Draft principles, rules and framework conditions for preventative measures against floods, decreasing flood risk, risk of drought and other risks related to a sudden, natural disaster, and integrated management of river basins

Integrated management of river basins is a tool for achieving actual improvement in the protection and use of water sources and land natural resources, an improvement in the prevention of floods, a decrease in flood risk, risk of drought and other risks related to a sudden, natural disaster in the landscape. Integrated management of river basins leads to achieving synergic effects in individual departmental policy in the area, savings in public finance and implementing innovations in the processes and activities of public administration.

Integrated management of river basins creates a basis for:

- financial and eco-system sustainability in decreasing flood risk along with the risk of drought
- implementation of a comprehensive target for revitalisation of the damaged land structure, protection of land resources, improvement in rainwater handling and restoration of vegetation cover (vegetation of a natural consistency) of an area via area-wide adaptation and economic measures for handling land and water resources in the landscape
- timely and financially effective treatment of municipal waste water and provision of drinking water
- an effective waste economy system and elimination of environmental contamination

Integrated management of river basins:

- based on the principles of sustainable flood protection, integrated water and land resources management, the definition of integrated water resources management and public interest in municipalities
- implemented by coordinating planning, authorisation and evaluation processes and public administration activities and further via a whole set of incentives, support and monitoring tools
- thorough analysis of the landscape and integrating processes in the basic planning unit, which is a municipality and its cadastre, with coordination of measures and activities at river basin level and with a secured system of support tools at national level

Integrated management of river basins is based on the following eco-system and environmental issues:

- water is the basic connection between environmental and land components. In its circuit, water has no political and administrative boundaries apart from the boundaries of river basins and the conditions of surface drainage in the landscape created by man. Therefore, comprehensive protection and utilisation of water and land in the landscape form the basis for a systematic approach and integrated flood management
- an integrated approach requires that the state of land resources, vegetation cover of an area and water resources in the country should be considered as a whole and not as separate subsystems. Reducing flood risk should be addressed concurrently and in conjunction with decreasing the risk of drought
- when transforming the landscape there are not only changes to surface drainage and the water regime of the territory, but there is also a significant change in the ratio of conversion and distribution of solar energy in the country between latent and tangible heat. These changes have a number of consequences and impacts upon local and regional climate change, including the impact on the growth of extreme weather events

- a healthy forest and landscape with continuous cover and a suitable surface structure has not only higher retention ability but also efficiently cools the land, whereby eliminating overheating of the landscape and atmosphere
- adaptation of the landscape structure and a change in management practices related to soil and rainwater should lead to gradual restoration of landscape eco-system functions in the distribution of rainwater, an annual decrease in surface rainwater run off and water erosion of soil in basins, and an increase in the resistance of basins to sudden and extreme circumstances and atmospheric events in relation to time and space allocation and distribution of rainfall. Adaptation and management measures should achieve an area increase in the ability of the landscape to retain the average maximum daily amount of rainfall of 80 to 100mm (depending upon local specific conditions, this value can alternate within circa 50 to 130mm)
- care should be taken to provide the most effective treatment of municipal waste water and drinking water in municipalities of all sizes. Care should also be taken in the prevention of and decrease in water, soil and atmospheric pollution by agriculture and industry, including gradual removal of old environmental burdens. The basis for protecting water and soil is also enforcement of an effective and efficient waste management system.
- soil and bedrock are the largest natural water collectors in the landscape, which greatly exceed the volume of all dams. The landscape is able to retain a significant part of rainwater on its surface in landscape microstructures that reduce the dynamic effect of flowing surface water
- systematic adaptation and restoration is also urgently required, mainly by mono-cultural agricultural land via the creation of a more friendly landscape structure (building terraces, boundaries, wetlands, soaking strips, grassing, reforestation, etc), and by preferential application of soil protection cultivation technology in the land (e.g. by applying non-ploughing methods)
- revitalisation is required by waterways, river bank eco-systems and adjacent wetland eco-systems. It is necessary to lower the longitudinal incline of water ways by building retaining waterway baffles on small waterways, restoring spring locks and feeding the original meanders where possible. Forest and agricultural roads require anti-erosion measures. New methods of rainwater management must also be applied next to roads and built up areas having a firm surface
- in towns and urban areas, it is necessary to re-evaluate the rainwater management system in order to retain and use rainwater via soaking, accumulation and evaporation from the urban area in the presence of vegetation
- technical measures for flood protection have a limited effectiveness, lifetime and territorial reach if their design is not the result of comprehensive evaluation of the impact upon water regime in the landscape and assessment of system benefits for the particular river basin. It is necessary to build safe flood corridors in urban areas, flood areas and dry polders to transform flood waves
- when revitalising the land, it is necessary to draw from historical experience when irreplaceable historical agricultural and landscape structures were created, such as ponds, boundaries or soil terraces and similar structures. Time and their presence in the area for hundreds of years have confirmed their efficiency, legitimacy and simplicity.

Principles of sustainable area flood protection

principle of widespread soil and water protection in river basins - it is necessary to support measures for widespread protection of an area against soil and wind erosion and measures for increasing the water retention ability of a basin in cadastral areas of individual municipalities. For this, it is necessary to design widespread technical, biotechnical measures and management methods which shall improve the area water balance and prevent fast run off of water from an area

the principle of solidarity (so-called principle of water tolerance) - the design and implementation of measures affect drainage conditions in a territory must be taken into account for the whole catchment. Measures implemented in one area must not exacerbate the situation in below or above lying areas in the basin

principle of partnership - an analysis of the drainage situation in the territories (municipalities, towns, region, basin, etc..), and important decisions in the design of measures to increase water retention basin ability and decrease erosion processes shall be carried out following negotiation and mutual agreement of all key stakeholders in the catchment area - administrators of waterways, farmers, foresters, representatives of municipalities, towns, land owners and experts. Together, in partnership, they shall prepare and implement projects for anti-erosion measures, measures to increase the retention ability of the basin in the municipality and measures to protect the area during flooding

principle of subsidiarity - the practical management and protection of area water resources and basins should apply the principle that what may be better and more effectively carried out by lower levels of public administration should be carried out at this level. This principle shows the need for effective decentralisation of activities and authorisations that can be better, faster and cheaper if carried out by local or regional self-governing authorities. Finances expended by local self-governments are under greater scrutiny and are used more effectively

principle of sustainable solutions - satisfactory and sustainable results in flood prevention and the elimination of the impact of climate change only occur if the causes of such events are investigated and addressed. By eliminating the causes and phenomena which increase flood risk deepen regional and local climate change and accelerate the drying of areas as a consequence of human activities, we can maintain or improve living conditions and the environment for future generations. The natural potential of an area will not decrease and the protective functions of water in eco-systems will be retained and the self-regulatory functions of basins will improve

principle of self-regulation of natural processes - after the implementation of measures monitoring the improvement in the water regime in an area, the effect of an initial and single investment into the rehabilitation of damaged landscape or parts of basins shall gradually show a complex effect each year

Exemption from the application of principles - since we have no direct ability to influence the flood prevention situation (widespread technical and biotechnical measures in the area) in countries from which surface water directly flows to us via water ways, it will also be necessary to apply classic technology such as protective dams, polders, etc, as temporary or interim solution in anti-flood protection. However, when designing these measures, it is necessary to consider that even in these floodplains and in periods outside major floods, securing area anti-erosion protection and ensuring that water storage capacity of these areas is increased. It is assumed that after the implementation of widespread flood prevention measures in neighbouring states, from which the water flows to us via waterways, extreme

flood waves will decrease or be reduced, or substantially slow the growth of flow volume limits in border flows in the long term.

At the same time, these principles form the basis for integrated management of water and land resources which create the conditions for improving the quantitative and qualitative water regimes in the basin. They form the basis for simultaneously achieving good water and land status in individual basins, settlements and communities.

The internationally most common definition of integrated water resources management is the following: "Integrated water resources management is understood to be a process which supports coordinated development and management of water, the land and its resources in order to maximise the results of economic and social prosperity fairly, without threatening the long term sustainability of living eco-systems." For a systematic decrease in flood risk and flood prevention, it is therefore necessary to clarify this definition in terms of water circulation in landscape eco-systems as follows: "Integrated water resources management is a process of comprehensive evaluation of the impact of taking water from landscape eco-systems and returning the water to them, including utilisation of water and the protection of water resources in basins whilst respecting laws related to the protection of water cycle stability in landscape eco-systems".

There is public interest in the protection and utilisation of water resources in municipalities, thorough protection of water and land, as well as long term sustainable management of water and land resources in individual settlements and their basins. Public interest in municipalities further includes providing access by citizens to drinking water, ensuring waste water treatment, minimising flood risk in the basin and municipalities, and providing a suitable system of flood protection of the area.

Principles of integrated management of water and land resources

1st principle - principle of widespread protection of water resources and application of widespread measures of flood protection in basins as a priority

Water cycle in nature has almost no boundaries. The only natural boundaries are basin boundaries. Each cadastre represents a sub-basin, part of a catchment. The absence of widespread protection of water in basins leads to disruption of water cycle and subsequently leads to a negative change in the water regime with a number of consequences.

Technical measures in the landscape should not accelerate taking water from the land, e.g. by excessive straightening of waterways or by unreasonable drainage of water from the landscape by parts of melioration systems and channels. The current method of rainwater and surface water management must be fundamentally changed in terms of the current approach to water and respecting the following steps:

1. retention of rainwater and surface water in the landscape "in situ" as much as possible via:
   implementation of widespread anti-erosion measures
   implementation of widespread measures for improving the ability of the basin to retain water,
2. surface waterways should only be used for draining natural excess water from basins.

Technical and bio-technical measures such as dry polders, dams and other line and point

constructions which regulate excess water in a specific part of the territory and transfer of internal water are also part of the implementation of widespread measures. Implementation or restoration of such equipment must be evaluated in terms of benefits in decreasing flood risk and risk of drought, as well as in terms of the impact upon the water regime of the whole basin and transformation of flood flows.

2nd principle - principle of respecting the importance of rainwater and the landscape's role in rainwater distribution

Water and land are the greatest natural assets of a municipality. Rainwater is a primary source of replenishing the stock of water resources in the landscape and its eco-systems. All rainwater which falls on a cadastre is an asset which should be protected and used rationally.

Healthy land has three key features in rainwater distribution:

1. it optimally soaks water into the land profile and bed depending upon their natural physical parameters
2. it creates favourable conditions for the evaporation of water from surfaces - soil, vegetation, water and other areas
3. it only drains natural excess water from the basin via a river network

However, in practice, these three functions deviate from the equilibrium. Building, economic and investment practises in the area result in the following:

1. long term and widespread limitation of surface and rainwater infiltration into the soil
2. long term and widespread limitation of continuous evaporation of water from the environment via functional vegetation, wet soil - wetlands - and water surfaces
3. long term acceleration of surface water drainage from the basin due to the straightening of waterways, neglect of anti-erosion landscaping, rainwater drainage via urban water drainage systems into waterways, etc.

Landscaping therefore changes the parameters of landscape functions in the distribution of rainwater (usually in one direction and negatively); it also changes water regime in the landscape, mainly from balanced to imbalanced. A water regime in landscape is influenced (in qualitative and quantitative terms) by: modification of waterways, hydro-melioration and drainage systems (drained water should be thoroughly monitored), building up areas with hard and impermeable surfaces (each year built-up areas increase at the expense of free land), irrigation systems (positive - but only if irrigation does not worsen the physical-chemical parameters of the soil and ground water aquifiers), management of land and forest, rainwater management in urban areas of towns and villages, waste water treatment methods and drainage of treated waste water, taking water for preparing drinking water and other purposes.

Rainwater in an urban environment should not automatically end up in the public sewage system, but should be available for supporting evaporation, soaking into subsoil, irrigation of public green areas and other vegetation and greenery in a town, as well as for accumulation purposes next to individual buildings or built-up areas. Accumulated, temporary excess water in various accumulation places and areas, in order that it can serve various purposes such as irrigation of greenery, wetting the urban environment or be used as utility water. Accumulated water may therefore be used for prolonging evaporation or infiltration of rainwater into soil in an urban environment, even outside the rainfall period. Rainwater used for evaporation in an urban environment has a positive cooling effect. The application of this approach is also related to increasing the proportion, volume and quality of vegetation and green areas in an

urban environment, whose prosperity mainly depends upon a sufficient amount of water and solar energy. Green areas better supplied with water, and a wetter environment in towns are more beneficial in terms of both environmental health and the creation of more favourable health conditions for the lives of citizens in towns or villages.

3rd principle - principle of cooperation and association of owners and co-owners of land and buildings in order to protect and use rainwater and protect the soil against erosion

In order to protect and use rainwater and protect the soil against erosion, it is beneficial to develop cooperation between owners of neighbouring estates - land or buildings - including their co-owners, to provide greater protection and utilisation of rainwater and land, whether in inside or outside the built-up areas in towns and villages. For outside the built-up areas of villages, it appears to be beneficial to develop cooperation via water farms and in a town and urban environment (inside built-up areas) in the form of water associations (with similar principles as an association of homeowners and non-residential areas). **Water associations** would represent various communities of homeowners' associations, owners of neighbouring properties and municipalities, created in order to ensure economic handling of rainwater within built-up areas of settlements. The activities of water associations should focus upon pooling financial means for construction and operation of various systems for harvesting, accumulation and utilisation of rainwater (e.g. for infiltration, irrigation of public greenery and use as utility water). **Water farms** would mainly extend farming practices by active harvesting of rainwater in open landscape and active use of this water for various production and non-production purposes. Water farms would therefore be able to have a positive impact on agricultural land, where anti-erosion methods and measures for water retention would be applied thoroughly and on a large scale, and would beneficially develop vegetation elements. These areas could then gradually be used, for example, for recreation, fisheries management, rearing water poultry or the cultivation of biomass.

4th principle - principle of evaluating the impact of planned construction, investment and management activities upon water circulation in the landscape

In the processes of land planning, strategic environmental assessment (SEA), environmental impact assessment (EIA) and building permits, it is necessary to investigate how much the proposed building, construction or activity would contribute towards limiting some landscape functions in compliance with principle number 2, and it is also necessary to investigate whether the builder, investor or operator of the planned activities suggests compensating measures, for example, in the form of accumulating harvested rainwater from roofs, supporting the infiltration of rainwater into the soil, creating public green areas or new or replacement water areas to support water evaporation into the ambient environment. Each compensating measure should also undergo analysis in terms of their impact upon the environment and their suitability for the given location.

5th principle - principle of re-assessment of current landscaping influencing the water balance and water regime in the area when deploying integrated management

Current landscape modifications positively or negatively influence the water regime in the landscape to varying degrees. It is therefore necessary to gradually scrutinise individual, most significant encroachment into the landscape in the cadastre which mainly negatively influence the water regime and attempt to propose measures within the preparation of the municipality's integrated water resources management plan, the preparation and implementation of landscaping, providing a system of ecological stability, preparation or updating area plans or

programmes for economic and social development which allow elimination of the most significant negative influences upon the landscape environment or significantly reduce their negative impact. This is mainly applying options to positively influence a municipality's water regime created by its own water and rainwater falling in the cadastre. At the same time, it is necessary to scrutinise the positive and negative impact of incoming surface water into the cadastre area and if necessary, propose and discuss corrective measures with representatives of the upper part of the waterway, focusing upon eliminating unfavourable conditions. The aim of this principle is also to eliminate and reduce useless drainage of water from a cadastre area. Adhering to this principle must not be applied against the interests of citizens living in the lower part of the waterway. Of course, all these measures must be planned and implemented in compliance with valid legislation and regulations.

6th principle - the principle of thorough waste water treatment and economic assessment of the most suitable public water supply and sewage system

Waste water must be suitably treated in the whole municipality to avoid pollution of existing ground and surface water resources. Thorough treatment of waste water will bring multiple benefits to citizens, municipalities and regions. It is best if waste water is treated as close as possible to the place where it is created. It is necessary to apply an economic cost assessment for providing a public sewage system and public water supply, or treatment of waste water in terms of investment and operational costs per one equivalent citizen. Economical principles say that it is necessary to support solutions which, depending upon local options and conditions, are the cheapest or most suitable per one equivalent citizen. This assessment shall finally give an answer as to which system of waste water treatment is most suitable for the village or community - whether centralised or decentralised. It is especially important to prepare these calculations for each of the following situations: a municipality with a public sewage system, a municipality without a public sewage system, a municipality with a sewage system under construction and a combination of the previous situations. A similar approach should also be applied when calculating the costs for building and operating a public water supply.

In order to adopt this approach when designing systems for drainage and waste water treatment as well as the provision of drinking water, it is necessary to follow the methodology of open planning. This means that the designer should prepare studies for various alternatives whilst including environmental and health criteria. A discussion with municipality citizens about the selection of the most suitable alternative should then take place, taking into account specifics and the actual needs of the municipality. For treatment of waste water, it is recommended that a minimum of one alternative to the traditional solution be prepared, including a public sewage system and water treatment plant. Economic assessment of the alternatives must be a compulsory part of the study. After its completion, dialogue between municipality citizens and the design experts should take place. The result of this dialogue should be a decision on the most suitable and most effective system of waste water collection and treatment. Only after this has taken place can the waste water treatment project be prepared. The suggested method may appear long and complicated but it guarantees transparency of the process and the satisfaction of the citizens, that they were made familiar with the options for economic and environmental solutions and that they participated in the selection process. There is high probability that the municipality will be satisfied with the implemented project since the reality will not significantly differ from expectations in terms of the economic and technological efficiency of the system. Using this method, it is possible

to control fulfilment of the requirement for retaining water in the area from the very beginning, and insist that the water is not drained via the waste water collection system. By applying this principle, improved conditions are also created for restoration and reproduction of an already existing infrastructure of public water supply and sewage systems, and for active utilisation of rainwater in the area.

When designing waste water treatment systems or designing their refurbishment, it is further necessary to consider the following design parameters or principles:

separate collection of municipal waste water from rainwater
minimise dilution of waste water and promote nutrient recycling
minimise or gradually completely eliminate the rainwater drainage via the sewage network - rainwater should be fully utilised if possible in the village or town.
if possible, treated waste water should not be drained into waterways but re-use it, for example, for infiltration into particular green areas, for irrigating areas producing biomass, etc. Only build economically sustainable lengths of collection networks

When designing public drinking water supply systems, it is necessary to apply economic criteria - the financially most efficient solution for construction and operation of public drinking water supply per one population equivalent (PE) whilst minimising excess expenses which increase the price of water.

7th principle - principle of economical handling of water resources and recycling water

When handling water resources, it is judicious to return used water back into local eco-systems and keep the drainage of used water to the recipient to a minimum (after its treatment). Waste water treatment systems should lead to the chain: **water - soil - nutrients - energy**, which could largely allow self-financing of many activities in this chain. Public buildings or public infrastructure buildings as well as interest groups (e.g. schools with land, agricultural farms) could build their own closed loop systems for utilising rainwater, waste water treatment and recycling used and treated water (e.g. for irrigating technical crops). The use of recycled water and rainwater per citizen should be included in the total consumption of water per citizen.

8th principle - principle of the creation and application of a real price for water

Water prices should consider the real costs for its provision and supply to households, including the creation of appropriate reserves for the reproduction of water supply systems and waste water treatment systems. Water regulation should not deform the market and limit the ability of public water supply and sewage system operators to provide the necessary infrastructure reproduction and create reserves for investment. The application of integrated water resources management in basins in compliance with these principles will create a stable environment for restoring water resources in the environment and simultaneously, thorough waste water treatment, together with the elimination of pollution of the area by various other point, line or area pollution factors, will not increase pressure to increase the price of raw water for the preparation and supply of drinking water. Widespread good management of water resources, adhering to these principles, will also not lead to an inappropriate need for supply and transportation of drinking water over long distances since it is possible to assume widespread improvement of stock and quality of ground and surface water in the landscape.

9th principle - principle of preparation and approval of plans for integrated water resources

management in municipalities as a local element of the water planning process

The basis for integrated water and land resources management is the establishment of a local element of water planning in the chain: **municipality, basin, Slovakia** - whilst fundamental rules and instructions should be formulated at national and basin level. Using this method follows the legal responsibility of the State to the European Commission. Setting these rules and principles of integrated water and land resources management at local level is permitted and promoted by the Water Framework Directive. Establishing plans for municipality integrated water resources management arises from the need for thorough analysis of conditions of parts of basins and basins in cadastres, subsequent assessment of these conditions and proposal of measures for repairing any unfavourable conditions and restoring good waterway conditions in the municipality. A plan for municipality integrated water resources management should be established in agreement with affected partners in the area whilst applying the principles of integrated water and land resources management in terms of the protection and utilisation of water resources. Local level and municipality level at the same time represent the most suitable space for putting the principles of integrated water and land resources management into practice. Preparation of plans for municipality integrated water resources management should follow the methodology established for this purpose, using the current appropriate legal support for this process in appropriate Acts and in compliance with the processes of water planning at national level.

Framework conditions for providing integrated management of river basins

In order to provide integrated management of river basins, it is necessary to develop a whole scale of processes and activities including measures of an institutional, conceptual, legislative, technical, technological, financial and management nature at individual levels of public administration, area as well as within an international relationship. This is mainly regarding the following processes, activities and measures which should create suitable framework conditions for application of integrated management of river basins:

At local level:

establish processes and methodology for local water planning

prepare plans for integrated water and land resources management in municipalities.

This plan is a result of the process of local water planning and is a decisive base for implementing landscaping, upgrading landscape plans, permission for building, decisions regarding maintenance, modification and revitalisation of waterways and melioration networks, adaptation of the landscape structure and improvement of land and water management including providing more effective waste water treatment and eliminating environmental pollution from various sources within the cadastre.

communication, coordination and development of cooperation between owners of neighbouring land and interested parties in cadastres in the preparation and implementation of these plans in terms of investment, building and economic activities in the area

more detailed legislative arrangements for the preparation, implementation, maintenance and assessment of the efficiency of adaptation and economic measures in landscape

management, preparation, implementation and application of proposed measures in practice:

- *in terms of water and land quantity,* the basic measures include adaptation and economic measures (which form part of flood prevention measures) for individual types of land - forests, agricultural land, urban areas and waterways.
- *in terms of water and land quality,* the basic measures include measures for municipal waste water treatment and decreasing point, line and area pollution of water and land from various sources of pollution - by the public, agriculture, industry, etc.
- planning, granting permission and assessment processes in public administration are used to support implementation and application of these measures
- monitoring and support tools serve for inspection, technological, technical and institutional support of implementation of the proposed measures in practice

At river basin level:

assessment and coordination of the investment, economic and building activities of stakeholders in river basins: neighbouring villages, farmer's representatives in basins, forest management, water companies, waterway administrators, citizens' representatives (mainly communities from inundated areas and most frequently affected communities, etc), as well as representatives from industrial companies, the transport and technical infrastructure, local state administration, self-governing regions, banks and insurance companies (spread of insurance risk and supporting prevention)

communication and cooperation between interested parties within institutions of river basin self-government, water farms (outside urban areas of villages) and water associations (inside urban areas of villages), which focus upon decreasing water soil erosion, increase the retention ability of neighbouring parcels and cadastres, improve waterway maintenance, re-evaluate the justifiability and functioning of melioration equipment and improve the readiness for flood and exceptional situations

preparation and updating river basin management plans and flood risk management plans based on integrated water resources management plans and municipality land resources

At national level:

creation of inter-departmental management Programme for Landscape Revitalisation and Integrated River Basin Management of the Slovak Republic as a systematic tool for flood prevention and for reducing flood risks, the risk of drought and other risks caused by sudden natural disasters, using local manpower potential, including part of the long term unemployed as well as creating new types of economic activities in the area during its implementation

preparation and approval of Implementation Project of inter-departmental management Programme for Landscape Revitalisation and Integrated River Basin Management of the Slovak Republic for the period October to December 2010

establishment of an expert committee for integrated management of basins and landscape consisting of representatives from the appropriate departments, sectors, various administrators and owners of land, representatives of municipalities and self-governing regions

updating and amending laws (in the field of land and water) in order to include the principles of integrated water and land resources management into the legal environment

creation of financial, motivational and supporting mechanisms for widespread harvesting and enhancement of rainwater, anti-erosion and water retention landscaping, and maintenance of waterway networks.

reorganisation of selected state institutions in the area of land management and water management including the creation of: functional river basin administration, an effective model for maintenance and revitalisation of waterways, adaptation of melioration systems to meet current needs; an effective system of operation, construction and restoration of objects for flood protection in the area

quarterly submission of reports on floods to government sessions, whilst these reports should be extended to include damage and costs incurred due to drought, gales and forest fires in relation to the mutual eco-system reason

provision of deposits or early payments from the state to municipalities to cover expenses for preparation and emergency works during floods (to avoid lengthening of budget freezing by municipalities, related payment incapacity and elimination of the risk of compulsory administration by the municipality)

completion of a simple information system for analysing the surface drainage of rainwater from the areas of individual villages and a proposal for adaptation and management measures to reduce flood risk in cadastres, and subsequently in entire catchments

support further construction and extension of the Catalogue of Measures, solutions and examples from practice, widening the network of large SHMI meteorological radars by a network of small meteorological radars in order to improve and adjust prediction and warning services for monitoring the effectiveness of implemented measures

improving the system of coordination for providing aid during and after floods, exchanging information and verification of data on damage via a central portal and coordination centre, including deepening cooperation between emergency service units, increasing the role of self-governing regions in terms of prevention and reducing the impact upon life in regions caused by exceptional situations

supporting sustainable sanitation which creates space for systematic application of small, village, decentralised and alternative systems for waste water treatment which will reduce costs for municipal waste water treatment in medium and small villages calculated per one citizen, or one population equivalent

implementing the principles of integrated water and land resources management into planning, approval and evaluation processes of public administration - into project practice, landscaping, systems of building permission and land planning, environmental impact assessment and into public administration strategy planning

At European Union level:

reform European Union Common Agricultural Policy which would lead to preferred support for farmers in matters of adapting the landscape structure and improving year-round land, rainwater and nutrient management in order to restore eco-system landscape services and reduce the impact of climate change, reduce flood risk and risk of drought, protect soil and water resources

reinforce the principle of widespread harvesting of rainwater and the protection of soil against water erosion in cohesion policy tools and regional cohesion policy in the current (2007 - 2013) as well as the future programme period (2014 - 2020)

reinforce the principle of evaluation of investment and operational costs for the construction of public water supply and sewage systems per one population equivalent and support projects for sustainable sanitation in medium and small villages (fewer than 2,000 inhabitants or 2,000 PE)

application of local water planning as the basic degree of water planning which reinforces an integrated approach in the area of water, soil, biodiversity and the climate when amending EU directives concerning water, soil and climate change

support the creation of financial and motivational tools for landowners in order for

systematic adaptation of the landscape structure and improvement in land resources and rainwater management (including restoration of continuous vegetation cover of the area and reducing the erosion process) in individual European river basins

At international level:

Within application of the principal of solidarity, subsidiarity and partnership, and due to eco-system links and the impact of changes in one part of a river basin and continents upon other parts of river basins and continents, it is necessary to require the application of revitalisation and adaptation of the landscape structure, its foresting, increase the ability to retain rainwater and decrease the erosion processes in all types of land (agricultural landscape, forests, urban areas, waterways and unused landscape) outside the borders of the European Union.