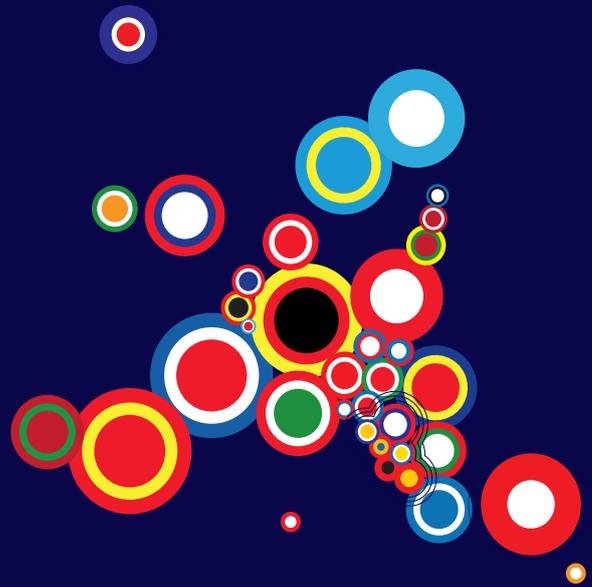




**INSTRUMENT FOR PRE-ACCESSION ASSISTANCE (IPA II)
2014-2020**

SERBIA

Flood recovery and prevention



Action Summary

The Action will contribute directly to implementation of Government priorities in the post-flood period and concerns both the recovery needs as well as upgrading the emergency response and prevention systems. The activities are grouped around the sectors of energy, transport, flood protection, including flood prevention as part of disaster risk reduction, housing, income generation and further assistance to build the capacity of the Government Office for Reconstruction and Flood Relief.

Action Identification	
Programme Title	Country Action Programme - recovery of flood damages
Action Title	Assistance to flood recovery
Action Reference	
Sector Information	
ELARG Sectors	
DAC Sector	
Budget	
Total cost (VAT excluded) ¹	62,000,000 EUR
EU contribution	62,000,000 EUR
Management and Implementation	
Method of implementation	Direct and indirect management
<i>Direct management:</i> EU Delegation in charge	EU Delegation to the Republic of Serbia
Implementation responsibilities	Government of the Republic of Serbia, the Office for Reconstruction and Flood Relief
Location	
Zone benefiting from the action	Republic of Serbia
Specific implementation area(s)	
Timeline	
Deadline for conclusion of the Financing Agreement	
Contracting deadline	
End of operational implementation period	

¹ The total action cost should be net of VAT and/or of other taxes. Should this not be the case, clearly indicate the amount of VAT and the reasons why it is considered eligible.

1. RATIONALE

The objective of this Action is to assist Serbia in the recovery effort in the aftermath of the flood that hit the region during May and consequently in September of 2014 to improve prevention and emergency response system. More concretely, the Action is directed towards re-establishing of regular functioning of public services, through rehabilitation of the damaged regional and local transport network, restoration of the power supply and distribution facilities, but also towards reconstruction and improvement of flood prevention systems and emergency response systems including procurement of mobile electricity distribution equipment.

Support required under this IPA 2014 Action is based on the needs assessment which was conducted by national authorities substantially backed-up by the internationally funded expert teams. Furthermore, estimated damages, losses and recovery needs are subsequently translated into National Recovery Programs for various sectors as formalised by respective Decrees. The present Action relies notably on the adopted National Recovery Programs for transport and water management sectors. Focal national institution for all the post-flood recovery developments is the newly established Government Office for Reconstruction and Flood Relief which undertakes comprehensive inter-institutional coordination, while the general legal framework is set by the special Law on post-flood rehabilitation in the Republic of Serbia (adopted in July 2014).

The proposed Action takes duly into consideration the assistance which is already being implemented under IPA 2012 program which was promptly processed during summer 2014. The 30 million EUR worth reallocation of IPA 2012 is by far the most substantial international support currently running in the field and is already providing first tangible results. In consent with the EU, it was designed in a manner to pilot some delivery models which are being built upon in the proposal for IPA 2014. To resume, the urgent support package from IPA 2012 concentrates on the following critical areas:

- **Public buildings and facilities (municipal buildings, schools, kindergartens, health centres, urgent road section etc.):**
 - Reconstruction of 30 public buildings and objects;
 - Reconstruction of 300 private households and construction of 70 houses which are heavily damaged by the floods mainly in the municipalities Obrenovac and Krupanj;
 - Construction of the 11km of the road Krst – Korenita – Krupanj;
 - Procurement of biocides for mosquito control;
 - Improvement of conditions in the temporary shelters;
 - Technical assistance support for the national authorities, especially the Office for Reconstruction and Flood Relief.

All activities related to this component of IPA 2012 AD are implemented by the UNOPS for the amount of 14 million EUR. It is worth mentioning that for the aspect of public buildings, the IPA portion complemented by 4 million EUR of assistance of the Kingdom of Norway covers all the estimated recovery needs.

- **Private housing cleaning, repair and reconstruction, dehumidification, re-equipping and income generation activities**

Geographically focussed grants provided housing and income generation in over 22 municipalities. The support concerns delivery of prefabricated houses for the 59 families and provision of equipment for 302 micro and small enterprises. The support is geographically organized to cover Sabac, Sid, Bajina Basta, Loznica, Mali Zvornik, Valjevo, Ljubovija and Osecina, Smederevska Palanka, Jagodina, Paracin, Ub, Cacak, Velika Plana and Koceljeva, Kosjeric, Lazarevac, Sviljanac, Trstenik, Varvarin and the city of Kraljevo.

Activities related to this component are implemented by the Danish Refugee Council, HELP and ASB for the total amount of 8 million EUR.

➤ **Agriculture support, especially for seeds and restarting production of vulnerable small scale farmers**

The support is provided to agricultural producers in Obrenovac; Paraćin; Ub; Čačak; Krupanj; Šabac; Mali Zvornik; Velika Plana; Loznica; Trstenik; Jagodina; Šid; Valjevo; Osečina; Varvarin; Koceljeva; Kosjerić; Kraljevo; Kragujevac; Smederevska Palanka; Svilajnac; Ljubovija; Lazarevac; Bajina Bašta.

This component is implemented by FAO (Food and Agriculture Organization) for the amount of 8 million EUR.

Upon the approval of the IPA 2012 package and the closure of International Donor Conference for Serbia and Bosnia and Herzegovina (held on July 16, 2014), intensive follow-up in coordinating and consolidating development assistance has taken place during summer 2014. Likewise, the Government Office for Reconstruction and Flood Relief was entrusted with the funding from various sources following a public campaign for assistance to those struck by the floods. These funds were used in the housing domain and for compensations to affected population in amounts of 1,000 to 5,000 Euros depending on the category of damage sustained, providing for partial assistance to all those who submitted a request. In cases where no land for a new home was available any longer, the Government paid cash grants of 25,000 Euros per household. From 29,887,000 Euros paid into the Government-dedicated account to date, a total of 28,560,000 Euros were paid out to 14,275 and still growing number of beneficiaries.

A total of 14,581 Acts for private housing in need for reconstruction have been issued by the Government of Serbia and local governments to the end beneficiaries, out of which 5,355 are issued in the municipality of Obrenovac alone. In this particular municipality, representing a third of the affected number of households, it appears that all needs for construction of houses within Category 6 (total damage) will be met due to the interest of a number of donors, including the 8 houses which will be constructed with EU funds by UNOPS. However, the homes in this town were submerged in water for a full 22 days and the damages here are worse than the ones afflicted by flooding in other municipalities.

In other municipalities, where the interest of other donors has been less intense, the IPA 2012 package has succeeded in addressing nearly all existing needs officially registered under Category 6 and a fair percentage (between 20% and 40% depending of the municipality) of needs under Category 4 and 5. A large number of needs however still remain unmet, either due to the re-categorisation of housing objects (from Category 4 and 5 to Category 6) or to the identification of vulnerable households who did not obtain a formal recognition through Acts of the Government Office for Reconstruction and Flood Relief. It should be noted that assistance for reconstruction of objects in Categories 1-5 is not provided by any donor other than the EU, hence creating a big discrepancy between the level of damage and need against the resources committed. The rationale is the following: out of 14,581 cases to date, thus far the EU shall assist a total of 1,029 households (7%), these being 2.50% for Obrenovac and 9.67% for all other municipalities.

Therefore, the focus of the programming for various assistance sources is dominantly on the resource-demanding sectors such as transport, energy, water management and housing. To that extent, the proposed assistance under IPA 2014 is tailored towards areas with anticipated substantial social, economic and cost-effective implications, which fit the remaining needs as well as the tentative implementation timeframe. IPA 2014 activities are grouped/focused around the:

1. Disaster risk management and emergency response system, including setting systemic approach concerning flood risk management, provision of equipment needed for reaction in emergency situations, focusing on energy and water supply.
2. Water management, rehabilitation of the embankments and drainage channels
3. Transport sector, in particular rehabilitation of the road network affected by the landslides

4. Housing, public and utility infrastructure (public buildings, embankments, road section, heating, water supply, power connections, sewage linked to housing), income generation activities and further assistance to the Government Office for Reconstruction and Flood Relief to add to the ongoing activities in the five IPA 2012 grants.

PROBLEM AND STAKEHOLDER ANALYSIS

Problem analysis

During the third week of May 2014, exceptionally heavy rains fell on Serbia which was caused by a low-pressure system ('Yvette') that formed over the Adriatic. Record-breaking amounts of rainfall were recorded; more than 200 mm of rain fell in western Serbia in a week's time, which is the equivalent of 3 months of rain under normal conditions.

The heavy rainfalls led to a rapid and substantial increase of water levels in the main rivers in western, south-western, central and eastern Serbia: Sava, Tamnava, Kolubara, Jadar, Zapadna Morava, Velika Morava, Mlava and Pek.

Because of the flooding, some 32,000 people were evacuated from their homes, out of which 25,000 were from the town of Obrenovac. The majority of evacuees found accommodation with relatives, but some 5,000 required temporary shelters in camps established by the Government and the Serbian Red Cross. The worst affected locations were Obrenovac, Lazarevac, Paracin, Smederevska Palanka, Svilajnac, Sabac, Sremska Mitrovica, Bajina Basta, Krupanj and Ub.

As a result of the disaster a total of 1.6 million persons were directly or indirectly affected in the country, mostly located in central and western Serbia. The floods that occurred in 50 river beds of western, central and southern parts of Serbia affected 52 municipalities, with severe damages in 24 municipalities, causing complete destruction of 485 housing units, and partial damage on 16,200 apartment and individual housing units, as well as public buildings (education, health, etc.), and local administration offices. In many localities the entire social activity was disrupted while in few ones (Obrenovac, Paracin, Krupanj, etc.) the local economy was also severely affected. Many people had to be evacuated on short notice from their houses and temporary shelters have been provided in the nearby localities, not hit by the floods.

Similar situation repeated in September 2014 and hit Eastern part of the Republic of Serbia (Bor District), namely the municipalities of Kladovo, Negotin, Majdanpek, Tekija, Brza Palanka, Grabovica and Boljetin.

The Serbian *Government Committee for the assessment of damage from natural disasters* working under the auspices of the Office for Reconstruction and Flood Relief was convoked in the immediate aftermath of the natural disaster. It initiated its work on the issue of the floods on Tuesday 20 May 2014, sending a request to the local authorities for preliminary reports on the damage from the floods. Based on that, the Serbian government prepared initial estimates of damages, including the list of priorities and sequencing. In addition, the Government of the Republic of Serbia has conducted a post-disaster needs assessment.

The European Union, the United Nations and the World Bank – coordinated through in line with the 'Joint Declaration on Post-Crisis Assessments and Recovery Planning', subscribed in 2008 – provided financial and expert support to conduct the assessment. The assessment enabled to estimate disaster effects – damage and losses – and impacts as well as the financial requirements to undertake recovery and reconstruction. More than 14 sectors of social and economic activity and cross-cutting issues were analysed during the assessment.

The assessment revealed that the total effects of the disaster in the 24 affected municipalities amounts to 1,525 million EUR, of which 885 million EUR (57% of the total effects) represent the value of destroyed physical assets, and 640 million EUR (43% of the total) refer to losses in production. When considering the additional affected municipalities, the total value of disaster effects would rise to 1.7 billion EUR.

It was found that total disaster effects were concentrated mostly in productive activities (1,070 million EUR and 70% of the total), social services (242 million EUR and 16%), and infrastructure (192 million EUR and 12%); thus, disaster impact was highest in terms of production and access to social services, than in regard to destruction of infrastructures. In regard to individual sectors of economic and social activity, the most affected sector that require recovery and reconstruction financing was the one of mining/energy (494 million EUR and 32% of the total), followed by housing (231 million EUR and 15%), agriculture (228 million EUR and 15%), trade (225 million EUR and 15%) and transport (167 million EUR and 11%).

Financial requirements have been estimated for all sectors of social and economic activities, under both public and private domains, to ensure the recovery of personal income, access to basic services, production levels in agriculture, industry, trade and mining, as well as of the environment, together with the needs to rebuild destroyed assets following disaster-resilient standards.

The financing of these post-disaster needs would come from a combination of government funds, EU funds, private sector resources, soft-term credit from local banking institutions, as well as cash grants and donations from the international community, and fresh and rescheduled loans from international financial institutions.

- ***Energy***

Overall damages in the power sector are estimated at 21,218 million RSD (181.6 million EUR). Over 90% of the damages are in the coal and power generation sectors, followed by the power distribution sector. Some damages were also registered in the power transmission, natural gas, and district heating sectors. All major enterprises affected by the floods are fully government owned.

Recovery of coal production is essential to ensure timely and sufficient availability of electricity supply to all consumers. The estimated recovery costs amount to 24,498 million RSD (211.8 million EUR), spread out in 2014 and 2015. The cost of reconstruction for the mining and energy sector has been estimated at 23,363 million RSD (202.0 million EUR).

Floods caused significant damages to the electricity distribution system. The distribution system in Serbia is operated by 5 distribution system operators, 4 being affected by floods. Up to 110,000 customers were affected by supply interruptions in 28 municipalities touched by the floods. Large portions of the distribution network were affected and to a lesser extent, the transmission network, more than 9 million EUR direct damage in distribution sector only.

Given that the floods also heavily affected EPS generation capacities drastically reducing coal production, the possibility of restrictions in electricity supply is not ruled out. This will put additional pressure on the distribution system and unplanned outages are a realistic scenario. Lack of mobile substations would also significantly increase the frequency and even more duration of the unplanned interruptions (indicators for distribution system SAIFI and SAIDI). Comparing the last distribution system report with the last year report can be noticed that SAIDI after the flow increased. To ensure security of electricity supply, to decrease the risk not to have stable electricity supply, there is a need to ensure the mobile electrical equipment. There are mobile substations which would be of great assistance to EPS to maintain the distribution system stable and to keep electricity supply reliable. In case of emergency situations (outages due to different failures on the grid) distribution automation systems would significantly improve dispatching efficiency, shorten the time to fault detection, isolation of fault and restoration of the power supply to the majority of the consumers which could be supplied through alternative feeders. Distribution automation systems (primary equipment like new switch gear equipment both for cable and overhead lines, intelligent switchgear equipment like pole mounted autoreclosers, remotely controlled airbrake disconnectors, pole mounted remotely controlled SF6 load brake switches, remotely controlled vacuum breakers, adequate digital radio telecommunication equipment, modern SCADA servers) would significantly improve network reliability indices like SAIDI, SAIFI). The said equipment would be strategically placed to be able to answer to emergencies and prevention in the most efficient way.

The most vulnerable region is Central and Western Serbia, where most municipalities were affected. This area is covered by Distribution System Operator “Elektrosrbija”, serving some 900,000

customers. The headquarters is based in the city of Kraljevo and the operations are conducted through 11 regional branches. Out of these 11 branches and 22 lower organizational units, 10 units were most severely affected by recent floods (Bajna Basta, Loznica, Sabac, Valjevo, Ljubovija, Kosjeric, Lazarevac, Trstenik, Varvarin and Kraljevo). Also, in 2010, a strong earthquake hit Kraljevo and surrounding areas leaving severe damages on private housing and infrastructure. Proposed areas are mainly rural and very often when it comes to outage for example during winter months, it takes maintenance utility people sometime days in the mountain to find cause and fault location since at present all manipulation on the grid were performed manually on the site. It is very time consuming and more importantly in case of natural disasters locations are not accessible. The targeted areas have mainly long, radial overhead lines and based on the experiences of developed European utilities such systems would improve significantly reliability factors of the grid (SAIDI, SAIFI) and provide customers with higher quality power supply. Implementation of digital packet data radio systems in licensed frequency bands will enable fast and reliable telecommunication infrastructure which will contribute to the development of the distribution system.

For that reason this region is selected for introducing the system of automation of the distribution medium voltage grid. As for the mobile substations, they will be kept on designated locations with the aim to be able to reach out in the most efficient way any location throughout the territory of Serbia, where needed.

- ***Transport***

One of the main environmental problems emanating from the floods of May 2014 include activation of approximately 2000 landslides reported but out of these about 135 have affected the road network and 12 that of the railways. The combination of heavy rainfall, high soil saturation before the intense rains began, and the presence of unstable soils in hilly areas, caused the subsequent occurrence of landslides. These landslides occurred in both inhabited and uninhabited areas and generated destruction of houses, roads, bridges and other infrastructure works.

There are 58 landslides and objects (listed in the Annex 4) proposed for urgent action on the national roads.

The main criterion for selection of landslides was the level of urgency for remediation and the complexity of the works which should be implemented. Namely, P.E Roads of Serbia analysed all locations where landslides affected the road network by using the criteria of immediate urgency for reconstruction and complexity of works to be conducted. The landslides which are chosen to be subject of the respective AD are considered as moderate type, i.e. the landslides that can wait for the start of works in March 2015. The most critical landslides (40) have been under remediation already, and those works are financed from other sources which PE Roads of Serbia managed to ensure.

The necessary documentation for the remediation for the 58 landslides and objects which are subject of this AD will be prepared following the systematic approach defined by the relevant regulatory framework. Namely, site-visits for all the landslides were conducted, accurate baseline surveys of the landslide areas and first conceptual ground models of the landslides have been developed. Ground investigations of the landslides have been designed and undertaken.

On the basis of the collected data, remediation solutions have been or will be designed. All project documentation will be or is being prepared according to the relevant regulatory framework:

- the Law on planning and Construction (Official Gazette of the Republic of Serbia No.72 / 2009, 81/2009, 64/2010, 24/2011, 121/2011, 121/2012, 42/2013-CC, 50/2013-CC, 54/2013-CC, 98/2013),
- the Law on Public Roads (Official Gazette of the Republic of Serbia No. 101/2005, 123/2007, 101/2011 and 93/2012),
- the Regulation of Technical Norms for Foundation Structures (Official Gazette of the SFRJ No. 15/1990),
- the Law on Health and Safety at Work (Official Gazette of the Republic of Serbia No. 101/2005),

- the Law on Mining and Geological Research (Official Gazette of the Republic of Serbia No. 88/2011),

and in accordance with other applicable regulations.

According to the Article 143 of the Law on Planning and Construction, works on remediation of consequences of a natural disaster might be conducted without a building permit, with the obligation of obtaining the necessary permits or acts within one year of the moment when the natural disaster occurred. In addition, according to the Article 145 of the Law on Planning and Construction, construction works for investment maintenance, remediation, rehabilitation and reconstruction can be conducted with the act of allowance for undertaking the works, without obtaining the building permit.

All the permitting for remediation of landslides on national roads, selected within this proposal, will be done by the Ministry of Construction, Transport and Infrastructure.

The cause of the landslide was the extreme precipitation resulting in high pore pressures in the landslide mass that has probably been active also in the past. The area has been deforested and possibly cultivated as compared with the surrounded forest vegetation. Following emergency clean-up earthworks reopening of the road has been achieved. This is a temporary diversion that should not be considered as a permanent solution since reactivation of the landslide may happen anytime following even small scale precipitation directly affecting the large tension cracks developed in the slide mass.

Risks in major landslide locations have considerably increased due to the high probability of reactivation and traffic disruption if rainfall and flood events of event lesser intensity take place. Similarly risk has largely increased for locations where railway or road embankments have been washed away as discussed before. With many embankments weakened by the large and fast flows over them they are now more prone to further damage from either heavy rainfall or from further flows.

Total reconstruction needs for transport sector are 14,830.9 million RSD, while for primary and secondary road sections is estimated on 6,254.7 million RSD (53.5 million EUR), and for railway sections reconstruction on 4,565.2 million RSD (39 million EUR).

- ***Investments in the rehabilitation of embankments and channel drainage systems***

The floods damaged large portions of flood protection infrastructure (mostly embankments) which failed either because they were overtopped or following underground erosion of their foundations (suffusion).

In few cases, suffusion of material in dike foundation occurred and created holes under the construction that, then, rapidly enlarged and triggered the dike failure. The high velocity of flood waves and large volume of sediments transported (sometimes, large rocks have been rolled over by the floods) produced severe erosion of the river banks and river beds and even destroyed the river bank protection. In some cases, the riverbed enlarged from 50 to over 300 meters, damaging other types of municipal infrastructure (roads, water supply pipe, cables).

As part of the operational plan for flood protection systems, channels and channel drainage network in the hydro-melioration basins play an important role. The canal system within a catchment area has a multiple function. It is used primarily for the drainage but also for irrigation in the absence of water during the drought periods. Furthermore, additional water from rain, snow or other factors, in this particular case – flood, can gravitate toward a channel system. During the long periods of rain, the channel system linked together with pumping stations drainage the water and pumped it into the recipient. In this way, flooding of settlements or agricultural areas is avoided. Each snag within the channel network results with the spillage and potential flood of the greater area around the channel and can be avoided by a proper and regular maintenance.

Damage to Flood Control Works is actually rehabilitation costs, estimated by using the current construction costs for the respective types of works and replacement / repair costs for equipment (electrical, mechanical, hydraulic, as the case is). The damage has been estimated together with the three Public Water Management Companies for the territory under their administration (Srbijavode

PWMC, Vode Vojvodine PWMC and Beograd Vode PWMC). Public Water Management Companies prepared comprehensive list of the locations of embankments that needs to be repaired based on the criteria of urgency. The list consists of the locations separated in three categories: where the repair need to be finalized by the end of the year 2014, where the repair need to be finalized in course of the next 2 years and between 2016- 2020. Taking in consideration the urgency, given timeframe for the commencement of works and the proposed budget, the line Ministry together with the PWMCs selected the locations presented in this particular document, where the works can start at the beginning of next construction season which is March 2015. During the consultation process on selection of locations with all relevant national stakeholders, all the parallel negotiations with other donors were taken into account and the most adequate financing modalities were identified. The details about other donor assistance, including World Bank's Emergency Recovery Loan (ERL) are presented in the section Lessons learned and link to previous financial assistance.

The respective Action document is designed taking into account all mentioned initiatives, so that the priorities for IPA 2014 assistance clearly complement but do not overlap with other funding sources or options under consideration.

- ***Flood prevention system/Disaster risk management***

In the past few years, floods have become one of the dominant risks in Serbia. It is estimated that 158,460 people were at risk of flooding on the territory of the Republic of Serbia between 2009 and 2012 a total area of 474,652.85 hectares was affected, while 58,449 structures were directly under threat. Directive 2007/60/EC on the assessment and management of flood risks is almost fully transposed in 2010 by the Law on Water.

Heavy rainfall and disastrous floods in spring 2014 has affected houses, infrastructure, livelihood, agriculture, SMEs and industries. In accordance with the Instruction of the Head of the National Emergency Management HQ, the State of Emergency was declared for the whole territory of the Republic of Serbia. According to the official data, Emergency Services (fire-rescue brigade, police, army, and Red Cross) evacuated and rescued 31,879 people from the affected areas. More than 24,000 people were evacuated only from the most affected municipality of Obrenovac, where more than 2,260 buildings were flooded and more than 1,800 buildings damaged. Electricity and drinking water supply was threatened in number of municipalities.

The flood disaster 2014 has made evident a number of vulnerabilities of the Serbian population and economy that – in view of climate change – deserve special attention and require the reduction of disaster risks. Improved strengthening and expansion of flood control systems, flood-forecasting and prevention activities, and physical planning to avoid locating homes and production activities in flood-prone areas, are some of the required activities to be carried out.

Improvement of floods forecasting systems is another pre-requisite to reduce disaster risks. Directive 2007/60/EC requires undertaking of three subsequent steps: 1. Identification of risks areas; 2. Preparation of Flood hazard maps and flood risks maps; 3. Establishment of Flood risks management plans. With Sofpas I (IPA 2007 - completed in 2012), step 2 of the Directive was achieved for approx. 25% of the risks area locations (24 out of 99) or 50% of the risk area coverage. Continuation of this project foreseen within the activity 3 will complete step 2 of the Directive in order to cover all 99 risk area locations or 100% of the risk area coverage. The full achievement of the Flood Directive, meaning preparation of the Flood risks management plans is planned for the next programming year, taking in consideration that the deadline set in the Law on Water for finalization of Flood risk management plans is 2017. According to the same law, Article 49, the flood risk management plan shall ensure risk management through the lessening of potential harmful consequences of floods to human health, the environment, cultural heritage, and/or economic activity. The plan referred to will be delivered for the territory of the Republic of Serbia and for its water districts. The plan will be based on the flood hazard map and flood risk map, applying a methodology which shall address: flood risk management objectives, measures by which such objectives shall be achieved, priorities and the manner by which the flood risk management plan will be implemented, competent legal entities, funding required for the implementation of the flood risk management plan, the procedure for harmonization with the water management plan, and public participation. According to the Article 50,

the flood risk management plan shall be delivered in the same manner and following the same procedure as for the water management plan. The Strategy Paper defined the improvement in river basin management planning as one of priorities in water management sub-sector. This will further assist Serbia in the harmonization with the EU Flood Directive in the fulfilment of its obligations in the integrated management of hydraulic resources field and the global protection against floods.

The floods showed that the main problems are gaps in early warning system, as well as the lack of adequate equipment of the Sector for Emergency Management of the Ministry of Interior, which is very often essential in saving human lives. There is a lack of adequate investment in the operation and maintenance of existing equipment, as well as the replacement of old equipment is posing a serious challenge. Although national and local authorities have made great efforts to provide basic protection and rescue equipment for local units, civil protection units and other operational units, there is still a great need for basic and specialized equipment which will be used in case of floods.

The Republic Hydro-Meteorological Service (RHMSS) currently disposes forecasting system for small and medium catchments. The model is calibrated and in function for 10 river catchments, but in the majority of these river catchments there are not enough automatic stations measuring real time data of precipitation, air temperature and humidity as well as water level. Because of that, RHMSS needs to strengthen the real time network stations on uncovered rivers, to make the model run better, as well as adopt a new model more suitable for medium size river catchments like Velika Morava, interested by the recent floods.

The recent floods made significant damages to the existing structure, but above all made evident the need to strengthening the hydro-met network for hydrological forecasting purposes along some basins directly related to the recent floods (Jadar, Kolubara, Morava and Timok). More accurate forecasting by RHMSS means more reactive responses in case of floods, because of timely issuing of early warnings (especially at local scale).

The current inventory features equipment, such as vehicles, boats, pumps and fire protection equipment that is outdated and unreliable which leads to a slower and less effective emergency response.

In recent years, Serbia has made progress in strengthening the legal and policy environment for emergency response and risk reduction.

Floods also damaged a number of substations of different voltage levels. While EPS is working to systematically replace and install new parts in all substations, interruptions and unplanned outages are possible. Therefore, having the mobile electrical substations of different voltage levels would be of great assistance to EPS to maintain the distribution system stable, to keep/increase power supply reliability.

In addition to the need to provide a backup power supply by mobile substations, during emergencies, it is crucial to perform medium network sectionalizing (automation of the network) as fast as possible. Quick sectionalising provides continuous power supply of consumers that are not affected by emergency conditions, and quick switch off of part of electrical network which is directly threatened. In this way, danger of electric shocks and fire is quickly minimized and possibility to preserve equipment is increased.

Recent floods have strongly pointed those needs. The best way to meet these needs is to raise level of automated control of medium voltage network by increasing number of sectionalisers in medium voltage network and to adequately distribute them in order to minimize the risks of outages and damages caused to customers by power cuts.

- ***Housing, utilities and income generation and the continued support to the Office for Reconstruction and Flood Relief***

The existing EU's contribution to the implementation of the short and mid-term efforts of the Government of the Republic of Serbia for reconstruction of flood-affected areas through support for the priorities in the area of reconstruction and repair of housing and income generation is expected to cover less than 10% of the total needs. The programme was tasked to assist at least 5,000 beneficiaries in terms of housing. This could be interpreted in this way if the members of the immediate family of the 1,029 beneficiaries receiving assistance are included (900 homes rehabilitated and 129 rebuilt), but even then the 5,000 goal would fall short.

Apart from this natural disaster, the country is heavily hit by the financial crisis. The EC 2014 Progress report quotes that overall, impacted by heavy floods the economy contracted in the first half of 2014. Exports remained the only engine of growth. External debt has been fairly stable in euro terms, but fell in relation to GDP to around 80 % by the end of June. Overall, strong export growth contributed to a further narrowing of external imbalances. In July, the Commission hosted a donors' conference for Bosnia and Herzegovina and Serbia co-organised with France and Slovenia. Total pledges for Serbia amounted to 986 million Euros of grants and soft loans out of which 80 million Euro grants from the EU budget – i.e. the 30 million from the IPA 2012 and 50 IPA million Euros from the IPA 2014 budget. This Action document now proposes that another 12 million Euros are added to the originally pledged 50 million so as to re-enforce the outcomes foreseen by the IPA 2012 funding.

The additional funds will be allocated in the largest part to cater the large needs in housing and income generation, to cover the needs the IPA 2012 programme could not cover thus far, and to include the variety of needs of the population struck by the more recent flooding in East Serbia (municipalities of Kladovo, Negotin and Majdanpek) or other such municipalities should there be another catastrophic event during the implementation of the programme. This is said due to the fact that the river beds are still unstable throughout the country and while repairs are taking place it may be expected that areas which have not suffered damages may be victim to such events in the coming months. This programme aims at including all such Serbian territories during its implementation. A smaller portion of the funds would also be allocated to for additional assistance to the municipalities flooded in September 2014 and to follow through and complete existing activities with respect to the activities of the Office for Reconstruction and Flood Relief until the end of the programme implementation period.

Stakeholder analysis

The Office for Reconstruction and Flood Relief

The Government of the Republic of Serbia established the Office for ***Flood Affected Areas Assistance and Rehabilitation*** (The Office) on 22 May 2014. It was established pursuant to the Article 31 point 1 of the Law on Government (“Official Gazette of the Republic of Serbia”, no. 55/05, 71/05 – correction, 101/07, 65/08, 16/11, 68/12 – CC, 72/12, 7/14 – CC and 44/14). The Office is headed by the Director, appointed for the period of five years. The Director is reporting to the Government of Serbia and the Prime Minister.

In particular, it conducts expert, administrative and operational affairs for the needs of the Government and mutual affairs of the Ministries and special organizations which are related to:

- coordination, monitoring and reporting in regards of the reception and distribution of the humanitarian and other aid addressed to the Government for the people affected by floods;
- establishment of standards and criteria, as well as the procedures for the distribution of aid;
- establishment of periodic and final reports on the aid distributed;
- coordination and preparation of partial reports and of the single report on the damage assessment;
- coordination of the preparation of priority, partial plans and of single plan for the recovery of the areas affected by floods;
- coordination of all necessary preceding activities and coordination of the overall conduct;
- monitoring and reporting of the conduct of the recovery plans of the areas affected by floods;

- coordination of the preparation of priority, partial plans and of single construction plan of the areas affected by floods;
- coordination of all necessary preceding activities and acts concerning the application of the construction plans for the area affected by floods;
- coordination, monitoring and reporting regarding the activities of the procurements necessary for the execution of the construction plans;
- establishment of standards and criteria and procedures of reporting during the realization of the construction plans;
- coordination, monitoring and reporting regarding the finalized parts of the construction plans; drafting of the periodic and final reports on realization of the construction plans;
- and all other activities related to the assistance and recovery of the flooded areas and monitoring of the fulfilment of the obligations Ministries, special organizations and Government's services have regarding the activities of the assistance and recovery of flooded areas.

The new Law on Recovery and Reconstruction (“Official Gazette of the Republic of Serbia”, No. 75/2014) with a view to formulate procedures for reconstruction and recovery of flooded areas has been passed by the Parliament and entered into force on 22 July 2014.

Ministry of Mining and Energy

The **Ministry of Mining and Energy** is responsible for overall policy and oversight of the mining and energy sectors. The regulatory competencies are performed by the Energy Agency of the Republic of Serbia (AERS). Serbia's energy sector policy and regulatory development is largely driven by the EU accession process and the obligations under the Energy Community Treaty. Apart from the Ministry in charge for energy, other beneficiary is:

The **Public Enterprise Electric Power Industry of Serbia** (PE EPS) is a vertically integrated company. Its main objective is to cover the entire electricity needs both of the economy and population including the following activities: electricity generation; electricity distribution and distribution system control; electricity trade; coal production, processing and transport; steam and hot water generation in combined heating processes; water power utilization and services in river and lake traffic; wholesale trade in fuel and similar products; research and development; design, construction and maintenance of energy and mining plants; design, construction and operation of telecommunication facilities; engineering. Supply and sales of electricity to 3,553,988 customers on the territory of Serbia (without Kosovo and Metohija) are carried out in the scope of the electric power distribution activities of EPS. The distribution system in Serbia is operated by 5 Distribution system operators, 4 being affected by floods. The distribution network consist of 185 substation (TS) 110/x kV, 640 TS 35/10 kV, 35.800 TS 20/0,4 kV, 10 TS 10/0,4 kV. At the moment EPS does not have any mobile substation high to medium voltage, 110/35 kV, and there exist a need for that kind of equipment. For all distribution network there are currently only 3 mobile TS 35/10 kV. When it comes to emergency situations causing the unplanned outages distribution automation systems (monitoring and control of medium voltage network) is essential to enable efficient (fast) fault detection and isolation, reconfiguration of the medium voltage grid and provide majority of consumers with power supply during the shortest possible time.

To achieve system protection, reactive power and voltage control, loss compensation, load following and energy balance, as well as optimization and stabilization of RES power plants, EPS need some mobile equipment which will help to solve emergency situations

Ministry of Construction, Transport and Infrastructure

The **Ministry of Construction, Transport and Infrastructure** (MCTI) is responsible for transport policy and regulatory development. Other institutions with the responsibilities in the transport sector include:

- The **Public Enterprise Roads of Serbia** (PERS) is established for managing state roads. PE "Roads of Serbia" is in charge of maintaining, protecting, exploitation, development and management of state roads of I and II category in the Republic of Serbia. Along with the protection and exploitation of roads, PE "Roads of Serbia" organizes and performs professional operations for constructing, reconstructing and traffic management on state roads in the Republic of Serbia.

PERS is responsible for maintenance, protection, operation, development, and management of main and regional roads in Serbia. The primary task of PERS is to preserve and further develop and improve the Serbian road network.

PERS also coordinates preparation of planning and design documents for the Serbian road network.

PERS is also responsible for preparation of documents that serve as basis for preparation of planning and design documents. Key specifications used for technical documentation preparation are:

- Technical specifications for contents and format of design documents,
- Technical specifications for contents and format of planning documents,
- Road design methodology,
- Planning and designing facilities concerning main roads,
- Technical instructions for preparation of reconstruction designs of non-urban roads (1998) etc.

PERS implements projects of main and regional roads, structures, traffic signs and equipment, in accordance with local legislation, i.e. laws, regulations, and other specifications. There is also existing Project Implementation Unit (PIU) with experience in projects implementation/operation. The unit for project implementation consist of approx. 25 people.

- The **Corridors of Serbia** Ltd. managed road construction projects of strategic national importance. The company Koridori Srbije Ltd. was founded in 2009 by the Government of the Republic of Serbia with the aim to perform the works in the sphere of the traffic infrastructure – highways on the territory of the Republic of Serbia, for the purpose of investing in the construction of the highways, organizing and performing professional activities related to the construction of highways, including the activities relating to the expropriation, drafting of plan and design documents and performing of works, organizing of professional supervision over the construction of the highways, as well as the activities relating to the planning of the construction of the highways construction. The Government of the Republic of Serbia on its session held on 28 July 2014, in accordance with the Government Law, Article 43, Paragraph 3, on a proposal of the Ministry of Construction, Transport and Infrastructure adopted the Conclusion to initiate the activities required for the merger by acquisition of the company Corridors of Serbia, Ltd. Belgrade, by the Public Enterprise **Roads of Serbia**. By merging the Company **Corridors of Serbia**, Ltd. Belgrade, and the Public Enterprise **Roads of Serbia**, the main goal of the Government of the Republic of Serbia is to improve the system of construction, maintenance, management and investment in road infrastructure.

Ministry of Agriculture and Environmental Protection

The **Ministry of Agriculture and Environmental Protection** (MAEP) is responsible for overall agriculture and environmental management issues in the country. Its mandate includes *inter alia* management of national parks, inspection surveillance, and water quality protection, chemical and waste management. It acts as focal point for various multi-lateral environmental agreements. The Serbian Environmental Protection Agency (SEPA) is an administrative authority under the MAEP that has legal obligations in the field of environmental monitoring, data collection and management, and preparation of national reports on the state of the environment and its components.

Responsibility for water management is shared between several institutions.

The main responsibility for flood protection and management of the respective infrastructure lies with the MAEP through the Water Directorate, under which competences are Public **Water Management Companies: Srbijavode, Vojvodina Vode and Beograd vode**. Furthermore, there are other competent authorities of the local self-government units in accordance with the provisions of the Water Law. **Water Directorate** has significant role related to water issues and implementation of water related projects. In implementation of this mandate, MAEP collaborates with other ministries (e.g. Ministry of Interior, Ministry of Construction, Transport and Infrastructure, etc.), and with other institutions at national level relevant in water management sector (e.g. Republic Geodetic Authority, Republic Hydro-meteorological Service of Serbia, Statistical Office of the Republic of Serbia). MAEP is responsible for water management on “level 1” water courses and actual implementation of this mandate is delegated to three public water management companies. PWMCs are responsible for a wide variety of tasks, including operational management of water infrastructure, distribution of water to users, licensing of water resources, as well as hydrological monitoring and flood protection. They are also in charge with management of dams and reservoirs. The three PWMCs have been established to conduct water management activities in specific areas through facilities for water flow regulation, drainage, flood protection, and water supply to water utilities, including dams, locks and intakes for irrigation.

The flood protection infrastructure includes the embankments, river banks and bed regulations, and drainage systems (canals and pump stations), except constructions which legal entities have erected for their particular needs.

PWMC Srbijavode has been established with the purpose of executing the activities related to the water resources of the Republic of Serbia, monitoring of water regime, maintenance and reconstruction of waterworks structures, drainage and flood protection, protection from erosion, exploitation of sand and stone in sense of improvement of water regime, protection of water from pollution, etc. PWMC has been established in 1996 by joining of 3 public companies – Dunav, Sava and Morava. At the beginning PWMC was responsible for water management at complete territory of Republic Serbia, until 2002, when new company –“Vode Vojvodine” undertook responsibility for Autonomous Province Vojvodina, so PWMC continued with operation in Central Serbia. However, as in 2008 new public company for water management has been enacted responsible for Capital City Belgrade (“Beograd vode”), responsibility of PWMC covers Central Serbia excluding territory of Belgrade. PWMC Srbijavode In 2012 PWMC had 139 employees. More than 65% is with high university degree. PWMC is organised in following parts:

- Company Directorate settled in Belgrade, responsible for coordination activities between the Company and two Water Management Centres (WMC);
- WMC “Sava-Danube” in Belgrade with 2 units;
- WMC “Morava” in Nis, with 5 units.

Additional positive element in engineering capabilities of PWMC is the experience in realisation of large investment projects, namely, from 2009 till 2013. Engineers from PWMC participated in Programme financed by World Bank financing support in total value of 2.7 billion RSD (app. 27 mill Euro) at 17 locations all over the territory of Serbia. Program included works on reconstruction and construction of 65 km of embankments, regulation works on total 55 km river bed (From Sabac to Drenovac, Low catchment of Jadar river, river Jesenica in town Velika Plana, river Mlava in town Petrovac and Stari Kostolac, Danube river in Golubac, etc.), reconstruction of about 165 km of irrigation channels within Municipality Smederevo, Negotin valley and Macva district.

Water and flood management on “class 2” water courses is the responsibility of local authorities on the territory under their administration. Publicly-owned water constructions for watercourse development, flood protection on class 2 water courses, and protection against erosion and torrential streams, shall be managed and their dedicated uses, maintenance, and safeguarding ensured by the local self-governing unit within whose territory any such construction is located. Any legal entity, entrepreneur, or individual who has erected a water construction for their own needs, manages and maintain such construction pursuant to the Law on Water. Responsibility for landslides is also under the local authorities on the territory under their administration.

Flood risk management plan for the territory of Serbia is the responsibility of the Ministry, while plans for water districts (7 in total) are in the responsibility of public water management companies.

The **Republic Hydro-meteorological Service of Serbia** (RHMSS) is a special organization within the State administration of the Republic of Serbia. RHMSS operates a comprehensive national observations network that contributes to the WMO Integrated Global Observing System (WIGOS) and adheres to the standards of the World Meteorological Organization (WMO). In line with the provisions of the Law on Meteorological and Hydrological Activity, RHMSS has exclusive jurisdiction for the preparation and issuance of meteorological and hydrological information and warnings in the period before, during and immediately after the cessation of meteorological and hydrological disasters and nuclear accidents. With its Early Warning System (EWS) integrated into the national system for protection and rescue, through a permanent 24-hour operation of organizational units, its task is to provide accurate and reliable weather, climate and hydrological information, forecasts and warnings. RHMSS also develops and periodically updates maps of vulnerability and risk from meteorological disasters and participates in mapping vulnerability against floods, and within its scope develops vulnerability assessment of the Republic of Serbia.

Hydro-meteorological warning and alarm system consists of:

- State meteorological and hydrological observation system,
- Computing and telecommunications system, and
- Analytical and forecasting system.

RHMSS is also hosting the South East European Virtual Climate Change Center SEEVCCC.

The Military Geographical Institute (MGI) is an institution of the **Ministry of Defense** that deals with R&D and manufacturing activities in the fields of geodesy, photogrammetry, cartography, geographic information system, cartographic reproduction, metrology and other geodisciplines for making geotopographic materials. Military Geographical Institute is cartographic institution capable of making topographic maps for the needs of government authorities and other stakeholders of society (industry, transport, education, etc.) Furthermore, MGI is the only state institution capable for taking aerial photos.

Republic Geodetic Authority (RGA) is a specialized state organization carrying out geodetic technical and administrative tasks defined by the Law. RGA is responsible for establishing and maintenance of the official land registries and production of geoinformation on the national level for purpose of public authorities and citizens such as:

- Basic geodetic works (spatial reference systems);
- State survey, the state border survey and register;
- Real estate cadastre and registration of real estate rights;
- Utility cadastre (networks of water supply, sewage and drainage, heating, electric supply, telecommunications, oil and gas distribution);
- Register of administrative unites;
- Address register;
- Topographic-Mapping production (topographic survey and mapping, National Basic Map, orthophoto, DTM, DSM, remote sensing, geographical names registry, cartographic publications);
- Real estate valuation and registration;
- Geomagnetism and aeronomy;
- Geodetic-cadastral information system;
- National Spatial Data Infrastructure (NSDI)

RGA is key provider of cadastre, mapping and Earth Observation data in Serbia. Additionally, RGA, as leading national public authority for the INSPIRE Directive implementation, has taken many initiatives for cooperation and geodata and services sharing among public authorities. Besides, RGA is

active member of numerous international organisations related to geodesy and mapping such as EUPOS and EuroGeographic.

RGA has developed its capacities for the production of high accuracy DTMs based on the data acquired by LiDAR technology through the implementation of “Project of Establishment of NSDI and Remote Sensing Centre within Republic of Serbia - based on IGIS system”. Currently, RGA disposes of four working stations of high performance and four licences of Bentley-MicroStation v8i and TerraSolid software necessary for the processing of LiDAR point clouds and images.

Since 2011, the Ministry of Interior is leading the **Sector for Emergency Management (SEM)** which functions as the National Platform for Disaster Risk Reduction. SEM is mandated by law to coordinate and manage protection and rescue activities in emergencies and to mainstream disaster risk reduction policies. SEM performs legislative, administrative, organizational and technical; preventive and technical; educational, informative and other activities related to management of emergency situations. SEM has four departments - Department for Prevention, Department for Fire and Rescue Units, Department for Risk Management and Department for Civil Protection, and National Training Centre, with a total number of 4,200 staff including 27 Regional departments for emergency management. The Department for Civil Protection is directly responsible for coordination and management of all activities intended for protection of citizens, while the Department for Fire and Rescue Units coordinates the work of fire and rescue units for the whole territory of the Republic of Serbia. Its fire and rescue units deal with first response, elimination and relief in the event of disaster. When dealing with floods situations, Specialised Civil Protection Units - for protection and rescue on and under water, as well as Special Units for taking care of citizens under stress. The Department for Civil Protection consists of 350 staff, of which 55 are at headquarters and 295 are at the Regional Departments. In cases of big emergencies, all manpower is deployed to the affected areas.

RELEVANCE WITH THE IPA STRATEGY PAPER AND OTHER KEY REFERENCES

The Commission is currently finalising a comprehensive Strategy Paper for the period 2014-2020, which provides a coherent and strategic framework for financial assistance under the new Instrument for Pre-Accession Assistance (IPA II). Programming of IPA 2014 in Serbia is ongoing and has been guided by the "Indicative Strategy Paper" (the Strategy Paper).

This Action Document is included in IPA 2014 Action Programme and is focused on the support for the recovery and reconstruction efforts, particularly for energy sector (equipment and services), stabilization and remediation of the landslides which are affecting the roads and houses, reconstruction of the embankments, equipment for the civil protection. It also includes specific measures related to the support for the development of risk maps for sub-basins and flood protection.

Although, the number of references could be elaborated for each of the sectors included in this Action, the following should be considered as the main references:

The Strategy Paper 2014-2020 defines the improvement in river basin management planning as one of priorities in water management sub-sector. Assistance in this respect will be provided for the harmonization with the European Flood Directive, in the fulfilment of Serbia's obligations in the integrated management of hydraulic resources field and the global protection against floods.

The EC Progress Report 2014 defines the area of civil protection, disaster risk reduction and disaster management as a matter of priority, particularly in the light of recent severe floods. In July 2014, the European Commission invited Serbia to join the EU Civil Protection Mechanism.

The Priorities for International Assistance in period 2014-2017 with 2020 projections (NAD) for the Home Affairs Sector contains a specific measure with relation to this Action:” Measure 1.4: Enhancing capacities of state authorities for the efficient reaction in emergency situation and effective protection of citizens”.

As for the specific National reference framework, the Action is fully based on the **Strategy for emergency Management and civil protection**¹ having the overall objective to develop a comprehensive, efficient and effective system to reduce the risk and consequences of natural disasters and other catastrophes, thus integrated emergency management in the Republic of Serbia, which contributes to increased security and sustainable development in the region.

Also the Action is based on national **Law on Emergency Situations** adopted by the Serbian National Assembly in December 2009. The Law defines:

- activities, alerts and management in emergency situations;
- a system of protection and rescue of citizens, material and cultural goods from natural and man-made disasters;
- rights and obligations of citizens, state agencies, autonomous provinces, local self-governments, companies and other legal persons and entrepreneurs;
- inspection and supervision systems, international cooperation and other issues relevant to international organisation and functioning of the protection and rescue system.

Within the framework of overall IPA assistance to the flood recovery, the Action complements the support envisaged within IPA 2012 envelope that supports implementation of the short and mid-term efforts of the Government of the Republic of Serbia for reconstruction of flood-affected areas through support for the priorities in the area of reconstruction and repair of public buildings and housing.

Moreover, the Action complements the assistance from the European Union Solidarity Fund (EUSF), created in 2002 to provide the EU with an instrument which would allow responding effectively to major natural disasters affecting Member States or countries negotiating their accession to the EU, such as Serbia. In the aftermath of the flood disaster, the Government of Serbia is currently applying for the EUSF and the amount of support is currently under estimation.

Specifically in relation to the Energy and Environment sectors it should be noted that the Catastrophic floods which occurred in Serbia in May 2014 caused an emergency situation, which is not expected and because of that not included in the long-term plans for Serbia and the documents related to the process of EU accession. Energy Distribution sector rehabilitation and enhancement, with environmental improvement are included in all related documents included in recent MIPD.

Energy: Compliance support to meet the needs of the regional Energy Community Treaty, relevant EU Directives and regional market obligations; compliance of legislation with the *acquis* for energy and environment.

Environment: Support to the approximation and implementation of Environmental legislation and related strategies.

The Plan for Implementation of the European Partnership Priorities has listed detailed task with regards to the Environment and Energy sector - 7.3.2 - to begin implementation of the national environment strategy, 7.3.5 - to implement adopted legislation on industrial pollution, 7.3.12 – to continue to implement the National environment protection strategy and Sustainable Development Strategy of the Republic of Serbia 7.5.1 implement the Commitments undertaken in the framework of the Energy Community Treaty.

Commission working document “Serbia Progress Report”, regarding the Stabilization and Association Agreement and the European Partnership priorities, where stands “On industrial pollution control and risk management, a number of by-laws were adopted notably on submission of integrated permit applications. The list of installations which will have to comply with the Integrated Pollution Prevention and Control Directive before 2015 is being revised”.

Under Article 111 (Environment) of the SAA, Serbia is obliged to halting further degradation and start improving the environmental situation with the aim of sustainable development.

This project is strongly linked with the quoted documents, tasks and expectations.

The Energy Community Treaty signed multilaterally by the EU Commission and South East Europe countries introduces the legal requirement for Serbia to implement the *Acquis* on the Environment.

¹ For the period 2011 – 2016

Annex II of the Treaty sets the deadline of 31 December 2017 for implementation of Directive 2001/80/EC (the ‘large power plant’ Directive) and Directive 96/59/EC, which is a relatively short period for such a major program of works, and with such a high cost.

Environmental issues regarding the watercourse rehabilitation, trying to recover the environment from the disturbance occurring floods are determined by Government and EC regulations:

SECTOR APPROACH ASSESSMENT

The activities under this stand-alone Action are horizontal and cross several sectors.

The following sectors are the main subjects of this Action:

- **Energy**, in relation to the purchase of equipment and services related to the energy distribution sector;
- **Transport**, in relation to the restoration of road networks affected by landslides and the restoration of pre-crisis traffic flows
- **Environment and climate change**, in relation to the stabilization and remediation of the landslides which are affecting the roads and houses as well as disaster risk management, such as: reconstruction of the embankments in order to prevent flooding and monitoring equipment for flood prevention;
- **Home Affairs**, in relation to disaster risk management and the purchase of equipment for civil protection.
- **Housing, utilities and income generation and the continued support to the Office for Reconstruction and Flood Relief**

LESSONS LEARNED AND LINK TO PREVIOUS FINANCIAL ASSISTANCE

Lesson learned

The principal lessons learned from past disaster relief efforts have been recently summarised in the statements of the Commissioner Kristalina Georgieva at the UN high level briefing on the International Strategy for Disaster Reduction in April 2014. The European Union, and in particular Central Europe, has suffered once-in-a-100-years floods in 2013: applying the lessons learned from similar flooding from 2002, the floods in 2013 took fewer lives.

A common thread has been that the most vulnerable locations and the most vulnerable people are hit the hardest. These events have also shown the need for continuous and robust risk management policies, whereby each Euro invested in the disaster risk leads to a reduction of 4 to 7 times in reduced damage costs. Likewise, experience has shown that the systems for disaster risks management also act as a strong driver of innovation, growth and job creation. The key steps applied in the EU as learned from these events include mandatory risk assessment, enhanced preparedness, and integration of risk management measures in a number of key policies and financial instruments (climate change adaptation, transport and energy, research and innovation, as well as in the use of structural and cohesion funds).

Three key lessons learned are directly applicable to the current Action.

Firstly, the collection and sharing of globally comparable data on disaster loss and hazards are needed for accuracy and transparency. Without clear, transparent and comparable data, disaster relief efforts cannot take place in an effective manner, but also future disaster mitigation and risk management. An important part of this is the adoption of clear standards for the collection of the needs assessment data – thereby the PDNA agreement between the EU and UN/WB.

Secondarily, the need for immediate action and impact in disaster cases, such as the floods in Serbia and the region. The need includes to set up action oriented targets and measurable deeds and, in particular, this means that the actions should target vulnerable groups first. Overall, disaster relief should contribute to sustainable and smart growth. It should channel potential for productive investments to contribute to growth, jobs and competitiveness.

Thirdly, it is important to build on the specific experiences of disaster recovery in each vulnerable sector and to incorporate these lessons into future policy making with a view to building in preventative measures. Many of the worst effects of the floods might have been prevented or lessened by such an approach.

These lessons are the guiding principles in the optimisation of the financial assistance that has been made available by the Government of Serbia and the entire Donors community to recover damages and face major risks in the aftermath of the May 2014 flood.

The proposed investment in equipment and capacity building for creation of the basis for flood management plans, has the goal to respond the criteria of maximum efficiency (in terms of response to climate change, early warning, disaster prevention and risk reduction) and minimum cost, both of them are essential to guarantee the immediate implementation under the given conditions, as well as immediate feasibility.

The most urgent actions to “*get prepared*” against natural disasters concern improving the national capacity to elaborate more and more accurate forecast on how hydro-meteorological events will evolve, going as much as possible to local scale, furnishing reliable real-time data and alarms to Civil Protection, local self Governments and all Agencies operating for the safety of populations and the environment. To get this scope, RHMSS needs to strengthen its hydro-meteorological network along several rivers, in order to get real time data about rain fall, water levels of rivers, discharge. It will allow RHMSS to proper input data into the hydrological model in use, and then to issue more accurate and reliable forecast and early warning bulletins to the Sector for Emergencies (Civil Protection).

Financial Assistance

After the floods that affected the country, the Government of Republic of Serbia declared a state of emergency for its entire territory. A request for assistance was sent to the international community, notably to the governments of the EU Member States, EU Candidate Countries in the region, the Russian Federation, the European Commission (EC) and the United Nations (UN).

The Government established a “*Floods Emergency Headquarters*” within the Ministry of Interior, Sector for Emergency Situations, together with crisis centres in each of the flood-affected municipalities/districts/cities. On 16 May 2014, the Ministry of Foreign Affairs established its Crisis Response Team, tasked with coordinating the activities relating to relief and donations from abroad. At the same time, activation of the EU Civil Protection Mechanism was requested and the necessary steps were taken to provide assistance through all available EU mechanisms and funds to which Serbia has access as an EU Candidate Country.

The initial assistance has been provided based on Serbia's urgent request and has been channelled through the European Commission's Emergency Response Coordination Centre (ERCC). Most States and international organizations responded positively to the Serbian government's appeal for flood relief and assistance. Immediate and urgent assistance in staff and equipment, required for saving human lives, preventing further deterioration of the situation and safeguarding vital infrastructure systems, was provided by teams from 15 countries: Russian Federation, Montenegro, Macedonia and Belarus, and – through the EU Civil Protection Mechanism – Bulgaria, Germany, Romania, Denmark, Slovenia, Hungary, Czech Republic, Austria, France, Croatia and Cyprus. These countries provided assistance in equipment, lifeboats, high-capacity water pumps, power generators, water tanks, machinery, helicopters and specialized emergency response teams.

In addition, the UNDAC and EUCP teams were involved in coordinating the stay and engagement of the various international teams. Focal activities were: biological decontamination of the land and supplying the population with water, medicines and food, and others were landslide remediation, strengthening of embankments, pumping out water, monitoring of sanitary conditions in the reception centres.

In order to put this recovery on a sound planning basis the government has requested technical assistance from the international community to conduct a Recovery Needs Assessment and these has been organized between EC, UN agencies and WB.

Through a Contribution Agreement with UNOPS, the EU has allocated 1 mill EUR (from IPA 2012) as part of the floods recovery funds to strengthen staff capacity in the Office for Reconstruction and Flood Relief and in other bodies, including the Serbian European Integration Office (SEIO). Likewise, approximately 1.7 mill EUR (of joint IPA and national funds) is available as savings under IPA 2011 direct grant for Population and Agricultural Censuses and should be used for in-depth assessment of damage and needs, analytical work and possible forward planning for the priority medium and longer term interventions. Funds are available by September 2015.

The SEIO submitted the application for the EU Solidarity Fund on July 31, and updated version on August 18. The European Commission approved the application in October and proposed a draft budget of 60.2 million EUR to be approved by the European Council and European Parliament to cover the following operations:

- Rebuilding key infrastructure and energy facilities (including water supply systems, telecommunications and health care and educational facilities)
- Temporary accommodation for vulnerable population groups,
- Protection of cultural and national assets of special national and wider interest,
- Cleaning designated natural preserves and zones of wider societal significance.

As explained, procedure for the reallocation of 30 million EUR from IPA 2012 has already been completed (respective Amendment to the Financing Agreement concluded July 3, 2014) and the implementation for all the designated areas has started as presented in the Section 1 “Rationale” of this AD. A 12 million EUR top-up to the grant contracts currently ongoing to provide for additional services to the population affected by flooding is part of this proposal.

Likewise, besides the present 62 million EUR funding as proposed here from IPA 2014, other options for IPA support are being considered as follows:

- Cross Border Cooperation (financed through IPA 2012 and 2013) – funds allocated for calls within the cross-border programme Serbia-Croatia and Serbia-BiH (3.6 million EUR each) shall be implemented in accordance with regular dynamics, geographical scope and modalities, while the guidelines for calls shall be drafted in such a manner to favour interventions pertaining to revitalization of economic and social activities affected by floods
- Joint proposal with Bosnia and Herzegovina shall be submitted for funding through regional IPA funds available in the amount of 20 million EUR.

In terms of **ongoing, parallel assistance** in the transport sector, significant assistance for post-disaster recovery will be ensured through reallocation of the already approved loan for the SERBIA ROAD REHABILITATION AND SAFETY PROJECT (RRSP), contracted in April 2013 between PE Roads of Serbia (PERS), the World Bank, the European Investment Bank and the European Bank for Reconstruction and Development. Around 70 million EUR (out of around 390 million EUR) will be reprogrammed for meeting urgent recovery needs – rehabilitation of around 10 sections of road network, approximately 180 km long. This rehabilitation will encompass, apart from the planned works under the RRSP, remediation of around 40 critical landslides, then emergency works on the remedy of the damaged structures, unstable slopes and landfalls on the following roads:

- Loznica-Valjevo: sections Zavlaka 2 (Likodra)-Valjevska Kamenica and Loznica 5- Zavlaka 2 (Likodra);
- Mali Zvornik-Ljubovija- B.Basta: section Mali Zvornik-Ljubovija 1 (Bratunac);
- Lazarevac-Arandjelovac-Krcevac: sections Arandjelovac 4 (Orasac)-Krcevac and Lazarevac 4-Arandjelovac1;
- Topola-Donja Satornja-Rudnik-Bucin grob: section Topola-Rudnik;
- Raska-Jarinje: section Raska 2-administrative border with Kosovo and Metohia (Jarinje);
- Pojate-Krusevac-Kraljevo-Preljina: section Mrcajevci-Kraljevo 1;
- Obrenovac-Sabac: section Misar-Sabac 4 (Jevremovac);
- Loznica-Mali Zvornik: section Mali Zvornik-Banja Koviljaca.

As mentioned already, 4 million EUR are allocated from the IPA 2012 assistance, for urgent recovery of the Krst-Korenita-Krupanj regional road IIA 139 which was seriously damaged by erosion and runs adjacent to the major river. The relevant works are to start end-October 2014.

In addition to the previously provided assistance, it is worth reiterating in this section that, given the circumstances, several initiatives are being considered / negotiated in parallel. Currently, the Office for Reconstruction and Flood Relief is organizing series of consultations with the IFIs and bilateral donors which pledged their assistance to Serbia. Together with the relevant line ministries, Ministry in charge of finances at the first place, public utility companies and in close cooperation with the Serbian European Integration Office (SEIO), the most adequate financing modalities for each of identified needs are being defined. In that respect, at the point of drafting of this AD, the consultations with the World Bank concerning the Emergency Recovery Loan (ERL) were finalized. For the major part is ERL is concentrated on the energy sector, in particular on the reconstruction of the Kolubara mine, foreseeing procurement of the damaged electrical equipment including number of electricity meters and mobile electrical substations (110/35 kV, 35/10kV and 20/10/04kV) and import of the electricity during the winter period. A number of mobile electrical substations foreseen be procured through ERL are complemented with those equipment anticipated under this AD. Also, through the ERL Government intends to support subventions for agricultural producers, while one smaller component will be focused on improvement of flood protection systems. In addition, consultations are on the course with the Government of Japan concerning the concessional emergency situation Yen loan currently considering recovery of the damage on the electrical equipment and auxiliary mechanization in Kolubara coal mine in order to provide stable electricity production and to prevent power shortages in the country.

The respective Action document is designed taking into account all above mentioned initiatives, so that the priorities for IPA 2014 assistance clearly complement but do not overlap with other funding sources or options under consideration. To this end, SEIO organized several rounds of consultations, notably by using the existing mechanism of Sector Working Groups for the concerned areas and direct communication with the concerned stakeholders, whereby the participation of line ministries and the EU Delegation was broadened by the representatives of the Office for Reconstruction and Flood Relief and relevant public utility (water) companies.

2. INTERVENTION LOGIC

LOGICAL FRAMEWORK MATRIX

OVERALL OBJECTIVE	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	
To assist Serbia in the recovery effort in the aftermath of the catastrophic floods of May 2014 and to create conditions for flood prevention and reaction in emergency situations.	Key economic and social indicators in most severely affected municipalities return to pre-flood levels	EC Progress Report Reports from Statistical Office	
SPECIFIC OBJECTIVE	OBJECTIVELY VERIFIABLE INDICATORS (OVI)	SOURCES OF VERIFICATION	ASSUMPTIONS
<p>Specific Objective 1: To enhance disaster risk management /flood prevention systems and the mitigation of immediate energy and water supply risks</p> <p>Specific Objective 2: To rehabilitate flood protection infrastructure</p> <p>Specific Objective 3: To rehabilitate damages caused by landslides to road transport network</p> <p>Specific Objective 4: To provide additional assistance to cover for additional needs in housing and income generation, as well as the assistance to the Office for Reconstruction and Flood Relief.</p>	<p>Major catchments covered by flood risk maps and flood forecasting system in place</p> <p>Embankments and pumping facilities restored</p> <p>Road traffic restored to pre-flood levels System average interruption duration index (SAIDI) is improved by 5 % System average interruption frequency index (SAIFI) is improved by 2%</p> <p>An additional 1,500 beneficiaries are provided housing and an additional 300 SMEs and small farms assisted.</p>	Regular reports of Office for Reconstruction and Flood Relief	<p>Government maintains high commitment for floods restoration and recovery</p> <p>Responsible Serbian institutions have sufficient capacity to prioritise the implementation of planned activities.</p> <p>Technical documentation is of sufficient quality and is produced on time</p>
RESULTS	OBJECTIVELY VERIFIABLE INDICATORS	SOURCES OF VERIFICATION	ASSUMPTIONS
<p>Result 1.1 Flood risk and flood hazard maps developed for the areas which were not so far covered in Serbia</p> <p>Result 1.2 Water information system of the Republic of Serbia upgraded</p> <p>Result 1.3 Early warning system for flood control/management improved</p> <p>Result 1.4 Equipment for the reaction in emergency situation procured</p>	<p>Number of flood risk maps prepared</p> <p>Reduced time for reaction in the emergency situations</p> <p>4 mobile substations of different voltage level available to respond in emergency situations</p> <p>Number of customers in the region of Central and Western Serbia submitting claims for damaged electrical appliances due to power cuts</p> <p>Mobile drinking water treatment plants procured</p> <p>Mobile flood protection walls procured</p>	<p>Site visits, invoices, reports produced by MoI Sector for States of Emergency during and after equipping and operations</p> <p>EPS monthly report on distribution system reliability</p>	DTM and relevant pads prepared.
<p>Result 2.1 Rehabilitated embankments, channel drainage systems and water-pump stations</p>	<p>Number of rehabilitated embankments: total of 20;</p> <p>Number of repaired water pumping stations/locations: total of 6 locations</p> <p>Number of damaged levees & banks restored</p> <p>Kilometres of channel drainage network cleaned</p>	<p>Site visits, invoices, reports produced by Water directorate, PE Srbijavode and PE Beogradvode during and after rehabilitation works/repairs</p> <p>Annual Report on the state of the environment in the Republic of Serbia</p>	
<p>Result 3.1 Remediated critical landslides affecting the road network and recovery of the road structures damaged by erosions</p>	<p>58 landslides affecting the road networks remediated</p> <p>11 road structures (bridges) recovered (when possible,</p>	<p>Publishing of Invitation for tenders; Signing of Letter of Acceptance; Construction Books Revision; Issuing of Taking Over Certificates</p>	<p>Technical documentation (Final design with Technical Check Approval (TCA) and Building Permit) prepared on time, by</p>

	using prefabricated elements) within 5 months (2 months for tendering and contracting, 3 months for construction	(ToC)	PERS Adequate weather conditions for conducting works on landslides remediation Favourable weather conditions prior to the commencement of works not additionally affecting the landslides
<p>Result 4.1: Additional needs in housing and income generation provided to at least another 1,500 households</p> <p>Result 4.2: Agricultural and Food Security Emergency assistance provided to flood affected small-scale farmers in Serbia</p> <p>Result 4.3 Assistance in expertise and staffing provided to the Office for Reconstruction and Flood Relief until the end of 2015 and the results of the EU flood support project efficiently communicated to the general public</p>	<p>Homes rehabilitated and farms and small businesses running</p> <p>Delivery of assistance to at least 1,800 beneficiaries</p> <p>Government Office for Reconstruction and Flood Relief sustained until the end of 2015 Project visibility ensured in all media and results communicated to the broad public</p>	<p>Site visits, invoices, reports</p> <p>Site visits, invoices, reports</p> <p>Staff time-sheets/lists</p> <p>Media reports, press clippings, project films</p>	Monthly and quarterly grantee reports
ACTIVITIES	MEANS	OVERALL COST	ASSUMPTIONS
<p>Activities to achieve Result 1.1:</p> <p>1.1.1 The supply of missing equipment for LiDAR system. 1.1.2 Development of input data (high density pads) for flood risk mapping and production of -DTMs</p> <p>Activities to achieve Result 1.2:</p> <p>1.2.1 The supply of hardware and software necessary to improve Water Information System (WIS) 1.2.2 Development of flood risk maps for the remaining sub-basins and establishment of the basis for upcoming phase of the preparation of flood risk management plans. 1.2.3 Integration of flood risk maps into WIS, including previously prepared flood risk maps through Sofpas I and additional capacity building</p> <p>Activities to achieve Result 1.3:</p> <p>1.3.1 Supply of equipment to rehabilitate and strengthen of hydro-meteorological monitoring network of central Serbia for forecasting and early warning purposes. 1.3.2 Equipment installation and testing</p> <p>Activities to achieve Result 1.4:</p> <p>1.4.1 The supply of necessary equipment for Sector of Emergency Management 1.4.2 Procurement of one mobile electrical substation 110/35 kV, three mobile electrical substations 35/20 kV 1.4.3 Procurement of distribution automation systems for distribution system operator ED Elektro Srbija from Kraljevo for sub</p>	<p>Service contract (1.2.2; 1.2.3)</p> <p>Supply contracts (1.1.1; 1.1.2) (1.2.1) (1.3.1; 1.3.2) (1.4.1) (1.4.2; 1.4.3; 1.4.4; 1.4.5; 1.4.6; 1.4.7) (1.4.8) (1.4.9)</p>	<p>Total cost of action: 62 million EUR</p>	

<p>utilities (branches): Bajina Bašta, Loznica, Šabac, Valjevo, Ljubovija, Kosjerić, Lazarevac, Trstenik, Varvarin, Kraljevo</p> <p>1.4.4 Delivery of mobile equipment to designated warehousing facilities</p> <p>1.4.5 Designing the mobile equipment emergency deployment plan</p> <p>1.4.6 Automation systems installation</p> <p>1.4.7 Monitoring the proper implementation of the deployment plan and functioning of the system</p> <p>1.4.8 Procurement /purchase of mobile drinking water treatment plants</p> <p>1.4.9 Procurement of mobile flood protection walls</p>			
<p>Activities to achieve Result 2.1:</p> <p>Rehabilitation of embankments and water-pump stations.</p> <p>2.1.1 Rehabilitation of channel drainage network in Obrenovac</p> <p>2.1.2 Rehabilitation of channel drainage network in Surcin and Novi Beograd</p> <p>2.1.3 Rehabilitation of damaged water pumping stations/locations</p> <p>2.1.4 Flood Protection of the settlement Valjevo and Gornji Milanovac</p> <p>2.1.5 Flood protection of settlement Paracin</p> <p>2.1.6 Flood protection of settlement Svilajnac</p> <p>2.1.7 Provision of effective works supervision services in line with the best engineering practice</p>	<p>Works contract (2.1.1;2.1.2;2.1.3;2.1.4;2.1.5;2.1.6)</p> <p>Service contracts (TA) for supervision (2.1.7)</p>		
<p>Activities to achieve Result 3.1:</p> <p>3.1.1. Constant monitoring using survey points with inclinometers and piezometers;</p> <p>3.1.2. Installation of catch fences, development of debris ditches and/or the clearing of gullies/streams/rivers.</p> <p>3.1.3. Recovery of the damaged elements;</p> <p>3.1.4. Construction of the flood relief culverts within the flood plain;</p> <p>3.1.5. Improvement foundation design and protection to the abutments (and piers).</p> <p>3.1.6 Provision of effective works supervision services in line with the best engineering practice</p>	<p>Works contract (3.1.1, 3.1.2,3.1.3, 3.1.4, 3.1.5),</p> <p>Service contracts (TA) for supervision (3.1.6)</p>		<p>Available resources, existing relevant specifications.</p>
<p>Activities to achieve Result 4.1:</p> <p>4.1.1 Provide assistance for housing of people based on established criteria for the selection of beneficiaries for the selection of beneficiaries focusing mainly on the vulnerable persons affected by the floods in particular those accommodated in collective accommodation.</p> <p>4.1.2 Procure and deliver materials needed for the reconstruction of households which will be selected for urgent reconstruction</p> <p>4.1.3 Conduct supervision of works and monitoring of construction material distribution</p> <p>4.1.4 Purchasing of basic household packaged containing home</p>	<p>Direct grant agreements (4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5) and delegated agreements (4.2.1, 4.2.2 and 4.3.1, 4.3.2)</p>		

<p>appliances for reconstructed households.</p> <p>4.1.5 Provision of technical and financial support to potential beneficiaries in grant implementation and restart of business and farming operations.</p> <p>Activities to achieve Result 4.2:</p> <p>4.2.1 Purchasing of animal feed, fertilizer, seeds and seedlings and delivery to small farms in the affected areas</p> <p>4.2.2 Purchasing of live animals and their delivery to small farms in the affected areas</p> <p>Activities to achieve Result 4.3:</p> <p>4.3.1 Provide further assistance and support in expertise and staffing of the Office for Reconstruction and Flood Relief until the end of 2015</p> <p>4.3.2 Provision of assistance to efficiently communicate EU flood support project results to the general public.</p>			
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Preconditions: For results 1.1 and 1.2 is launching of a Framework Contract to prepare the Technical Specifications of supply contracts (and ToRs for the service contract, if necessary).

DESCRIPTION

Specific objective 1: To enhance disaster risk management /flood prevention systems and the mitigation of immediate energy and water supply risks

The establishment of an effective flood prevention system and emergency reaction will be addressed by following **results**:

Result 1.1 *Flood risk and flood hazard maps developed for the areas which were not so far covered in Serbia*

Result 1.2 *Water information system of the Republic of Serbia upgraded*

Result 1.3 *Early warning system for flood control/management improved*

Result 1.4 *Equipment for the reaction in emergency situation procured.*

Result 1.1 *Flood risk and flood hazard maps developed for the areas which were not so far covered in Serbia*

The activities planned to achieve this result will ensure that flood risk maps are prepared for river catchments and sub-basins and that as a consequence flood protection will be improved. Preliminary flood risk analysis (2012) identified 99 important flood prone areas where population, economy and environment are vulnerable (yellow and red in Figure 1, below). Catastrophic floods in May 2014 affected 43 areas from 99 in total (red in the Figure 1).

Starting from the experiences of flooding in May 2014 and other floods that have occurred in different parts of Serbia in recent years and taking into account that Serbia should implement the Floods Directive in EU accession process, all available resources should be redirected to support activities aimed to improve flood risk management. Promotion of the sustainable flood risk management measures and best practices, linked with environmental protection, civil protection, low impact development and sustainable land use planning, will deliver multiple benefits by increasing public awareness and by informing Serbian competent authorities about flood risk and how to adequately deal with it.

Flood risk maps are basic elements for the development of Flood Risk Management Plans (FRMPs) for the territory of the Republic of Serbia, and for its water districts. Currently, flood risk maps in 24 major flooding areas in Morava and Danube basin were developed within the IPA SoFPAS 1 project (finalized in 2012). The major problem in flood risk maps development was the lack of sufficiently high resolution digital terrain model (DTM), which is the basis for making flood risk maps. Republic of Serbia, concretely, the Military Geographical Institute of the Ministry of Defense possesses a system for aerial recording, consisting of airplane and digital aerial photogrammetric camera intended for capture aerial recordings to be used as a spatial base for cartography, spatial and urban planning and infrastructure design. Data produced may be used for three-dimensional spatial modelling in the form of DTMs. However, the resolution and the level of details of DTMs obtained in this way are not sufficient for the application in flood risk mapping. Satisfactory feature of DTMs for flood risk mapping requires recording from the air based on laser technology, by using Light Detection and Ranging systems (LiDAR).

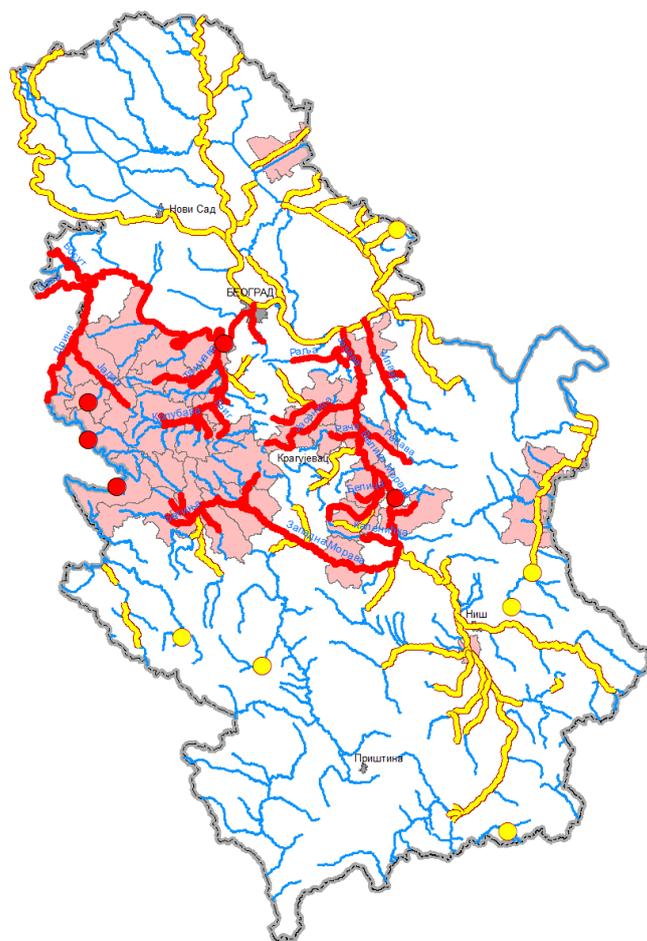


Fig 1: Important flood prone areas and areas affected by 2014 flooding

Flood risk maps are crucial for developing and implementing emergency plans in case of natural disasters, to be always related to accurate hydro-meteorological forecasts based on mathematical modeling.

Accordingly with EU Floods Directive and EU Water Framework Directive, and consistently with Serbian national priorities, climate change adaptation asks for strengthening national capacities to elaborate more and more accurate forecast on how hydro-meteorological events will evolve, going as much as possible to local scale, furnishing reliable real-time data and alarms to civil protection, local governments and all agencies operating for the safety of populations and the environment.

Floods 2014 severely hit the hydro-meteorological monitoring network of the Republic Hydro-Meteorological Service of Serbia (RHMSS), and raised the urgency of strengthening and automatize real-time monitoring system. Moreover, although data processing and modelling at central level is of highest standard, accuracy of hydrological/hydraulic forecast remains low, because to properly run mathematical models there is a urgent need to input real-time data, automatically, from observation points, and to multiply the observation points to make the forecast more accurate.

More effective flood early warning system on smaller rivers' floods requires also the establishment of links between radar observations and rainfalls by using automatic rainfall stations. Meteorological radar - with the range of 300 km - has been installed on Jastrebac Mountain. This unmanned radar, remotely operated from RHMSS in Belgrade, provides full hydrometeor detection across the spectrum and the accurate measurement of small and extremely large amounts of rainfall. Wide range of parameters of dual polarization allows very precise identification of the type hydrometeors, which are currently the most advanced results in radar meteorology. Moreover, radar is networked with the same wavelength radars located in Vojvodina, which allows obtaining composite radar images over

the entire territory of Serbia and beyond. However, the system of automatic pluviometers, that serves the radar, consisting of only 9 stations, is not in early warning function due to the lack of applicative software. Besides multiplying and automatizing observation points by strengthening the hydro-meteorological monitoring network, also the radar observation system for small and for wide-range estimation of rain should be strengthened in order to strengthen forecast capacities of RHMSS.

Improved flood risk management through the development of flood risk maps will further improve civil protection during the floods. Mapping will contribute to the identification of logistics' location for Civil Protection Units and thus assure prompt and timely reaction and respond in rescuing.

There is also a need for the staff of SEM to have access to the WIS database that is to be developed under this project.

Floods also damaged a number of substations of different voltage levels increasing possibility of interruptions and unplanned outages are possible. To ensure security of electricity supply and decrease the risk of instability, it is necessary to ensure the mobile electrical equipment and proper medium voltage distribution automation systems. In emergency situations (outages due to different failures on the grid) distribution automation systems would significantly improve dispatching efficiency, shorten the time to fault detection, isolation of fault and restoration of the power supply to the majority of the consumers which could be supplied through alternative feeders.

Specific activities planned under Result 1.1 are described below.

⇒ 1.1.1 *The supply of missing equipment for LiDAR system.*

Given the existence of air recording system (airplane and aerial photogrammetric camera) and the lack of LiDAR system, there is a need to upgrade existing equipment with LiDAR. Missing equipment includes: (1) LiDAR sensor for laser capture from air, and (2) equipment (hardware and software) for data archiving and processing. This equipment will be used to collect high density three-dimensional data from the ground, and thus to produce DTM with high accuracy and resolution. Together with aerial recordings, those data form integral spatial base, intended to be available for all competent state bodies and local self-governments with no charges. Given the situation in Serbia due to catastrophic flooding, the equipment will be primarily used for the recording of existing levees, embankments, and infrastructural objects in areas affected by floods, but also for the development of flood risk maps. The characteristics and quality of LiDAR based DTMs allows their use for recording and assessment of damage, reconstruction and revitalization of existing road and railway network, evidence of existing and assessment of new landslides, recovery of open pits, flood and landslide prevention measures, etc. Moreover, laser technology of recording allows three-dimensional spatial modeling even on poorly accessible and dangerous terrains. LiDAR system and associated hardware and software equipment has to be compatible with existing system for aerial recording. The Military Geographical Institute has trained and experienced staff and years of experience in aerial photography and complete aerial survey of the terrain (and initial processing, if needed) will be conducted by the Military Geographical Institute, as their regular task.

Technical specifications for LiDAR equipment are provided in Annex 4.

⇒ 1.1.2 *Development of input data (high density pads) for flood risk mapping and production of DTMs*

The aerial shooting, as already said, will be done by Military Geographical Institute, following the next priority locations:

- (a) flood prone areas affected by floods in May 2014 and not covered by flood mapping exercise in SoFPAS 1 project;
- (b) flood prone areas affected by floods in recent years and not covered by flood mapping exercise in SoFPAS 1 project;
- (c) limited part of flood prone areas covered by flood mapping exercise in SoFPAS 1 project due to the poor previously available DTM and due to the morphological changes of the terrain, as a consequence of May floods; and

(d) other flood prone areas.

Geodetic surveys of riverbeds will also be done following above mentioned priority locations. The recorded data will be then delivered to the Republic Geodetic Authority for production of DTM.

Republic geodetic authority has developed its capacities for the production of high accuracy DTMs based on the data acquired by LiDAR technology through the implementation of “Project of Establishment of NSDI and Remote Sensing Centre within Republic of Serbia - based on IGIS system”. Currently, RGA disposes of four working stations of high performance and four licences of Bentley-MicroStation v8i and TerraSolid software necessary for the processing of LiDAR point clouds and images.

RGA already produced high accuracy DTM of 1m grid and 15cm average height accuracy for the flood prone area of Tisa river, from the Hungarian border till the mouth into the Danube river with the total area of 2920 km², which is one of the important flood prone areas stated in the priority list of Water Directorate. Project area and methodology of DTM production has been defined in cooperation with the Public Water Management Company “Vojvodina Vode” which was recognized as a primary beneficiary.

Technical normative for LiDAR method of topographic survey, manner of data processing, specification and quality control of DTM produced from LiDAR point clouds has been defined by Regulation on topographic survey and topographic cartographic products (“Official gazette of the Republic of Serbia”, no.124/12). At the time of project realization, MGI and RGA should follow the official Regulation on topographic survey and topographic cartographic products in order to enable DTM production by national standards.

RGA will be in charge for producing the DTM for this activity as part of their regular tasks. Taking in consideration that total area coverage that needs to be recorded with LiDAR camera is around 7500 km², that RGA has 4 operators at their disposal to perform this task, RGA will, until the beginning of project realization, train additional 6 operators from already permanently employed staff in order to be able to perform the task of DTM production, for the area of 7500 km², within 8 months.

Stated period for DTM production directly depends from the LiDAR acquisition dynamic performed by MGI.

External hardware for RGA is needed for the purposes of distribution and archiving of the DTMs, as well as additional mobile IT equipment for the field work during the development of DTMs.

The concrete agreement with the institutions involved will be defined via Memorandum of Understanding (MoA). MoA will be signed before actual implementation of the project between the Directorate for Water, the Ministry of Defence and the Republic Geodetic Authority. The Memorandum will define roles and tasks of each stakeholder as well as the modalities of financing of each task and sources of financing. Furthermore the Memorandum will establish a Project Implementation Unit with representatives of each institution having decisional power.

Complete list of flood prone areas that need to be covered is provided in Annex 4.

Specific activities planned under Result 1.2 are described below.

⇒ 1.2.1 *The supply of hardware and software necessary to improve Water Information System as a database of flood risk maps*

Hardware equipment includes desktop workstations with monitor for users of Water Management Information system of Republic of Serbia in the Directorate for Water , PWMCs, and Sector for Emergency Management (SEM).

Licenses for existing GIS with necessary modules are needed for data processing, pad preparation, floods modeling and analysis of results. Also, the software for 2D hydraulic modeling is needed for flood modeling and analysis.

The list of the equipment is provided in Annex 4.

⇒ 1.2.2 *Development of flood risk maps for the remaining sub-basins and establishment of the basis for upcoming phase of the preparation of flood risk management plans.*

A flood risk management plan based on the flood hazard maps and flood risk maps will be prepared. The activity will focus specifically on development of indicative inundation maps for areas where no flood maps are yet available, covering the majority of the floodplains, and development of comprehensive flood risk map which should be developed for those floodplains identified as the most vulnerable by the flood zoning maps.

⇒ 1.2.3 *Integration of flood risk maps into WIS, including previously prepared flood risk maps through Sofpas I and additional capacity building*

This activity will include additional capacity building component for all the institutions involved in the process of producing the maps, but also involved in their actual use later on. Additionally, this activity will include preparation of maintenance study for strengthening meteorological radar network of Serbia, for wide-range estimation of rain.

Previously prepared maps under Sofpas I project are not fully uploaded into WIS (the process is ongoing) and not fully in use due to lack of the capacity of PWMC to perform this task, but also due to the low technical capacities of the WIS. We expect that within this activity we will strengthen the capacities of PWMCs and all the other users of flood risk maps in order to be ready for the next step, which is preparation of Flood risk management plans which is the final goal of this exercise. Preparation of the Flood risk management plans depends of the usage of the maps for the flood prone areas and this activity is of crucial importance if we want to achieve target from the Water Law for the preparation of Flood risk management plans but also to be in line with Flood Directive.

ToR for service contract for activities 1.2.2 and 1.2.3 will be prepared through FwC, if needed, and with close cooperation with all relevant institutions.

Specific activities planned under Result 1.3 are described below.

⇒ 1.3.1 *Supply of equipment to rehabilitate and strengthen of hydro-meteorological monitoring network of central Serbia for forecasting and early warning purposes.*

The supply will integrate and strengthen the existing Hydro-Meteorological Monitoring Network of RHMSS. It will includes: rehabilitation and upgrade of stations damaged during the floods; upgrade and strengthening of the observing network along Jadar, Kolubara, Južna Morava, and Timok rivers; upgrading of real time data transmission system; upgrade of Main RHMSS Control Centre in Belgrade, and remote Centers of Valjevo, Požarevac, Kraljevo and Niš; improvement of RHMSS Decision Support System and hydrological and hydraulic (flood) forecasting capacity; supply of working stations equipped with software for automated calibration of an existing meteorological radar.

⇒ 1.3.2 *Equipment installation and testing*

Specific activities planned under Result 1.4 are described below.

⇒ 1.4.1 *The supply of necessary equipment for Sector of Emergency Management*

The 2014 floods showed that the main problems of the Sector for Emergency Management are the lack of adequate equipment, which is very often essential in saving human lives. Although national and local authorities have made great efforts to provide basic protection and rescue equipment for local units, civil protection units and other operational units, there is still a great need for basic and specialized equipment which will be used in case of floods. The Sector has got theoretical and practical knowledge at the level of international standards; therefore the need for training is not an urgent matter.

The list of necessary equipment is listed in Annex 4.

The following set of activities under result 1.4 pertains to ensuring reliable electricity supply through purchasing of mobile electrical substations and distribution automation systems (medium voltage monitoring and control systems):

- ⇒ 1.4.2 *Procurement of one mobile electrical substation 110/35 kV, three mobile electrical substations 35/20 kV*
- ⇒ 1.4.3 *Procurement of distribution automation systems for distribution system operator ED Elektro Srbija from Kraljevo for sub utilities (branches): Bajina Bašta, Loznica, Šabac, Valjevo, Ljubovija, Kosjerić, Lazarevac, Trstenik, Varvarin, Kraljevo*
- ⇒ 1.4.4 *Delivery of mobile equipment to designated warehousing facilities*
- ⇒ 1.4.5 *Designing the mobile equipment emergency deployment plan*
- ⇒ 1.4.6 *Automation systems installation*
- ⇒ 1.4.7 *Monitoring the proper implementation of the deployment plan and functioning of the system*

EPS operates 185 substations on 110/35 kV, 640 TS 35/10 kV and 35.800 TS 20/0.4 kV i 10/0.4 kV.

The mobile substations will be deployed in emergency situations where power supply has been affected by unforeseen events and repairs cannot be made quickly. The mobile substations provides great flexibility for maintenance work and increased safety as it removes the time pressure to complete all necessary work to restore power within a required time window.

The mobile substations can be plugged into the electricity network within 3 hours so that the maintenance and revamping can be carried out at both 110 kV substations and 35 kV or lower voltages, without turning the power off to the connected customers for extended periods.

The mobile substations are assembled on trailers and are also equipped with auxiliary panels (protection & control and power supply). Equipment can be easily and rapidly installed on site. Transformer is installed on a proper trailer, ready to be energized, with accessories and a protection panel. It actually acts as a full plug-and-play system.

When equipment is no longer necessary on the site, it will be moved and be made available for other applications in other locations.

Distribution automation systems (for monitoring and control of the medium voltage grid) for noted utilities, would provide necessary SCADA servers, digital telecommunication radio infrastructure, necessary new switch gear equipment (both for overhead lines as well cable networks), RTU (remote terminal unit) units for controlling intelligent switch gear equipment. These integrated systems would significantly improve network reliability (SAIDI and SAIFI indexes improvement). Distribution system operator is ED Elektro Srbija. This distribution automation system will provide DSO dispatchers with fast and reliable tools in order to enable them quick reaction when it comes to any kind of outage caused by any possible reason, including natural disasters. Quick reaction means more reliable energy to all. The system will be implemented in 10 areas of Central and Western Serbia, on the territory covered by Distribution System Operator "Elektro Srbija". These areas are in the greatest need of emergency recovery but are also considered as very susceptible to any future natural disaster damages, due to its geographic and the conditions of the distribution grid.

Deploying such systems would enable dispatchers to reconfigure the medium voltage grid very fast and to reduce number of customers affected by any type of failure.

- ⇒ 1.4.8 *Procurement/purchase of mobile drinking water treatment plants*

PWMC Belgrade Water and Sewage resources have been actively engaged in rehabilitation and repair of flooded areas (May-July 2014), particularly in Obrenovac on activities pertaining to restoring basic living conditions for inhabitants of flooded areas (water pumping and rehabilitation of the sewage system). Those recent environmental hazardous situations and experiences demonstrated the urgent need for procurement of mobile drinking water treatment plants as units of absolute necessity that invaluablely contribute to reducing the flooding effects. During activities in Obrenovac,

two of such mobile units were activated thanks to the governments of Germany and Hungary (temporary aid). Upon works completion, the units were shipped back.

For adequate risk response and prevention in any future similar situations, the City of Belgrade needs to procure such mobile water plants/units.

It is important to highlight that Public Water Management Company Beogradvode will be the beneficiary of the mobile drinking water treatment plants, while these equipment can be lent to any other municipality/city in case of the emergency.

⇒ 1.4.9 *Procurement of mobile flood protection walls*

In order to improve flood protection system in the City of Belgrade and minimize the risk of future similar situation it is necessary to strengthen the system further with mobile flood protection walls. On the territory of the city's biggest municipality of Novi Beograd, with nearly 300,000 residents and number of schools, kindergartens, health centers and similar facilities of public interest, the left bank of the Sava river is protected only by one line of defense (embankment). By construction of Belgrade infrastructure around rivers Sava and Danube, embankments were built according to the at-the-time available and known data on these rivers' water levels. Upon construction of the hydropower plant "Djerdap", water levels changed – i.e. Danube river flow slowed and normal water levels of river Sava rose. During the period that followed, the already built embankments were up built for the level that secures unobstructed passage of 50-yr waters. Climate change and increased inflow of residents into the city impose the need to increase the embankment levels to the levels of 100-yr waters. Certain locations can be up built, however, large parts need to be protected by mobile systems, i.e. systems for protection from high waters.

City of Belgrade has no possibilities for developing another line of defense from high waters due to developed building and road infrastructure. Furthermore, shipyard with its infrastructure is directly threatened by high waters and international and national sailing is prone to suspension in high waters situations when regular or emergency flood protection is declared.

Economically, Belgrade Port is located on the Danube riverbank, where customs warehouses for storing goods for Belgrade and the entire Republic of Serbia are located. International pier for leisure and commercial boats is on the Sava river, i.e. customs and passport control is located on that part.

Environmentally, it is important to mention that water intakes and water transportation systems processing the water supply plant are located on the aforementioned shores/riverbanks.

Cities of Novi Sad and Golubac on the Danube river already possess mobile flood protection systems on endangered locations, and are located on international river flows of the 1st order. Smaller cities and towns are protected by control facilities and embankments around them.

Taking in consideration unpredictability of nature and the fact that similar situation can occur in a near future, it is estimated that the existing, so far efficient way of defense have to be improved with mobile protective walls. Left bank of the Sava River and right bank of the Danube in total length of about 3,600 km is necessary to protect with the system of flood protection walls.

It should be noted that PE Belgrade Water and Sewage can secure adequate resources for suitable storage and maintenance of mobile water plants and mobile flood protection walls.

Specific Objective 2: To rehabilitate flood protection infrastructure

This objective will be addressed by the:

Result 2.1 *Rehabilitated embankments, channel drainage systems and water-pump stations*

The importance of maintenance and prevention can be illustrated in the specific case of Obrenovac during the floods in May 2014. On the territory of Obrenovac there is app. 36.5 km of channel network that drains surface water from the territory close to 32,000 hectares of the catchment areas where the Thermal Power Plant Nikola Tesla is located. Also the channel network of the New

Belgrade and Surcin areas directly affects the safety of the settlements with the most density in the Republic of Serbia. In this area there is app. 60 km of channel network.

New circumstances showed that apart from the maintenance of the existing flood prevention systems there is a great need for its improvement.

The following activities are planned to achieve this results:

⇒ 2.1.1 and 2.1.2 *Rehabilitation of channel drainage network on the hydro-melioration basins for the:*

- Municipality of Obrenovac for the length of 60 km
- Municipalities of Surcin and Novi Beograd for the length of 36.5km

⇒ 2.1.3 *Rehabilitation of damaged water pump stations/locations*

Institution in charge for the activities 2.1.1; 2.1.2 and 2.1.3 is Public Water Management Company Beograd Vode.

⇒ 2.1.4 and 2.1.5 and 2.1.6 *Flood protection of settlements of Paracin, Valjevo, Gornji Milanovac and Svilajnac*

Flood Protection of the settlement Valjevo will cover 4.5 km of rehabilitation of the river bed at Kolubara river while the settlement of Gornji Milanovac will be protected by rehabilitation of the river bed at Despotovica river in the length of 2.5 km. Rehabilitation of sections in Valjevo and Gornji Milanovac will be defined in accordance with existing technical documentation. Flood Protection of the settlement Paraćin: regulation of the Crnica River in the area of Koridor 10 till the settlement, section from km 7+151 to km 8+122 (0,97km), construction retention area upstream of Koridor 10, reconstruction flood Flood Protection system in settlement zone (3.0km) and rehabilitation downstream section till the confluence into the Velika Morava river. Flood protection of the settlement Svilajnac: regulation of the Resava river from the confluence into Velika Morava river to Buk creek - from km 0+000 to km 5+100.

Institution in charge for the activities 2.1.4; 2.1.5 and 2.1.6 is Public Water Management Company Srbijavode.

⇒ 2.1.7 *Provision of effective works supervision services in line with the best engineering practice*

Specific Objective 3: To rehabilitate damages caused by landslides on road transport network

This objective will be addressed by the:

Result 3.1 *Remediation of the critical landslides affecting the road network and recovery of the road structures damaged by erosions.*

There are 58 landslides and objects proposed for urgent action on the national roads, managed by Public Enterprise Roads of Serbia (PERS). Most of these are located in central and western Serbia. For tendering purpose some of these should be grouped into single contract based on location. The main objective should be enabling traffic as a precondition for other government entities and agencies to help recovery of affected region and people to normal living environment. It is expected that smaller local construction companies will be involved in realisation of the works which will indirectly help local economy, trade and markets. Preparation of designs for the remedial action on the landslides is ongoing. By the beginning of October about 70% of the designs will be finalized, therefore the assistance activities can be implemented successively according to the documentation finalized. Due to the situation on site, weather conditions and traffic flow, the attached list of the landslides may change by the commencement of the assistance. Any additional costs above the planned shall be borne by PERS. For this assistance, problems with land acquisition, social issues and

environmental pollution are not expected. The major assumption in relation to the achievement of this result is that there might be protracted delays in the completion of the designs. Existing PERS funding is not sufficient to provide proper maintenance of road network. However, one of the focuses of the current World Bank assistance programme is the development of an overall maintenance model that can be universally applied.

Planned activities under **Result 3.1** include:

- ⇒ 3.1.1 *Constant monitoring using survey points with inclinometers and piezometers;*
- ⇒ 3.1.2 *Installation of catch fences, development of debris ditches and/or the clearing of gullies/streams/rivers;*
- ⇒ 3.1.3 *Recovery of the damaged elements;*
- ⇒ 3.1.4 *Construction of the flood relief culverts within the flood plain;*
- ⇒ 3.1.5 *Improved foundation design and protection to the abutments (and piers);*
- ⇒ 3.1.6 *Provision of effective works supervision services in line with the best engineering practice.*

Specific Objective 4: To provide additional assistance to cover for additional needs in housing, utilities and income generation.

This objective will be addressed by following **results**:

Result 4.1 Additional needs in housing and income generation provided to at least another 1,500 households.

Specific activities planned under Result 4.1 are described below.

- ⇒ 4.1.1 *Provide assistance for housing of people based on established criteria for the selection of beneficiaries focusing mainly on the vulnerable persons affected by the floods in particular those accommodated in collective accommodation.*
- ⇒ 4.1.2 *Procure and deliver materials needed for the reconstruction of households and utilities which will be selected for urgent reconstruction*
- ⇒ 4.1.3 *Conduct supervision of works and monitoring of construction material distribution*
- ⇒ 4.1.4 *Purchasing of basic household packaged containing home appliances for reconstructed households.*
- ⇒ 4.1.5 *Provision of technical and financial support to potential beneficiaries in grant implantation and restart of business and farming operations.*

Result 4.2: Agricultural and Food Security Emergency assistance provided to flood affected small-scale farmers in Serbia

Specific activities planned under Result 4.2 are described below.

- ⇒ 4.2.1 *Purchasing of animal feed, fertilizer, seeds and seedlings and delivery to small farms in the affected areas*
- ⇒ 4.2.2 *Purchasing of live animals and their delivery to small farms in the affected areas*

Result 4.3: Assistance in expertise and staffing provided to the Office for Reconstruction and Flood Relief until the end of 2015 and the results of the EU flood support project are efficiently communicated to the general public

Specific activities planned under Result 4.4 are described below.

- ⇒ 4.3.1 *Provide further assistance and support in expertise and staffing of the Office for Reconstruction and Flood Relief until the end of 2015*
- ⇒ 4.3.2 *Provision of assistance to efficiently communicate EU flood support project results to the general public.*

INDICATOR MEASUREMENT

Indicator	Description	Baseline (year)	Last (year)	Milestone 2017	Target 2020	Source of information
R1.1 Indicator 1	Number of flood prone areas covered with flood risk maps	24 (2013)		99		Annual Report on the state of the environment in the Republic of Serbia
R1.4 Indicator 1	SAIDI improved by 5%	293 (1 st half of 2014)			278 (First half of 2015)	
R1.4 Indicator 2	SAIFI improved by 2%	2.85 (1 st half of 2014)			2.79 (First half of 2015)	
R1.4 Indicator 3	Customers' claims for damaged electrical appliances reduced by 3%	7% (1 st half of 2014)			4% (July 2016)	
R1.4 Indicator 4	Number of Mobile drinking water treatment plants procured	0 (2014)			5	
R1.4 Indicator 5	Kilometres of the mobile flood protection walls	0(2014)		9	20	
R2.1 Indicator 1	Number of rehabilitated damaged and destroyed embankments.	0(2014)			20 (end of 2014)	
R2.1 Indicator 2	Number of repaired water pumping stations/locations.	0 (2014)			6 (end of 2014)	
R2.1 Indicator 3	Kilometres of channel drainage system rehabilitated	0(2014)				
R3.1 Indicator 1	Number of landslides affecting the road networks remediated	0 (2014)			56 (2014-2015)	
R3.1 Indicator 2	Number of road structure (bridges) affecting the road networks remediated	0 (2014)			11 (end of 2014)	
R4.1 Indicator 1	Number of beneficiaries assisted	0 (2014)			1,500 (end of 2015)	
R4.2 Indicator 1	Number of beneficiaries assisted	0 (2014)			1,800 (end of 2015)	

5. CROSS-CUTTING ISSUES

ENVIRONMENT AND CLIMATE CHANGE (AND IF RELEVANT DISASTER RESILIENCE)

Environment in relation to this Action is not a cross-cutting issue but is in fact a central topic for most of the interventions of this Action: a significant component of the envisaged assistance indeed relates to environment and disaster resilience.

This Action directly relates to environmental issues and all anticipated actions were designed to have positive impact on “Rio markers”. Action contributes reducing vulnerability of human or natural systems to the impacts of climate change and climate-related risks by maintaining or increasing adaptive capacity and resilience.

ENGAGEMENT WITH CIVIL SOCIETY (AND IF RELEVANT OTHER NON-STATE STAKEHOLDERS)

A significant contribution to the implementation of this Action is expected from the side of the CSOs, especially from those ones dealing with humanitarian aid and local development. Immediate aid through the mobilisation of CSOs has been provided at the moment of the flood (charity, direct assistance to victims of the disasters, provision of voluntary support, benefits campaigns, collection of goods and medicines, etc.) were organised with the participation of private subjects, citizens and CSOs. A similar degree of involvement of CSOs is not expected during the post-flood recovery, however the involvement of CSOs is still substantial for the implementation of the Action and essential for the achievement of its results.

In order to enable more inclusive and transparent dialogue, consultation and communication with all relevant stakeholders in the respective sectors, a consultation mechanism with the civil society organisation (CSOs) has been established in Serbia in 2011. This mechanism is based on the consultative process with Sectorial Civil Society Organisations (SECOs) and serves as a platform that enables exchange of information and contribution of CSOs in relation to planning development assistance, particularly programming and monitoring of the IPA. A sectorial civil society organization indicates a consortium of maximum three civil society organizations as partners, one of which is clearly indicated as leading partner. The SECO consortium for the environment sector actively contributes to the creation of recommendations within the network and influence official documents and provides recommendations for defining priorities for financing from EU funds and development assistance.

EQUAL OPPORTUNITIES AND GENDER MAINSTREAMING

As the National Strategy for Improved Status of Women and Gender Equality Promotion (2009-2015) obliges for equal participation of women and men in decision making at all levels and in all policy areas, greater involvement of women in actions described, regarding policies and decision-making processes will be promoted.

A number of steps have already been undertaken to address gender issues, such as production of the report that is integral part of the Recovery Needs Assessment (RNA) report. The report examines gender through various elements, such as:

- Roles and participation of women and men;
- Employment and livelihoods;
- Impact on Women’s Workloads;
- Housing, Land and Property;
- Education, Health, Social Services;
- Collective centres;
- and provides assessment in terms of estimation of costs of women’s unpaid labour in flood recovery and estimation of gender-related recovery and reconstruction needs.

However, the report states that the absence of sex-disaggregated disaster impact information across all sectors makes it impossible to reliably apportion damages and losses by sex.

At activity level, it will be ensured that the fundamental principles of promoting equality and combating discrimination are guaranteed on the basis of equal access regardless of sex. The Action acknowledges women's contributions in the informal sector and at household level as a critical factor.

This Action represent further efforts to move beyond humanitarian assistance and relief programs to more long-term development programs and thus is driven also by a gender perspective to be effective in securing sustainable, people-centred development. Implementing partners will be encouraged to address the specific needs and priorities of both women and men in planning processes and allocation of resources especially because of differential impacts of floods in relation to health, education, food supplies, water and sanitation, energy and other basic supplies, as well as employment and income generating opportunities. Thus, the pipeline of flood related Actions (IPA 2012, IPA 2013, IPA 2014, EU solidarity fund) in wider perspective, requires taking into consideration of women's needs in the prioritization of investments, as well as throughout the project cycle. Gender-related recovery and reconstruction costs necessarily shall include measures to mitigate increased gender gaps and disadvantage caused by the disaster.

MINORITIES AND VULNERABLE GROUPS

In all activities during this Action steps will be taken to ensure that the rights of minorities are taken into account.

6. SUSTAINABILITY

The proposed Action will produce sustainable results in the short run, as part of the long-term plan of post-flood reconstruction, coordinated by the Government of Serbia. The four-step approach of the Government is based on the coordination of national and international donor efforts, and the reconstruction of the electric power system, road infrastructure, repair of the damage on houses and other facilities and support to further economic growth.

The Action represents a second stage in provision of support that will allow the recovery in sectors as energy and mining, civil protection and environment and climate change, thus allowing also provision of related services. In the long-term, it will provide the chance for a strong and sustainable economic and social development to take place in affected areas and wider across country, returning to at least the pre-flood levels in terms of key economic and social indicators.

The intended project will ensure adoption of best practices and fulfilment of commitments under the SAA and the EU *Acquis* and the best European practices in the field of construction.

7. COMMUNICATION AND VISIBILITY

The visibility will be organised to promote the exchange of experiences, constraints and best practices achieved on the provision of the assistance.

The main aims of the publicity / visibility requirements are to increase the public awareness and transparency over the activities and to inform potential beneficiaries about the results achieved by the provision of assistance.

All activities must be carried out in accordance to the Communications and Visibility Manual for EU External Action. Publicity must be ensured in accordance with the applicable rules on the visibility of external actions laid down and published in the "EU guidelines on visibility" available on: http://ec.europa.eu/europeaid/work/visibility/index_en.htm.

The visibility issues must be respected all types of communications written correspondence and preparation of deliverables (brochures, posters, newsletters, pamphlets and other type of informative material). The standard formats will be used in briefings, newsletters, press conferences, presentations, invitations, and signs, to highlight EU participation. The key tools of information and communication are:

- Media – press releases, press events, interviews, background papers, project visits

- Events – forums, information days, workshops, professional debates, seminars, conferences, project presentations, other regional events

Publications – newsletters, brochures, leaflets, project information sheets, reports, studies, programme presentation summaries

- Publications Internet pages
- Others: billboards, plagues, stickers, flags, maps, posters and tables.

All the deliverables to be published / issued required prior approval by the contracting authority.

LIST OF ANNEXES

- **ANNEX 1. Sector specific documents**
- **ANNEX 2. List of reference documents**
- **ANNEX 3. Details per EU funded operation (*) where applicable**

ANNEX 1. SECTOR SPECIFIC DOCUMENTS

Spatial plan of the Republic of Serbia 2010-2021 (Official Gazette RS, No. 88/10);

“Water Resource Base of Serbia” (“Vodoprivredna osnova Republike Srbije”);

Law on Disaster Management (Official Gazette RS, No. 57/2011);

Strategy for emergency Management and civil protection (2011-2016)

National Programme for Environmental Protection (NPEP) 2010-2019 (Official Gazette of the Republic of Serbia, no. 12/10);

The National Sustainable Development Strategy (NSDS) (Official Gazette of the Republic of Serbia, no. 57/08);

Environmental Approximation Strategy (EAS) 2011-2019;

Waste Management Strategy 2010-2019 (Official Gazette of the Republic of Serbia, no. 29/10);

National Strategy for Protection and Rescue in Emergency Situations of the Republic of Serbia (2011).

ANNEX 2. LIST OF REFERENCE DOCUMENTS

Floods Risk Directive (2007/60/EC);

The Law on Water (Official Gazette RS, No. 30/10);

National Plan for Adoption of the Aquis (NPAA);

National Priorities for International Assistance (NAD) 2014 – 2017 with 2020 Projections;

Waste Framework Directive (2008/98/EC);

The Law on Environmental Protection (Official Gazette of the Republic of Serbia, No. 135/04, 36/09);

The Law on Waste Management (Official Gazette of the Republic of Serbia, No. 36/09, 88/10);

Law on Emergency Situations, (Official Gazette of RS No 111/09 and 92/11).

ANNEX 3. DETAILS PER EU FUNDED OPERATION (*) WHERE APPLICABLE

Specific objective 1: To enhance disaster risk management /flood prevention systems and the mitigation of immediate energy and water supply risks

Expected outputs for the Results:

- 1.1 Flood risk and flood hazard maps developed for the areas which were not so far covered in Serbia
- 1.2 Water information system of the Republic of Serbia upgraded
- 1.3 Early warning system for flood control/management improved
- 1.4 Equipment for the reaction in emergency situation procured

The bullet points bellow and the related tables present the itemised equipment to be purchased within the results (1.1.1; 1.1.2; 1.2.1; 1.3.1; 1.4.1; 1.4.2; 1.4.3; 1.4.4; 1.4.5; 1.4.6; 1.4.7; 1.4.8; 1.4.9):

- Missing equipment for the existing LiDAR system supplied and system operational.
- LiDAR based flood prone areas DTMs developed;
- Geodetic surveys of riverbeds developed;
- Hardware and software necessary to create flood risk maps supplied;
- Flood risk map developed for those floodplains identified as the most vulnerable by the flood zoning maps;
- Flood risk maps uploaded into WIS;
- New automatic hydro-meteorological monitoring and forecasting network (and transmission system) supplied to RHMSS, new system integrated and operational;
- Strengthening of the RHMSS flood forecasting capacities for small and medium catchments;
- Three new working stations operational equipped with software for automated calibration of an existing meteorological radar;
- Equipment for Sector for Emergency Management supplied;
- One Mobile electrical substation 110/35 kV, three mobile electrical substation 35/20kV;
- One Mobile electrical substation 110/35 kV, three mobile electrical substation 35/10kV and automation system for ten areas in Central and Western Serbia;
- Mobile drinking water treatment plant for the City of Belgrade;
- Mobile flood protection walls for Belgrade and Zemun.

Activity 1.1.1³ (Ministry of Defence)	
Item	Number of Items
a) LiDAR camera	1
b) LiDAR associated hardware and software equipment	1
Activity 1.1.2⁴ (Republic Geodetic Authority)	
Item	Number of Items
Equipment necessary for LiDAR data processing and DTM production and control	12
Activity 1.2.1 (Users of WIS)	
Item	Number of Items
Desktop workstations with monitor for users of Water Management Information system of Republic of Serbia with software licences (WD, PWCs, SEM, RGA)	65
Laptops for users of Water Management Information system of Republic of Serbia (WD, PWCs, SEM)	11

³ Technical specification are presented below

⁴ Technical specification is presented below

GPS handheld devices with supporting software for field data collection for users of Water Management Information system of Republic of Serbia	10
Servers for Water Management Information system of Republic of Serbia	8
Presentation Monitor (High Resolution, Large Display size)	4
Activity 1.3.1(Republic Hydro-Meteorological Institute)	
Item	Number of Items
Supply of equipment to rehabilitate and strengthen of RHMSS hydro-meteorological monitoring network of central Serbia for forecasting and early warning purposes	1
Supply of working stations equipped with software for automated calibration of an existing meteorological radar, RHMSS	3
Activity 1.4.1 (Ministry of Interior – Sector for Emergency Management)	
Item	Number of Items
Field vehicles for transporting of staff and equipment – Compact off road, 4x4 Diesel Manual GPS Europe	2
Field vehicles for transporting staff and equipment – off road, 4x4, Pick up double cabin, diesel manual	2
Van - transporter shuttle for transporting people (citizens) during the process of evacuation, diesel manual	2
Generators, four point, capacity 15-25 Hp	30
Sewage pumping units – multi-purpose pumping unit designed for pumping contaminated liquids, sewage and sludge, with accessory parts	4
Activities 1.4.2-1.4.7 (Ministry of Mining and Energy)	
Item	Number of Items
Mobile electrical substation 110/35 kV	1
Mobile electrical substation 35/20kV	3
Telecommunication digital data radio repeater	49
RTU (remote terminal units) with digital data radio	380
Data concentrator with appropriate software applications Data gathering, storing and presenting	14
SCADA servers	14
Installation	380
Antennas	380
Coaxial cables	10000 m
Antenna brackets	443
Autoreclosers	70
Pole mounted load brake switches (LBS)	210
Airbrake disconnectors	100
Multifunctional control meter devices for secondary substations 10/0,4 kV	2000
Ethernet 5 port switch with built in 3G back up communication modem for secondary substations 10/0,4kV	2.000
Equipment Programming / configuration	
System commissioning	
Activity 1.4.8 (City of Belgrade,)	
Item	Number of Items
Mobile drinking water treatment plant/s – capacity	1

5m ³ /h	
Activity 1.4.9 (City of Belgrade, PWMC Beograd Vode)	
Item	m
Mobile flood protection walls- Novi Beograd	1,800
Mobile flood protection walls- Zemun	1,840

Activity 1.1.1 Technical specification for LiDAR equipment

a) The main characteristics of LiDAR camera

Main performance specifications	Model Leica ALS80 HA	
Maximum flying height (m AGL)	5000	
Minimum flying height (m AGL)	100	
Maximum measurement rate (kHz)	500	
Field of view (FOV) (degrees, full angle, user adjustable)	0 – 75	
Roll stabilization (automatic adaptive, degrees)	75 active FOV	
Scan patterns (user selectable)	sine, triangle, raster	
	sine	100
	triangle	79
Maximum scan rate (Hz)	raster	60
Numbers of returns	unlimited	
Numbers of intensity measurements	3 (first, second, third)	
Storage media	Removable 800 GB SSD	
Flight management	Leica FlightPro	

b) LiDAR associated hardware and software equipment

No.	Item	Product name	Quantity	Note
	SOFTWARE	Leica XPro	1	MGI currently has only one license for the software Leica Xpro, which is necessary for processing of data obtained by a digital camera Leica ADS80, which would be used for the production of digital orthophoto
		Leica XPro (update of existing version)	1	Due to outdated versions of the software which MGI currently has, and in order to save funds, it is necessary to update them, in order to facilitate the planning and recording of data recorded by Leica ADS80 and LiDAR systems. - Two licenses of Leica XPro would enable faster generating of digital orthophoto; - The current version of the software IPAS TC cannot process data from GLONASS satellites, thus reducing the positioning accuracy, so it is extremely important to perform an update of the existing version to the Inertial Explorer; - Planning of LiDAR imaging cannot be carried out with the current version of MissionPro software that MGI has
		Inertial Explorer (update of existing IPAS TC)	1	
		MissionPro (update of existing version)	1	
		ERDAS IMAGINE (with modules MosaicPro and ImageEqualizer)	2	Necessary software for production of high quality orthophoto
		Terra Solid (scan, photo, modelar, match)	1	Software for processing digital data recorded by LiDAR system (compliant with

		TerraModeler + TerraScan	1	RGA)
		Bentley-Microstation v8	2	
		Leica FlightPro (update of the existing Leica FCMS)	1	Software for control of survey (in the airplane) by LiDAR and Leica ADS80 digital sensors. MGI has only the software Leica FCMS which is used to control only a digital camera Leica ADS80.
	HARDWARE	PAV100 (upgrade PAV80)	1	For compatibility with LIDAR, it is necessary to upgrade gyrostabilized platform PAV80 that MGI has
		Data Storage	1	Necessary for storing digital data
		Workstation with 2 monitors	5	For planning and processing of digital data
		Levels	2	Magnification: 32x or better; Accuracy: (0.7 mm or better); Shortest focusing distance: 1.6m; Compensator setting accuracy: 0.3"
		GNSS/SURVEY	2	- Satellite signals tracking: GPS [L1, L2, L2C (C/A, P, C Code)], GLONASS [L1, L2 (C/A, P Narrow Code)], SBAS: WASS, EGNOS, GAGAN, MSAS - Accuracy: RTK static mode (horizontal: 5 mm+0,5 ppm and vertical: 10 mm+1 ppm), RTK moving mode (horizontal: 10 mm+1 ppm and vertical: 20 mm+1 ppm), post processing static mode (horizontal: 3 mm+0.5 ppm and vertical: 4 mm+0.5 ppm)
		Off-road vehicle	1	

Activity 1.1.2 Technical specification of software and hardware equipment necessary for LiDAR data processing and DTM production and control

No.	Item	Product name	Quantity	Note
1.	SOFTWARE	Terra Solid (Scan, Photo, Modelar, Match)	2	Software for processing of LiDAR data and maintenance of existing version of softwares during project realisation
2.		TerraSolid (Scan, Modelar, Photo)	4	
3.		Bentley-Microstation v8i	6	
4.	HARDWARE	NAS Storage	2	Storage for LiDAR data exchange between RGA and MGI as well as between RGA and final users (40TB each)
5.		SAN Storage	1	Storage necessary for LiDAR data processing and backup (100TB)
6.		LTo5 tapes	140	Magnetic tapes necessary for raw and processed LiDAR data archiving (3TB each)
7.		Servers + virtualisation of servers (2 licences)	2	Architecture necessary for software, LiDAR data storage, processing and services provision
8.		Workstations with 2 monitors	6	For processing and control of LiDAR data
9.		Levels with invar staff	2	Magnification: 24x or better; Accuracy: (0.3 mm per km with invar staff); Shortest

				focusing distance: 1m; Compensator setting accuracy: 0.3"
10.		GNSS/SURVEY	2	- Satellite signals tracking: GPS [L1, L2, L2C (C/A, P, C Code)], GLONASS [L1, L2 (C/A, P Narrow Code)], SBAS: WASS, EGNOS, GAGAN, MSAS - Accuracy: RTK static mode (horizontal: 3 mm+0.5 ppm and vertical: 5 mm+0.5 ppm), RTK moving mode (horizontal: 8 mm+0.5 ppm and vertical: 15 mm+0.5 ppm), post processing static mode (horizontal: 3 mm+0.5 ppm and vertical: 4 mm+0.5 ppm)
11.		Laptop	2	Equipment necessary for field work (OS Windows 64bit)
12.		Off-road vehicle	2	

Notification:

- Above specified software and hardware equipment necessary for LiDAR data processing and DTM production and control will serve:
- Under the points no. 1, 2 and 3 for processing of raw point cloud data correction, relative and absolute orientation of point cloud data, preparation of data for processing and its control, automatic and manual point cloud classification, edition, creation of structural terrain lines, control of data processing, generation of DTM and its control and preparation of final product for the delivery;
- Under the points no. 4,5,6 and 8 for creation of sustainable IT infrastructure necessary to support software usage, virtualization and data storage, processing, exchange, backup and archiving, as well as for IT service provision;
- Under the point no. 8 for performing all stated tasks necessary for raw point cloud data processing, classification, editing and control and DTM production and control;
- Under the points no. 9,10,11 and 12 for performing all activities on the field necessary for the raw point cloud data correction and control of produced DTM (measurement of the representative control grids of points, regularly distributed for each river basin with the appropriate density and accuracy).

Activity 1.1.2 Preliminary Flood Risk Assessment and areas of potencial significant flood risks (APSR) on the territory of the Republic of Serbia

No.	Watercourse	Length (km)	Coverage (ha)	Note
1	Dunav	17.3	17,305	
2	Dunav ⁵	37.4		
2	Dunav	223.1		
2	Dunav	86.0		
2	Dunav	51.7		
3	Timok	19.4	3,524	
3	Timok	74.9	6,813	
4	Beli Timok	52.2	4,744	
5	Trgoviški Timok	2.6	103	
6	Svrljiški Timok	3.0	152	
7	Svrljiški Timok	2.6	180	
8	Jasenička reka	14.8	1,347	
9	Pek	69.8	6,346	
10	Mlava	64.1	14,576	
11	Vitovnica	13.0	947	
12	Nera	21.9	2,560	
13	Kanal Banatska Palanka - Novi Bečej (Hs DTD)	87.5		

⁵ Watercourses marked in green are covered by Sofpas I project

14	Karaš	27.8	3,357	
15	Vršački kanal	24.1	3,621	
16	Markovački potok	3.1		
17	Moravica (Vršac)	17.7		
18	Rojga	12.3		
19	Brzava	20.1		
20	Tamiš	37.1	9,275	
21	Tamiš	38.5	123,598	
22	Stari Begej	37.6	31,131	
23	Tisa	62.2		
23	Tisa	104.0	199,092	
24	Kanal Begej (Hs DTD)	36.4		
25	Zlatica	34.9	11,520	
26	Plazović	43.8		
27	Velika Morava	176.1		
28	Jezava	25.4	16,137	
29	Ralja	28.7	2,606	
30	Jasenica	72.8		* ⁶
31	Kubršnica	43.7		*
32	Veliki Lug	31.6	4,306	
33	Milatovica	6.8	621	
34	Resava	40.7		*
35	Rača	20.7	1,884	
36	Lepenica (Kragujevac)	48.4		
37	Uglješnica	6.7	918	
38	Belica	27.9		*
39	Lugomir	20.9		*
40	Županjevačka	32.3	1,470	
41	Dulenska	39.4	3,581	
42	Ravanica	4.1		
43	Crnica	19.1		*
44	Kalenička	25.5	13,925	
45	Južna Morava	241.6		
46	Moravica (Aleksinac)	20.3	921	
47	Nišava	139.1		
48	Toplica (Doljevac)	72.6		
49	Pusta reka (Doljevac)	47.6		
50	Jablanica (Leskovac)	50.4		
51	Šumanka	18.9	516	
52	Veternica	41.5		
53	Vlasina	16.7		
54	Lužnica (Babušnica)	11.0	500	
55	Tmovačka reka	6.2	142	
56	Binačka Morava	6.1	1,397	
57	Moravica (Bujanovac)	5.7	261	
58	Pčinja	2.0	50	
59	Zapadna Morava	196.7		
60	Rasina	36.8	3,345	
61	Gruža	31.7	2,879	
62	Ibar	22.5		
63	Raška	3.8	191	
64	Jošanica	1.4	72	
65	Čemernica	8.8		
66	Dičina	9.0	616	

⁶ * Improvement of DTM due to the poor previously available DTM (app. 300 km² or 10% of the covered area)

67	Despotovica	14.0	635	
68	Bjelica	17.9	814	
69	Moravica (Arilje)	52.1		*
70	Veliki Rzav	6.9		
71	Đetinja	23.3		*
72	Skrapež	19.8		*
73	Lužnica (Požega)	9.6	438	
74	Sava	178.8		
74	Sava	32.7	142,900	
75	Topčiderska reka	21.1	960	
76	Barička reka	2.9		
77	Kolubara	95.5	26,040	
78	Tamna	52.4	11,919	
79	Ub	12.8	2,333	
80	Gračica	7.1	323	
81	Turija	24.7	2,812	
82	Beljanica	10.4	943	
83	Barajevska reka	10.2	463	
84	Bačevačka reka	4.8	110	
85	Vraničina	6.9	157	
86	Lukavica	8.5	387	
87	Ljig	31.2	2,834	
88	Toplica (Mionica)	19.9	904	
89	Ribnica (Mionica)	7.0	318	
90	Ljubostinja	10.1	228	
91	Bosut	42.3		
92	Drina	92.4	41,999	
93	Jadar	63.1	5,739	
94	Likodra	2.1	107	
95	Ljuboviđa	1.8	64	
96	Pilica	2.2	56	
97	Lim	13.7	373	
98	Lim	32.3	1,466	
99	Grabovica	1.7	130	
		Total:	741,981 (7,419.81km²)	

Specific Objective 2: To rehabilitate flood protection infrastructure

Result 2.1. Flood protection infrastructure rehabilitated

Activities 2.1.1 and 2.1.2 Rehabilitation of channel drainage network on the hydro-melioration basins for the:

- Municipality of Obrenovac for the length of 60 km
- Municipalities of Surcin and Novi Beograd for the length of 36.5km.

Activity	m`	Documentation
Rehabilitation of channel drainage network for the municipalities of Surcin and Novi Beograd	365,000.00	Project in preparation
Rehabilitation of channel drainage network for the municipality of Obrenovac	600,000.00	Project in preparation

Regarding the status of documentation, it is important to mention that according to the *Law on Water* (Official Gazette of the RS, No. 30/10), a public water management company that is given a water area to manage is obliged to maintain its waterworks facilities and hence, perform necessary works in line with the

program approved by the Water Directorate and based on elaborated studies (*“elaborati”*). Studies are developed by the public water management company, certified by a licensed engineer within the company, while revision/checkup is performed by the Water Directorate (*“Direkcija za vode”*).

For this particular activities 2.1.1 and 2.1.2, prior to development of an “elaborate” (a study), field measuring, estimates and marking have to be conducted/performed. The goal is to bring the channel drainage network into the state of normal functioning of the system. In consultation with colleagues from the geodesic department and the department for preparation and planning, development timespan is 30-45 work-days. This period of time covers development of technical documentation and recovery (*sanation*) specification.

Activity 2.1.3 Rehabilitation of the water pumping stations

Rehabilitation damaged pumping stations		
No	Pumping station	Brief description of damage
1	PS Mislodjin	Repair of pipeline, repair of three pumps, rehabilitation of access road
2	PS Vic Bara	Rehabilitation of electro-mechanical equipment, pumps, rehabilitation of access road
3	PS Zabreske livade	Rehabilitation of electro-mechanical equipment, pumps, rehabilitation of building
4	PS Kupinac	Rehabilitation of electro-mechanical equipment and pumps
5	PS Piroman	Rehabilitation of building, new diesel machine (old destroyed)
6	PS Skela nova	Rehabilitation of engine no. 1

Institution in charge for the activities 2.1.1; 2.1.2 and 2.1.3 is Public Water Management Company Beograd Vode. As part of the existing documentation, "Beogradvode" has studies ("elaborates") that contain all needed information regarding the channel network and pumping stations, based on which recovery/sanation studies can be developed. As recovery works are not investment works (i.e. building/construction works), permits for executing these are not required (existence of an elaborate/study is sufficient).

Activity 2.1.4 Flood Protection of the settlement Valjevo and Gornji Milanovac:

Regulation of Kolubara River in Valjevo in the length of 4.5 km and regulation of Despotovica River in Gornji Milanovac in the length of 2.5 km.

Activity 2.1.5 Flood Protection of the settlement Paraćin:

- Regulation of The Crnica River in the area of Koridor 10 till the settlement, section from km 7+151 to km 8+122 (0.97km),
- Construction retention area upstream of Koridor 10, reconstruction of Flood Protection system in settlement zone (3.0km) and
- Rehabilitation downstream section till the confluence into Velika Morava River

Activity 2.1.6 Flood Protection of the settlement Svilajnac:

- Regulation of The Resava River from the confluence into Velika Morava River to Buk creek - from km 0+000 to km 5+100

Institution in charge for the activities 2.1.4; 2.1.5 and 2.1.6 is Public Water Management Company Srbija Vode. Activities for the proposed locations are covered with full technical documentation prepared by PWMC Srbija Vode, including valid building permits, where necessary. The documentation is in line with the Law on Planning and Construction.

STATUS OF PROJECT DOCUMENTATION

Activity	Description	Type of work	Main design	Technical control	1. Building permit 2. Issued by	Additional activities	Necessary time for additional activities (months)	Duration of works contract (months)
2.1.4	Flood Protection of the settlement Valjevo and Gornji Milanovac	Construction and reconstruction of the FP structures						
2.1.5 a	Flood Protection of the settlement Paraćin: Regulation of the Crnica river in the area of Koridor 10 E 75 to the settlement (from km 7+151 to km 8+122, 0,97km), providing throughput and retention area upstream of Koridor 10 near the village Glavica (2,0km), rehabilitation downstream section till the confluence into the Velika Morava river (3,5km)	Construction and reconstruction of the FP structures	Yes	Yes	1. Yes, works on downstream section in progress 2. Municipality of Paraćin	After the flood events, additional checking is in progress in order to compare Main design with the actual status from the field	2	12
2.1.5 b	Eliminating critical flood location (flood events in 2014) - Flood Protection of the Central zone of settlement Paraćin: Reconstruction Flood Protection system in settlement zone (4,0km)	Construction and reconstruction of the FP structures	Main design for emergency works in procedure	After finalization of the main design for emergency works	1. Decision on emergency works (instead of building permit) 2. Municipality of Paraćin	Finalization of the main design for emergency works	3	12
2.1.6	Flood Protection of the settlement Svilajnac: Regulation of The Resava River from the confluence into The Velika Morava River to the Buk creek (km 0+000 to km 5+100), providing riverbank stability in confluence area, providing throughput in the settlements area upstream section (Resava, Buk 4,0km)	River regulation works	Yes	Yes	In the procedure	After the flood events, additional checking is in progress in order to compare Main design with the actual status from the field	2	12

Activity 2.1.7 Provision of effective works supervision services in line with the best engineering practice

Specific Objective 3: To rehabilitate damages caused by landslides to transport networks.

Result 3.1. Remediation of the critical landslides affecting the road network and recovery of the road structures damaged by erosions

Works contracts (number of works contracts to be determined between the UNOPS, being implementing partner for the specific objective 1, and the PE. Roads of Serbia)

Service contracts (TA) for supervision

The main criterion for selection of landslides was the level of urgency for remediation and the complexity of the works which should be implemented. Namely, PE Roads of Serbia analysed all locations where landslides affected the road network by using the criteria of immediate urgency for reconstruction and complexity of works to be conducted. The landslides which are chosen to be subject of the respective AD are considered as moderate type, i.e. the landslides that can wait for the start of works in March 2015. The most critical landslides (40) have been under remediation already, and those works are financed from other sources which PE Roads of Serbia managed to ensure.

No	ID broj	Number of road	Section	Station	Type of damage	Municipality	Design	Approximately, when can be started	Geographical coverage
1	1416	IB 29	Sjenica - Duga Poljana	361+100 - 361+200	Landslide	Sjenica	Existing	Mar-15	Vicinity of Novi Pazar
2	1417	IIB 411	Perovac - Gokčanica - Goč	6+100 - 6+200	Landslide	Kraljevo	Design in the process It will be finished 31.12.2014	Mar-15	
3	1200	IB 30	Ivanjica - Ušće	7+000 - 7+040	Landslide	Ivanjica	Design in the process It will be finished 30.11.2014	Mar-15	Vicinity of Ivanjica
4	1201	IB 30	Ivanjica - Ušće	21+800 - 21+850	Landslide	Ivanjica	Design in the process It will be finished 30.11.2014	Mar-15	
5	1307	IIB 359	Beršići - Gornji Branjani	31+250 - 31+400	Landslide	Gornji Milanovac	Design in the process It will be finished 31.12.2014	Mar-15	Vicinity of Čačak
6	1111	IIA 177	Sastavci - Šiljkovica	106+000 - 106+030	Landslide	Požega	Design in the process It will be finished 31.12.2014	Mar-15	Vicinity of Požega
7	1006	IB 28	Rogačica - Užice	119+545 - 119+595	Landslide	Užice	Design in the process It will be finished 25.12.2014	Mar-15	Vicinity of Užice
8	1007	IB 28	Rogačica - Užice	117+045 - 117+095	Landslide	Užice	Design in the process It will be finished 20.12.2014	Mar-15	
9	1008	IB 28	Rogačica - Užice	111+745 - 111+825	Landslide	Bajina Bašta	Design in the process It will be finished 20.12.2014	Mar-15	
10	1011	IB 28	Rogačica - Kostojevići	64+369 - 64+419	Landslide	Bajina Bašta	Design in the process It will be finished 30.09.2014	Mar-15	
11	1013	IB 28	Rogačica	58+269 - 58+419	Landslide	Bajina Bašta	Design in the process It will be finished 30.09.2014	Mar-15	
12	1024	IB 28	Mokra Gora - Kremna	501+050 - 501+138	Landslide	Užice	Design in the process It will be finished 30.09.2014	Mar-15	

13	0018	IB 22	Beograd - Svračkovci	312+250 - 312+300	Landslide	Gornji Milanovac	Design in the process It will be finished 25.12.2014	Mar-15	Vicinity of Beograd
14	0048	IIA 150	Bosuta - Gornja Toplica	83+150 - 83+180	Landslide	Gornji Milanovac	Design in the process It will be finished 25.11.2014	Mar-15	
15		IIA 150	Bosuta - Gornja Toplica	82+900 до 82+943	Landslide	Gornji Milanovac	Design in the process It will be finished 25.11.2014	Mar-15	
16	0122	IIB 364	Brajkovac - Belanovica, Belanovica - Varnice, Varnice - Rudnik	44+550	Landslide	Gornji Milanovac	Design in the process It will be finished 20.09.2014	Mar-15	
17	0123	IIB 364	Brajkovac - Belanovica, Belanovica - Varnice, Varnice - Rudnik	44+700	Landslide	Gornji Milanovac	Existing	Mar-15	
18	0124	IIB 364	Brajkovac - Belanovica, Belanovica - Varnice, Varnice - Rudnik	45+600	Landslide	Gornji Milanovac	Existing	Mar-15	
19	0129	IIB 364	Brajkovac - Belanovica, Belanovica - Varnice, Varnice - Rudnik	50+700	Landslide	Gornji Milanovac	Existing	Mar-15	
20	0102	IIB 358	Kadina Luka - Ba - Srasle Bukve	7+950	Landslide	Ljug	Design in the process It will be finished 30.10.2014	Mar-15	
21		IB 24	Ravni Gaj - Kraljevo Balosava 4	48+970 - 49+197	Landslide	Knić	Existing	Mar-15	
22		IIA-183	Kragujevac - Donja Sabanta	9+500	Landslide	Knić	Existing	Mar-15	
23		IB 24	Ravni Gaj - Kraljevo Balosava 3	49+550 - 49+775	Landslide	Knić	Existing	Mar-15	
24	0505	IIA 213	Blaževo - Merčez - Kuršumljija	122+150 - 122+181	Landslide	Kruševac	Design in the process It will be finished 30.11.2014	Mar-15	Vicinity of Kruševac
25	3595	IB 36	Straža - Boljevac	40+200	Landslide	Boljevac	Existing	Mar-15	Vicinity of Valjevo
26	3661	IB 26	Ljubovija - Rogačica	16+230 - 16+250	Landslide	Ljubovija	Design in the process It will be finished 31.12.2014	Mar-15	
27	3669	IIA 137	Šabac - Tekeriš - Zavlaka, deonica Tekeriš - Zavlaka	10+225	Landslide	Krupanj	Design in the process It will be finished 26.09.2014	Mar-15	
28	3590	IIA 141	Pecka - Ljubovija	5+225 - 5+240	Landslide	Osečina	Existing	Mar-15	
29	3591	IIA 141	Pecka - Ljubovija	4+500 - 4+565	Landslide	Osečina	Design in the process It will be finished 31.12.2014	Mar-15	

30	3592	IIA 141	Pecka - Ljubovija	5+700 - 5+775	Landslide	Osečina	Existing	Mar-15	
31	3593	IIA 141	Crniljevo - Osečina	10+700 - 10+740	Landslide	Osečina	Design in the process It will be finished 31.12.2014	Mar-15	
32	3704	IIA 143	Pričević - Pecka	16+905 - 17+025	Landslide	Valjevo	Design in the process It will be finished 31.12.2014	Mar-15	
33	3679	IIA 170	Valjevo - Debelo Brdo - Rogačica - Bajina Bašta	35+500	Landslide	Valjevo	Design in the process It will be finished 30.11.2014	Mar-15	
34	3732	IIA 170	Sedlare - Debelo brdo	14+978 - 14+960	Landslide	Valjevo	Design in the process It will be finished 30.11.2014	Mar-15	
35	3733	IIA 170	Sedlare - Debelo brdo	22+130 - 22+150	Landslide	Valjevo	Design in the process It will be finished 20.12.2014	Mar-15	
36	3734	IIA 170	Sedlare - Debelo brdo	22+190 - 22+208	Landslide	Valjevo	Design in the process It will be finished 25.12.2014	Mar-15	
37	3600	IIA 175	Bogdanovića Brdo - Divčibare	35+880 - 35+900	Landslide	Mionica	Design in the process It will be finished 25.12.2014	Mar-15	
38	3601	IIA 175	Bogdanovića Brdo - Divčibare	39+410 - 39+450	Landslide	Mionica	Design in the process It will be finished 25.12.2014	Mar-15	
39	3602	IIA 175	Bogdanovića Brdo - Divčibare	30+250 - 30+320	Landslide	Mionica	Design in the process It will be finished 25.12.2014	Mar-15	
40	0826	IIA 228	Gornji Gajtan - Gazdare	124+410 - 124+440	Landslide	Medveda	Design in the process It will be finished 20.10.2014	Mar-15	Vicinity of Vranje
41	0827	IIB 436	Vučje - Vlajna	42+200 - 42+270	Landslide	Leskovac	Design in the process It will be finished 10.10.2014	Mar-15	
42		IA 21	Valjevo - Slatina	122+400	Landslide	Valjevo	Design in the process It will be finished 30.10.2014	Mar-15	
43		IIA 141	Ub - Koceljeva		Landslide	Koceljeva	Design in the process It will be finished 30.11.2014	Mar-15	
44		IB 21	Koceljeva - Valjevo	116+950	Landslide	Koceljeva	Design in the process It will be finished 20.10.2014	Mar-15	

45	ID2732	IB - 23	Konjevići - Beljina - Čačak, bypass Čačak	611+450 - 611+670	Damaged bridge during floods. Damaged riverbed in the area of the bridge	Čačak	Design in the process It will be finished 31.12.2014	Mar-15	Vicinity of Čačak
46	ID2728	IB - 21	Požega - Kosjerić - Valjevo	188+691 - 188+722	Damaged bridge during floods. Damaged riverbed in the area of the bridge	Kosjerić	Design in the process	Mar-15	Vicinity of Požega
47		IB 21	Požega - Arilje	002+178 - 002+236	Damaged bridge during floods. Damaged riverbed in the area of the bridge		Design in the process It will be finished 31.12.2014	Mar-15	
48		IB 21	Požega - Valjevo	169+650	Damaged bridge during floods. Damaged riverbed in the area of the bridge		Design in the process It will be finished 31.12.2014	Mar-15	
49	ID2702	IIA - 174	Kostojić - Varda	1+090	Damaged bridge during floods. Damaged riverbed in the area of the bridge	Užice	Design in the process It will be finished 31.12.2014	Mar-15	Vicinity of Užice
50	ID2709	IB - 28	Dub - Okletac	117+660	Collapsed bridge during floods. Damaged riverbed in the area of the bridge	Užice	Design in the process It will be finished 31.12.2014	Mar-15	
51	ID2710	IB - 28	Dub - Okletac	118+680	Damaged bridge during floods. Damaged riverbed in the area of the bridge	Užice	Design in the process It will be finished 31.12.2014	Mar-15	
52	ID2618	IB - 21	Šabac - Už. Požega	8+652	Damaged bridge during floods. Damaged riverbed in the area of the bridge	Ridake	Design in the process It will be finished 31.12.2014	Mar-15	Vicinity of Valjevo
53	ID2621	IB - 21	Šabac - Už. Požega	1+399	Collapsed bridge due to soil erosion below the middle pillar of the bridge	Koceljeva	Design in the process It will be finished 31.12.2014	Mar-15	
54		IIB 340	Banjani - Novaci	24+880	Damaged bridge during floods. Damaged riverbed in the area of the bridge		Design in the process It will be finished 31.12.2014	Mar-15	
55	ID2514	IIA - 141	Donje Crniljevo - Osečina, the bridge over river Ostenjac	13+630	Damaged bridge during floods. Damaged riverbed in the area of the bridge		Design in the process It will be finished 31.12.2014	Mar-15	

56	ID2517	IIA - 137	Šabac - Zavlaka, the bridge over Cok	3+681	Damaged bridge during floods. Damaged riverbed in the area of the bridge		Design in the process It will be finished 31.12.2014	Mar-15
57	ID2519	IIA - 137	Šabac - Zavlaka, the bridge over the Bojic channel	11+653	Damaged bridge during floods. Damaged riverbed in the area of the bridge		Design in the process It will be finished 31.12.2014	Mar-15
58	ID2532	IIA - 137	Mojković - Krupanj	0+203	Damaged bridge during floods. Damaged riverbed in the area of the bridge	Krupanj	Design in the process It will be finished 31.12.2014	Mar-15