patvirtinimo“. *Valstybės žinios*, 2009, Nr. 144-6376.

<sup>27</sup> Ibid, Article 7.5.

<sup>28</sup> Lietuvos Respublikos aplinkos ministro 2012 m. sausio 11 d. įsakymas Nr. D1-23 „Dėl Preliminaraus potvynių rizikos vertinimo ataskaitos patvirtinimo“. *Valstybės žinios*, 2012, Nr. 9-348.

<sup>29</sup> Ibid.

<sup>30</sup> *Potvynių rizikos valdymas* [interactive] [accessed 2015 04 12] <https://aplinka.lt/potvyniu-rizikos-valdymas>.



70-75 percent), intensive rainfalls (about 15 percent). Other causes, such as the rising of the water level in the Baltic Sea, the accidents in hydraulic engineering buildings and similar, comprise up to 15 percent of the causes of floods. The floods take place most often in spring (60 percent of the cases) and in autumn (35 percent).<sup>31</sup>

### ***Flood hazard maps and flood risk maps***

The second stage in establishing the flood risk management system is the setup of Flood hazard maps and flood risk maps. The requirements for the information that should be contained therein are set out in Article 6 of the Flood Directive. It stipulates that flood hazard maps should cover geographical areas which could be flooded and indicate areas where floods are of low probability, extreme event scenarios; floods with medium probability (likely return period  $\geq 100$  years) and floods with a high probability.<sup>32</sup> Furthermore, flood risk maps are to show the potential adverse consequences associated with the abovementioned flood scenarios, that is, indicative number of inhabitants potentially affected, type of economic activity of the area potentially affected; the objects which may cause accidental pollution in case of flooding; potentially affected protected areas, and other information which the Member State considers useful.<sup>33</sup> In Lithuania, such maps were formally endorsed by a Decree of Minister of Environment of 6 August 2014 “Regarding the authorisation of flood hazard and flood risk maps of Nemunas, Venta, Lielupė and Dauguva river basin districts”<sup>34</sup>. The maps are interactive online maps, placed at the address <http://potvyniai.aplinka.lt/potvyniai/>. The maps contain information on flood hazards in the whole of territory of Lithuania, more exactly in the territories that were identified during the first phase of the flood risk plans’ preparation, that is during preliminary flood risk assessment. The maps contain information on three types of floods that are relevant for Lithuania – that is, floods due to snow melting and heavy showers; floods in the near water areas; floods due to ice-hummock. The map also indicates other information and flood risk management. But it should be noted that the term to set up these maps was 22 December 2013, therefore Lithuania in implementing this provision was

<sup>31</sup> Ibid.

<sup>32</sup> Flood Directive, op. cit. 3, Article 6(3).

<sup>33</sup> Flood Directive, Article 6(5).

<sup>34</sup> Lietuvos Respublikos aplinkos ministro 2014 m. rugpjūčio 6 d. įsakymas Nr. D1-655 „Dėl Potvynių grėsmės ir potvynių rizikos žemėlapių Nemuno, Ventos, Lielupės ir Dauguvos upių baseinų rajonuose patvirtinimo“ *Teisės aktų registras*, 2014, Nr. 2014-10968.

late more than a half year, but it should be noted that Lithuania was one of the first states in the neighbouring countries to set up the abovementioned maps.

The drawing up of the maps prompted discussions in the society and among different state institutions regarding the measures that could be taken in order to avoid the negative consequences of floods. The flood hazard and flood risk maps, drawn up after analysis of past floods from the year 1810 till the present year allow forecasting territories that are at the risk of flooding in the future. Even though Member States had their policies regarding floods earlier as well, in author's opinion, the passing of the Flood Directive acted as an incentive to look into the area more thoroughly and attentively and to discuss and explore possible ways to counter floods or mitigate their consequences. The introduction of the abovementioned maps to the society in Lithuania was accompanied by a conference on the theme of flood history, main flood reasons in Lithuania and measures to counter flood threats.<sup>35</sup> Therefore the composition of the maps already raises discussions and interest in the theme of flooding and will raise awareness on the possible negative consequences. The question of floods interests many people in Lithuania, as most of the inhabitants have heard of the floods in the close-to-sea regions, and it is a phenomenon that captures attention of many people. The media did not stress that this map was drawn because this obligation is set out in a legal act of European Union, but mostly presented Lithuania as first among its neighbours to set up such maps and the presentation of the maps as revealing big hazards and risks.<sup>36</sup> This public attention and the information about possible flood risk territories may influence the review of laws on construction and the inhabitation of certain territories that are under bigger flood risk, that is, the public institutions will be less likely to give permissions to build any dwellings in those territories.

### ***Flood risk management plans***

At the moment of writing of this publication, the third stage of flood risk management process – that is, the preparation of flood risk management plans for RBDs – is being implemented. This is the final state of flood risk management, where the Member States will set out specific goals to counter the risks posed by floods. The term for the establishment and

<sup>35</sup> Levickaitė, R. Potvynių Lietuva: žemėlapis, kuris atskleidžia didžiausias grėsmes. *GRYNAS.lt* [interactive] 17 March 2014 [accessed 2015 04 10] <http://grynas.delfi.lt/gamta/potvyniu-lietuva-zemelapis-kuris-atskleidzia-didziausias-gresmes.d?id=64298312#ixzz3X1oEVGCB>

<sup>36</sup> Levickaitė, R. Sudarė potvynių žemėlapi: metas pradėti ruošti. *GRYNAS.lt* [interactive] 05 March 2014 [accessed 2015 04 10] <http://grynas.delfi.lt/gyvenimas/sudare-potvyniu-zemelapi-metas-pradeti-ruostis.d?id=67322158>.

publication of these flood management plans is 22 December 2015.<sup>37</sup> But it won't be the final step in the sense that all the measures taken in all the steps of flood risk management are to be reviewed periodically.<sup>38</sup>

The contents of these plans is set out in Article 7 of the Flood Directive, which indicates that the following questions should be included in the plans – firstly, the objectives, which the Member State sets out for the whole system of flood management. As mentioned, all Member States experience different sorts of floods which are caused by different factors, therefore the Directive sets out mostly the working of the whole system and obliges the Member States to take measures in flood management, without setting out the particular content of these measures. The objectives of flood management system should focus on “the reduction of potential adverse consequences of flooding for human health, the environment, cultural heritage and economic activity, and, if considered appropriate, on non-structural initiatives and/or on the reduction of the likelihood of flooding.”<sup>39</sup> As the Commission pointed out while proposing Community regulation regarding floods, „the most effective approach is through the development of flood risk management programmes incorporating the following elements:

- *Prevention*: preventing damage caused by floods by avoiding construction of houses and industries in present and future flood-prone areas; by adapting future developments to the risk of flooding; and by promoting appropriate land-use, agricultural and forestry practices;
- *Protection*: taking measures, both structural and non-structural, to reduce the likelihood of floods and/or the impact of floods in a specific location;
- *Preparedness*: informing the population about flood risks and what to do in the event of a flood;
- *Emergency response*: developing emergency response plans in the case of a flood;
- *Recovery and lessons learned*: returning to normal conditions as soon as possible and mitigating both the social and economic impacts on the affected population.”<sup>40</sup>

Furthermore, while establishing the particular measures for achieving the abovementioned objectives of flood risk management, the Member States should “take into

<sup>37</sup> Flood Directive, op. cit. 3, Article 7(5).

<sup>38</sup> See the timetable of implementation of the Flood Directive above, Table 1.

<sup>39</sup> Flood Directive, op. cit. 3, Article 7(2).

<sup>40</sup> Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. *Flood risk management - Flood prevention, protection and mitigation*. (COM(2004) 472final of 12.7.2004). [interactive] <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52004DC0472>

account relevant aspects such as costs and benefits, flood extent and flood conveyance routes and areas which have the potential to retain flood water, such as natural floodplains, the environmental objectives of Article 4 of Directive 2000/60/EC, soil and water management, spatial planning, land use, nature conservation, navigation and port infrastructure.”<sup>41</sup> Furthermore, the Directive indicates that “flood risk management plans shall address all aspects of flood risk management focusing on prevention, protection, preparedness, including flood forecasts and early warning systems and taking into account the characteristics of the particular river basin or sub-basin. Flood risk management plans may also include the promotion of sustainable land use practices, improvement of water retention as well as the controlled flooding of certain areas in the case of a flood event.”<sup>42</sup>

Another important principle that is established in Article 7 regarding the flood management plans is the principle of solidarity, which is due to the fact that, as mentioned above, most of the river basin districts in the European Union are international – that is, are situated in the territory of two or more Member States or Member States and third states.<sup>43</sup> The principle requires that “flood risk management plans established in one Member State shall not include measures which, by their extent and impact, significantly increase flood risks upstream or downstream of other countries in the same river basin or sub-basin, unless these measures have been coordinated and an agreed solution has been found among the Member States concerned in the framework of Article 8.”

Commission has underscored also two other important principles that are not specifically stated in the Directive, but are essential in its implementation – it is “interdisciplinary approach: all relevant aspects of water management, physical planning, land use, agriculture, transport and urban development, nature conservation need to be considered at all levels (national, regional and local)“.<sup>44</sup> Another principle that is important in the preparation of the flood risk management plans, is the development of stronger links between the researchers and authorities responsible for water management and flood protection.

The present regulation of floods in Lithuania, besides the acts already enacted due to the implementation of the Flood Directive, is relatively scarce. Most of the acts are enacted by the

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<sup>41</sup> Flood Directive, Article 7(3).

<sup>42</sup> Ibid.

<sup>43</sup> Bulgaria, Romania, Iceland, Liechtenstein, Norway and Switzerland also participated in meetings of the Water Directors. Communication.

<sup>44</sup> Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. *Flood risk management - Flood prevention, protection and mitigation*. (COM(2004) 472final of 12.7.2004). [interactive] <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52004DC0472>.

municipalities and are aimed at the preparation for specific floods – for example, in Jurbarkas, Trakai and Šilutė municipality.<sup>45</sup> There is a Resolution of Lithuanian Government regarding the program of preparation of Klaipėda and Tauragė districts for the floods and for the elimination of flood consequences for the years 2007-2015,<sup>46</sup> and this is the most comprehensive act until the enactment of new flood risk management plans for the whole territory of Lithuania. The future plans will have many advantages including the fact that they will be based on extensive scientific studies of floods and on the flood hazard and flood risk maps, and will cover not only part of Lithuanian territory. Although the abovementioned districts are most affected by floods, but more comprehensive view is required and this shall be ensured by the implementation of the Directive.

In Lithuania, the preparation of the flood risk management plan is in progress. The Ministry of Environment has made a contract regarding the preparation of the abovementioned plans with VšĮ Aplinkos apsaugos politikos centras.<sup>47</sup> The Ministry of Environment has announced on 24 October 2014 about the ongoing preparation of flood risk management plans which to that date had dwelled on the objectives of flood risk management, on the territories, which are most susceptible to the damage by floods; the measures already taken and the legal regulation in the particular field. The institutions taking part in this process are the Ministry of Environment, the Environmental Protection Agency and Lithuanian Hydrometeorology Institute.<sup>48</sup> The Ministry of Environment announced the amended version of the project on 27 February 2015.<sup>49</sup> The updated project includes most of the aspects that are required by the Article 7 of the Flood Directive and its annex. First part of the project describes the river basin districts that are in Lithuania, the second part describes the flood risk and flood hazard maps and the territories that are affected by floods in these

<sup>45</sup> Jurbarko rajono savivaldybės administracijos 2014 m. vasario 4 d. įsakymas Nr. O1-131 „Dėl Jurbarko rajono savivaldybės pasirengimo galimam 2014 metų potvyniui veiksmų plano patvirtinimo“, *Teisės aktų registras*, 2014, Nr. 2014-00992; 2015 m. sausio 12 d. įsakymas Nr. A1-35 „Dėl Šilutės rajono savivaldybės pasirengimo 2015 metų potvyniui veiksmų plano patvirtinimo“ *Teisės aktų registras*, 2015, Nr. 2015-00557;

<sup>46</sup> Lietuvos Respublikos Vyriausybės 2006 m. lapkričio 30 d. nutarimas Nr. 1202 „Dėl Klaipėdos ir Tauragės apskričių pasirengimo potvyniams ir potvynių padariniams šalinti 2007–2015 metų programos patvirtinimo“, *Valstybės žinios*, 2006, Nr. 132-5007.

<sup>47</sup> *Nemuno, Lielupės, Ventos ir Dauguvos upių baseinų rajonų potvynių rizikos valdymo plano projektas*. Versija 1.2 [interactive] Vš. Į. Aplinkos apsaugos politikos centras [accessed 2015 04 09] [http://vanduo.gamta.lt/files/1\\_UBR\\_plano\\_projektas\\_V12\\_201409221411540569255.pdf](http://vanduo.gamta.lt/files/1_UBR_plano_projektas_V12_201409221411540569255.pdf)

<sup>48</sup> Aplinkos ministerija. *Parengtas potvynių rizikos valdymo plano projektas*. [inactive] 24 October 2014 [accessed 2015 04 11] [http://www.am.lt/VI/article.php3?article\\_id=15175](http://www.am.lt/VI/article.php3?article_id=15175)

<sup>49</sup> Aplinkos ministerija. *Atnaujintas potvynių rizikos valdymo plano projektas*. [interactive] 27 February 2015 [accessed 2015 04 12] [http://www.am.lt/VI/article.php3?article\\_id=15624](http://www.am.lt/VI/article.php3?article_id=15624).

territories.<sup>50</sup> The prepared plan takes into account the effect of climate change on the occurrence of floods. The project defines the main objectives of flood risk management and further continues in detail to describe the proposed measures of flood risk management. They contain preventive measures, structural measures of protection from floods, non-structural measures, measures of preparation for floods, measures of reconstruction, and other measures that can help reach the objectives of flood protection. Among the measures indicated in the project – the improvement of the legal regulation in the flooded territories, new means to forecast floods, the modernisation of the inhabitants warning systems, the provision of new rescue tools, informing the society, etc.<sup>51</sup> The document also analyses the economic value of the measures proposed and the value attained if the measures are set in place and on the basis of this assessment and on other factors prioritizes measures as being of very high priority, high priority, low priority and not purposeful measures.<sup>52</sup> The document also describes the arguments proposed by interested parties and argues whether and why they were taken into account or not. What the document still lacks or what could be indicated in the legal act that will be endorsing the abovementioned project is the detailed description of the way in which progress in implementing the plan will be monitored,<sup>53</sup> and list of competent authorities and description of the coordination process with another States, because all of the RBD in Lithuania are international.

Another aspect that will have to be evaluated in executing the flood risk management plans and is indicated in the preliminary project of such plan-to-be, is the problem of building buildings in the territories that may be flooded. The legal acts regarding construction in Lithuania prohibit the building in the territories affected by floods, but the practical application of such provisions is limited due to the fact that legal acts do not define the concept of “flood covered territory”, also it is not indicated to which sort of floods it is applied; furthermore, the common territory plans drawn up by the municipalities do not indicate the flood covered territories and this does not influence the designation of the

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<sup>50</sup> *Nemuno, Lielupės, Ventos ir Dauguvos upių baseinų rajonų potvynių rizikos valdymo plano projektas*. Versija 1.5 [interactive] Vš. Į. Aplinkos apsaugos politikos centras [accessed 2015 04 09] <http://gamta.lt/files/2015%2002%2020%20Del%20PVP%20plano%20derinimo%20PRIEDAS14247676805.pdf>

<sup>51</sup> Aplinkos ministerija. *Atnaujintas potvynių rizikos valdymo plano projektas*. [interactive] 27 February 2015 [accessed 2015 04 12] [http://www.am.lt/VI/article.php3?article\\_id=15624](http://www.am.lt/VI/article.php3?article_id=15624)

<sup>52</sup> *Nemuno, Lielupės, Ventos ir Dauguvos upių baseinų rajonų potvynių rizikos valdymo plano projektas*. Versija 1.5 [interactive] Vš. Į. Aplinkos apsaugos politikos centras [accessed 2015 04 09] <http://gamta.lt/files/2015%2002%2020%20Del%20PVP%20plano%20derinimo%20PRIEDAS14247639805.pdf>

<sup>53</sup> Flood Directive, op. cit. 3, Annex.

purpose of land use.<sup>54</sup> Another problem that is raised in the process of flood risk management is that special hydro engineering buildings (the ones with 4 m and higher head of water or reservoir of 100 000 m<sup>3</sup> and more) there is no institution that supervises the obligation of users, owners or managers to keep such objects in proper order.<sup>55</sup> Therefore in implementing the flood risk management plans the legal acts will have to be reviewed to take into account the abovementioned factors.

## CONCLUSIONS

The flood risk management in Lithuania is executed in the same river basin districts as they are set up in implementing the Water Framework Directive. The four river basin districts – Dauguva RBD, Lielupė RBD, Nemunas RBD and Venta RBD – are all international, as only part of their territories are in the territory of the Republic of Lithuania.

The first state of the implementation of the Flood directive is to carry out preliminary flood risk assessment in evaluating the previous floods from the year 1810 that occurred in a particular country. The main aim of this stage is to indicate the territories which are relevant for flood risk management. The setup of flood hazard maps and flood risk maps indicating possible extent of different types of floods and their possible impact on the inhabitants of those territories as well as on other objects raised the awareness of the society on the possibility of the repetition of floods and instigated discussions on these questions.

The flood risk management plans that are being prepared in Lithuania in implementation of the Flood Directive will fill in an important void in Lithuanian legal system. The legal acts enacted before the process of implementation of the Directive were local in their nature and were not based on such extensive scientific study. The present project will cover the whole territory of Lithuania and includes many possible measures in order to prevent floods, prepare for them, respond in the cases when it occurs and to recover after the flood has taken place.

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## POTVYNIŲ RIZIKOS ĮVERTINIMAS IR VALDYMAS PAGAL EUROPOS SAJUNGOS IR LIETUVOS RESPUBLIKOS TEISĖS AKTUS

Violeta Vasiliauskienė\*  
Mykolo Romerio Universitetas

### Santrauka

Straipsnyje analizuojami Europos Parlamento ir Tarybos Direktyvos Nr. 2007/60/EC dėl potvynių rizikos vertinimo ir valdymo nustatyti potvynių rizikos valdymo sistemos sukūrimo etapai bei jų įgyvendinimas Lietuvos Respublikos teisėje. Potvynių direktyva įgyvendinama susietai su Europos Parlamento ir Tarybos direktyva Nr. 2000/60/EB, nustatančia Bendrijos veiksmų vandens politikos srityje pagrindus. Pastaroji direktyva nustato, kad vandens politika įgyvendinama upių baseinų rajonų pagrindu, pagal šiuos rajonus įgyvendinamas ir potvynių rizikos planavimo procesas. Lietuvoje yra keturi upių baseinų rajonai – Dauguvos, Lielupės, Nemuno ir Ventos, kurie visi yra tarptautiniai, tai yra, tik dalis jų yra Lietuvos Respublikos teritorijoje. Pirmojo etapo metu valstybės atliko preliminarius potvynių rizikos vertinimą, įvertindamos nuo 1810 metų šalyje vykusius potvynius. Šio etapo pagrindinis tikslas yra nustatyti, kurioms teritorijoms yra aktualus potvynių rizikos valdymo procesas. Tolimesnis direktyvos įgyvendinimo etapas – potvynių grėsmės ir potvynių rizikos žemėlapių parengimas. Juose nurodoma, kurioms teritorijoms gali grėsti potvyniai ir kokios pasekmės galėtų kilti tų teritorijų gyventojams ir ekonominei veiklai. Paskutinis Direktyvos įgyvendinimo etapas – potvynių rizikos valdymo planų parengimas – vyksta šiuo momentu. Europos Komisija pabrėžė, jog veiksmingiausias požiūris turi apimti kelis elementus. Visų pirma, planai apima prevenciją, nustatant draudimus statyti namus ir pramoninius pastatus galimai užliejamose teritorijose, siekiant išvengti žalos. Antra, imtis apsauginių priemonių, tiek struktūrinių, tiek nestrukūrinių, kurios būtų skirtos sumažinti potvynių galimybę konkrečioje vietovėje. Trečia, tai priemonės, skirtos gyventojų informavimui apie potvynių grėsmę ir ką daryti potvynio atveju. Ketvirta, turi būti išvystytos gelbėjimo priemonės potvynių atveju. Galiausiai šiuose planuose turi būti priemonės, kaip grįžti į įprastines sąlygas. Šis planas Lietuvoje užpildys teisinio reguliavimo trūkumus, nes dabartinis teisinis reguliavimas buvo labiau skirtas konkrečioms savivaldybėms, o bendro valstybės mastu galiojančio potvynių rizikos valdymo priemonių plano parengta nebuvo.

**Pagrindinės sąvokos:** potvynių rizikos valdymas, upių baseinų rajonai, potvynių rizikos žemėlapiai, potvynių grėsmės žemėlapiai

**Violeta Vasiliauskienė\***, Mykolas Romeris universiteto Viešojo saugumo fakulteto Teisės katedros lektorė. Mokslinių tyrimų kryptys: hidrosferos reguliavimas ir teisinė apsauga, Europos Sąjungos teisė, Tarptautinė viešoji teisė.

**Violeta Vasiliauskienė\***, Mykolas Romeris University, Faculty of Public Security, Department of Law, lecturer. Research interests: the legal regulation of hydrosphere and its legal protection, European Union Law, International public law.