



## BOSNIA AND HERZEGOVINA RECOVERY NEEDS ASSESSMENT

*Floods 14 – 19 May*

### *EXECUTIVE SUMMARY*

The authorities of Bosnia and Herzegovina at all levels have conducted an assessment of the post disaster recovery needs stemming from the devastating floods which affected large parts of the country from 14-19 May 2014. The European Union, the United Nations and the World Bank, within the framework of the Joint Declaration signed in 2008, supported this process by providing resources and technical support. The assessment was conducted over three weeks from 25 May to 17 June and reflects damages, effects, impact and needs on the basis of information available at the time of writing.

#### ***Methodology***

The assessment makes use of data from existing secondary sources, reports and records provided by different levels of government, relevant sectorial agencies, as well as information from other available sources, including maps, records and media reports. To complement and validate all the information collected, primary sources on effects and needs have been utilized, including rapid surveys on livelihoods, housing and public services and facilities.

The assessment has been undertaken for six sectors and three thematic groups. Practitioners from domestic authorities at all levels have collaborated with international experts. A methodological training workshop familiarized all actors involved with a common methodology based on the best international practices and standards. Sector teams visited affected areas across the country to consult with entities, cantonal and municipal authorities, other relevant public/community representatives, NGOs, and stakeholders, including UN and EU operations on the ground. No fewer than 26 municipalities were visited, several of them more than once with specific thematic or sector interest.

#### ***Characterization of the event***

Extraordinary rainfall affected Bosnia and Herzegovina between 14 and 19 May 2014, the largest precipitation in 120 years. Water retention by soil and slopes was surpassed. These effects were aggravated by pre-existing environmental degradation associated with environmental degradation factors such as deforestation, intrusion in river beds and construction in hazardous risk exposed areas.

The whole of the watershed leading to the river Sava was overwhelmed and peaked, generating flash floods and carrying debris downstream creating a path of destruction and desolation. The accumulated downstream flow of water, mud and debris caused widespread floods in the plain. As the river Sava peaked, drainage from the plain was made impossible causing the retention of water in lowlands for an extended period.

A large number of municipalities immediately declared a state of emergency, with others following at a later stage. It is estimated that a total of 81 local governments suffered damages, losses, as well as social or environmental impacts of a varying degree. Around 90,000 persons were temporarily displaced from their homes and more than 40,000 took extended refuge in public or private shelters or moved in temporarily with relatives or friends.

### ***Quantification of the damages, losses and effects***

The assessment provides a quantification of the partial or total destruction of assets that will have to be repaired, replaced or reconstructed. It also provides an estimate of the related losses, which include losses in production, income, livelihoods and employment as well as diminished access to services and goods, increased costs for society and government, and altered risk.

In sum, the total economic impact of the disaster (destruction or severe damage to property, infrastructure and goods as well the effects of destruction on livelihoods, incomes and production, among other factors) is estimated to have reached 3.98 Billion BAM. Most of it impacted the private sector; families, small, medium and large businesses, and agricultural producers, including an undefined number of vulnerable sectors of the population. For the Federation of Bosnia and Herzegovina (FBiH) the total effects (damages and losses) are 2.03 Billion BAM, with 1.89 Billion BAM for Republika Srpska (RS) and 57.89 Million BAM for the Brcko District of Bosnia and Herzegovina (BD).

The floods are estimated to have caused the equivalent of nearly 15 percent of GDP in damages (9.3 percent of GDP) and losses (5.6 percent) in 2014 in Bosnia and Herzegovina (BiH). This amounts to around 2.49 Billion BAM of damages and 1.49 Billion BAM of losses. The hardest hit economic sectors were agriculture, transport and productive activities. As a result, the economy of Bosnia and Herzegovina is expected to contract by 0.7 percent in 2014. The floods are expected to put further strain on public finances, raising the fiscal deficit from a baseline of 2 percent of GDP to 4.5 percent in 2014. A significant public sector financing gap of 1.7 percent of GDP has opened up, despite identified additional (to pre-floods needs) financing from domestic and international sources. The trade deficit is likely to come under pressure, widening to 34 percent of GDP in 2014 while the current account deficit is projected to increase from the baseline 7.8 to 9.7 percent of GDP in 2014.

The damages are not uniform in character along different sectors and affected municipalities due to their different origin, i.e. landslides, floods or erosion, and intensity of the event.

Table 1- Summary of damages and losses

	<b>Damages</b>	<b>Losses</b>	<b>Total</b>
Agriculture	204,090,000	162,070,000	366,160,000
Education	15,720,000	1,300,000	17,020,000
Energy	97,140,000	102,280,000	199,420,000
Floods protection	96,300,000	-	96,300,000
Health	11,330,000	92,180,000	103,510,000
Housing and household items	830,800,000	55,600,000	886,400,000
Livelihoods and Employment	677,800,000	873,260,000	1,551,060,000
Public Services and Facilities	35,920,000	17,700,000	53,620,000
Transport and Communications	511,960,000	168,080,000	680,040,000
Water and Sanitation	10,640,000	4,050,000	14,690,000
Gender	-	16,550,000	16,550,000
<b>Total</b>	<b>2,491,700,000</b>	<b>1,493,070,000</b>	<b>3,984,770,000</b>

### **Post-disaster needs**

In unison with authorities of Bosnia and Herzegovina at all levels the recovery needs are organized into short, medium and long-term priorities. The allocation of short, medium and long-term priority needs have been determined with consideration for the mobilization of resources, internal budget capabilities, and the international donor and International Financial Institutions (IFI) assistance.

To divert and avoid increases in the nation's imbalances, expenditures and recovery investments must remain pragmatic and possible for the country's capacities to absorb.

Table 2 - Summary of Recovery and Reconstruction Needs

	<b>Recovery Needs</b>	<b>Reconstruction Needs</b>
Agriculture	68,220,000	20,670,000
Education	10,400,000	17,300,000
Energy	6,680,000	118,710,000
Flood protection	-	358,800,000
Gender	17,550,000	-
Health	92,680,000	11,330,000
Housing and household items	15,040,000	820,880,000
Livelihoods and employment	183,640,000	865,000,000
Public Services and Facilities	19,900,000	40,350,000
Security	77,680,000	-
Transport	-	691,150,000
Water and Sanitation	7,550,000	10,640,000
<b>Total</b>	<b>499,340,000</b>	<b>2,954,830,000</b>

Having in mind the country's existing capacities in terms of governance and available resources, as well as disaster risk reduction considerations, the early recovery period will be essential and will focus on mitigating the short-term impact of the disaster through restoring critical services and infrastructure, sustaining livelihoods, and reducing vulnerability and future risks in longer-term rehabilitation. Concerns remain with regards to the absorption capacities of both governance structures as well as the private sector that will need to form a close partnership in spearheading the recovery effort.

*Table 3 - Scheduling of recovery and reconstruction needs*

	<b>Short-term</b>	<b>Medium-term</b>	<b>Long-term</b>
Recovery Needs	256,370,000	179,410,000	63,560,000
Reconstruction Needs	1,019,302,000	1,232,984,000	702,534,000

## **Sectoral Overview**

### **1. Agriculture**

Agriculture remains one of the most important sectors of the economy in Bosnia and Herzegovina. The rural population accounts for 60% of the total population and the agriculture sector is the mainstay for the majority of rural inhabitants, as well as employing 20% of the total working population. 52 most affected municipalities experienced severe damages to their environment and infrastructure, lives and well-being; 30 municipalities in the RS and 22 in FBiH. Approximately 70,000 hectares of arable and planted land were affected. Crops were impacted at various stages of development and 25,000 households have now seen their income and livelihoods permanently altered.

The floods occurred at a very critical time in the agricultural calendar. The crop sub-sector bears the bulk of the damages and losses whereas the livestock sub-sector is the second most affected. Fishery and forestry have been impacted to a lesser extent. The total damages are estimated to the amount of 204.09 Million BAM (91.74 Million FBiH, 105.55 Million RS and 6.8 Million BD), excluding the damages to farms, housing, irrigation and agro-processing industries.

The overall estimate of losses amounts to 162.07 Million BAM (32.58 Million FBiH, 128.25 Million RS and 1.24 Million BD), with a large share related to the agricultural production sub-sector, amounting to over 130.47 Million BAM (80.5%), followed by the livestock sub-sector totaled at 31.6 Million BAM (19.5%).

The Agriculture Recovery Plan will be based on: i) an immediate response to address the urgent needs required to maintain and restore productivity and the income of the affected population; ii) mid-term transition from Relief to Development interventions and iii) development interventions focused on disaster risk reduction (DRR) and climate change adaptation (CCA). The 'Build Back Better' approach will be mainstreamed into the medium and long-term activities, and under specific circumstances be applied in the initial recovery phase.

The overall recovery and reconstruction is estimated at 88.89 Million BAM (40.00 Million FBiH, 46.22 Million RS and 2.67 Million BD), of which 43% (38.3 Million BAM) is for immediate response and early recovery needs; 34% (30.23 Million BAM) for the rehabilitation of the sector in the medium-term; and 23% (20.44 Million BAM) for the long-term.

The agricultural sub-sector consisting of cereals, fruit plantations, vegetables and fodder crops, makes up 87% of the overall agricultural production in need of restoration. Urgent assistance to recuperate livestock productivity, given the numbers of livestock's death, is a further immediate requirement.

## **Education**

74 municipalities (42 in FBiH, 31 in RS, and BD) were identified 'as affected' based on secondary reports, municipal documentation and field visits. There are 9 'severely affected' areas (Samac, Odzak, Orasje, Brcko, Bijeljina, Doboje, Maglaj, Zepce, Domaljevac-Samac) where more than 50% of the affected population, and children, live. It is estimated that 60,000 children have been directly affected.

The education sector infrastructure suffered damages to 121 institutions, out of which 13 are preschools, 81 primary schools, 22 secondary schools, 1 boarding school, and 4 higher education institutions. Total cost of damages and losses is estimated at 17.1 Million BAM, of which 9.2 Million in FBiH, 7.9 Million in RS and 10,000 BAM in BD. The bulk of the damages were caused by the destruction of school premises through flash flooding and/or residual water as well as landslides. Educational institutions were identified as in need of intervention even prior to the floods.

The Build Back Better (BBB) principle will be applied here as well with the need to reconstruct in a quality and flood-resistant manner, in order to prevent further damages through similar events. Reconstruction should also consider other improvements, such as access for children and people with disabilities (e.g. wide doors and ramps).

The total cost for reconstruction and recovery activities is estimated at 27.7 Million BAM (12.81 Million FBiH, 12.91 Million RS and 1.98 Million BD). Reconstruction phase, called for in the short-term, is of crucial importance and needs to be finalized before the start of the school year (September 2014). Recovery will include the provision of individual school kits and educational content during the summer break for children in the most affected areas. A number of so-called child-friendly spaces, designed to provide a safe, structured and protective environment for children and families, will also be established. Recovery needs will entail Disaster Risk Reduction (DRR) awareness raising activities to provide better preparedness for future events.

## **Health**

The direct damages to health facilities have been limited and owing to a rapid response by health authorities to redirect staff and patients to unaffected facilities. Interruption of health services was both localized and minimal. However, the effects of the overall damages and losses in livelihoods and employment will translate into considerable losses to the Health Insurance Funds, as affected

populations and enterprises will be limited in their ability to pay the required premiums. In addition to the increased demand for health services in the immediate aftermath of the disaster, extra investment will be needed in disease surveillance, immunization, environmental health services, including vector and rodent control, as well as mental health services which will all need to be enhanced for an extended period of time. The damages suffered in physical infrastructure and resources may also place at increased risk a percentage of the population with non-communicable, chronic ailments.

In sum, the total estimated damage to health infrastructure amounts to BAM 11.3 million, of which 3.33 is in FBIH, and 8.0 in RS. BD reported no damages to its health infrastructure. Losses, however, are more much more significant and are projected at 92.18 Million BAM in total, of which 47.28 in FBIH and 44.90 in RS.

Reconstruction needs in the health sector entail investment in flood-damaged health facilities and assets that have been lost or destroyed in a spirit that reflects continued commitment to building back better. Recovery needs will include compensation for the loss of revenue for the respective health funds and public health institutes as well as additional funding to address costs of increased morbidity and access to health services for uninsured patients who lost their livelihoods. Priority public health programmes (maintaining enhanced disease surveillance until the health risks return to pre-disaster level, disease prevention campaigns, including immunisation and vector control to mitigate new health risks, long-term mental health/psychosocial treatment, support to vulnerable groups of population) were all accounted for, while the representatives of health authorities in FBIH and RS stressed that these programmes need to be continuously supported and maintained for a longer period of time than is estimated to be needed for the actual recovery phase. In addition, the health authorities in FBIH and RS identified the need for strengthening of preparedness and disaster risk management.

The priorities, as expressed by the health authorities in BiH, include swiftly restoring full service delivery capacity in the affected areas, ensuring continuity of care and treatment for the affected populations, and addressing new health risks which arose as the consequence of the flooding.

In summary, the total damages and losses for the RS were estimated at BAM 52.90 Million and for FBIH at BAM 50.61 Million, amounting to BAM 104.01 Million in estimated reconstruction and recovery needs for the whole of BiH. These are inclusive of costs of reconstruction and repair to a better standard of the affected facilities and the compensation (recovery) of the increased costs and loss of revenue expected. Certain amount (500,000 BAM) is considered for the strengthening of the ministries of health preparedness and disaster risk management.

### **Public Services and Facilities**

The flooding of May 2014 disrupted the provision of all public services in the majority of the municipalities affected, with a number suffering near-total devastation of service infrastructure and facilities. Four municipal administrations suffered major devastation of primary service infrastructure along with a number of law enforcement facilities and institutions of the judiciary located in the affected municipalities. A total of 210,000 citizens were affected by the partial or complete suspension of public

services with 50,000 of the most vulnerable deprived of welfare support provided by a network of municipal social service facilities. The total losses and damages to public facilities are estimated at 53.62 Million BAM, to include 18.9 Million BAM in damages to physical infrastructure, 16.6 Million BAM in lost equipment and other assets, 360,300 BAM damages to municipal records, as well as 6.7 Million BAM in lost revenues and 11 Million BAM deployed in emergency response. The breakdown between the two entities for damages and losses is as follows: 27.29 Million BAM FBIH and 26.33 Million BAM RS.

Reduced income experienced by all affected institutions, coupled with substantial emergency spending of available resources in immediate response, has resulted in a reduction in institutional capacities to deliver quality services

Recovery and reconstruction will place an additional burden on local governments already drained by emergency response and diminishing revenues. Four local governments will require substantial reconstruction of physical Infrastructure and the full or partial replacement of assets, to include computers, servers and other office equipment. The process of recovering municipal files, however, is likely to be less straightforward and expedient. Unlike vital records, land registry information and social service beneficiary files were kept in the form of paper records and will require the formation of verification commissions that will validate requests by individual claimants in regards to land ownership and eligible benefits. In order to mitigate vulnerability to similar events in the future, the principle of build-back-better will need to be applied to ensure disaster resilience. This opportunity should also be utilized to ensure better access to facilities for the disabled and to improve on energy efficiency profiles of affected local governments. The overall figure for recovery and reconstruction in this sector is estimated at 60.25 Million BAM (30.49 Million FBIH and 29.76 Million RS), with 19.9 Million BAM (11.62 Million FBIH and 8.28 Million RS) going towards recovery and 40.35 Million BAM (18.87 Million FBIH and 21.48 Million RS) earmarked for reconstruction.

As a matter of priority, one-stop-shop citizen support centers will need to be reestablished as they represent the primary interface of residents with government institutions. Welfare support facilities will need to be refurbished in order to deal with an increasing number of vulnerable groups that are seeking support as a result of the flooding. Finally, in order to ensure rule of law at the municipal level, judicial institutions must be reconstructed and equipped to guarantee that the existing backlog does not increase further.

## **Housing**

The housing sector suffered severe damages associated both with the vast extension of the flooding, covering both urban and rural housing, as well as destruction of houses by landslides. Associated with the destruction, or damage, to the houses was the destruction of household goods and valuable items such as documentation, family heirlooms and other valuables difficult to price. Over 43,000 houses and flats were flooded and 1,952 houses were destroyed due to landslides. The total extent of the damages and losses amounts to 886.40 Million BAM (424.90 Million FBIH, 443.30 Million RS and 18.20 Million BD), all of it suffered by privately owned households. The losses incurred, given the level of destruction,

arise from the need for temporary shelter, demolition and removal of rubble and debris, , as well as land acquisition and the provision of essential services for the relocation of housing units that have been destroyed by landslides.

The recovery and reconstruction strategy must include all affected communities, engaging both men and women in the planning and implementation of relevant activities. The strategy for the reconstruction of destroyed houses due to landslides must ensure that they rebuild in areas that are not at risk. Recovery and reconstruction in the housing sector must equally take into consideration recovery in other sectors, including livelihoods, transport, electricity, water and sanitation, agriculture and access to social services, including health and education. In sum, an estimated 835.92 Million BAM will be necessary for the recovery and reconstruction process, out of which 15.04 Million BAM will be necessary in the short and medium-term to achieve a full recovery. The recovery needs include the cost of temporary shelter, demolition and removal of rubble and debris.

In the medium and long-term phases, priorities will entail the development of specific subprojects for the repair of houses; their approval by donors and/or the State and/or the Entities; implementation of subprojects and monitoring at State, Entity and/or Municipal levels.

As a matter of priority in the first 12 months post disaster, the following actions should be taken:

- Identification of hazardous buildings and structures which 1) are at risk of collapsing; and 2) are in areas at risk of landslides;
- Detailed identification and consolidation of information on all damages and related losses to the housing sector;
- Development by the state coordinating body of a criteria for the identification and selection of beneficiaries with a priority given to those that are temporarily displaced and meet the social vulnerability criteria;
- Development by the state coordinating body of the beneficiary selection procedure;
- Development by the state coordination body of technical standards for the reconstruction and rehabilitation of housing units;
- Allocating budget funds at the entity / state level which would be used for reconstruction/relocation of houses;
- Establishment of a state managed coordination mechanism to assure that donations are allocated to the priority areas;
- Development by the Municipalities and Brcko District of a detailed list of potential beneficiaries in the priority areas;
- Identification and overcoming of legal obstacles to collection and disbursement of donations for housing and other infrastructure at entity and state level;
- Development of specific subprojects for the repair of houses;
- Approval by donors and/or the State and/or the Entities;
- Implementation of subprojects;
- Monitoring at State, Entity and/or Municipal levels

For those flood-affected households that incurred repairable damages to their homes and flats and are able to return, priority interventions in the short-term include the repair of their homes through contractors or the provision of shelter recovery kits (tools, construction materials, protective equipment, etc.) that will enable them to self-recover their dwellings. As many have lost their livelihoods, shelter recovery strategies should equally consider livelihoods recovery/restoration that will allow returnees to generate income. In the short-term, this could include cash-for-work (focusing on debris removal and infrastructure reconstruction, including homes and community infrastructure), as well as the restoration of productive assets.

The goal of the 12-month post disaster should be to repair at least 25% of the damaged houses, with priority given to those that are currently displaced and meet the social vulnerability criteria. Funds for the repair of houses should be made available immediately given the fact that no works can be carried out during the winter months.

Durable housing solutions must be found for those who are not able to return immediately to their homes because their dwellings have been either completely destroyed, are located in an at-risk area (due to landslides or mines), or they require special assistance (mentally or physically disabled, elderly, etc.). Durable solutions also include the need for an interim / temporary solution.

## **Energy**

As soon as heavy rains started on May 14, utility companies went into crisis mode and, as a preventive measure, disconnected vulnerable transmission and distribution lines and substations. More than 100,000 users in the country were disconnected as a result. As a direct consequence of floods a number of facilities were damaged or destroyed. From the period of May 14 - 19, electricity transmission company (TRANSCO) and electricity utility companies progressively re-established electricity supply where possible; however some areas were left without power either because the equipment was heavily damaged, and/or the flood level of the area and landslides created a safety hazard.

The impact of the floods on the energy sector was registered through damages to generation facilities, transmission and distribution networks, as well as coalmines that supply the thermal electricity generating plants. Damages to the distribution network are mostly restricted to low lying flood-prone areas, whereas most damages to the transmission network came from devastating landslides. Impact to coal mines was the result of a mix of flooding and landslides.

The total value of damages and losses at the state level was estimated at BAM 199,416,569. At the entity level, FBiH has a share in damages and losses of 64.3% (128.2 Million BAM), RS with 35.2% (70.1 Million BAM) and BD with 0.5% (1.1 Million BAM). The reported damages and losses on TRANSCO amount to 4.3 million BAM, which are split between FBiH and the RS in accordance with the companies' shareholder ownership structure (FBiH 58.89% and the RS 41.11%) and are reflected above.

The extensive flooding has aptly illustrated the vulnerability of the energy sector in the country. Immediate steps in recovery should be aimed at increasing the resilience of power utilities to emergency

scenarios. Therefore, a carefully planned recovery strategy is of the utmost importance. Overall recovery needs are estimated to 125.39 Million BAM (94.59 Million FBiH, 27.29 Million RS and 3.51 Million BD).

Short-term recommendations, encompassing up to 12 months, should focus on:

- providing meters and safe energizing of transmission and distribution systems;
- recovering generation supply capacity;
- rapid restoration of transmission and distribution network;
- rehabilitation of damages to high, medium and low voltage systems;
- restoration of the inventory of equipment and spare parts that were used in the emergency phase;
- rehabilitation of small hydro power plants;
- rehabilitation of affected business premises;
- ensuring all affected facilities are restored to operation with better disaster resilience capacity;
- exploring lowest-cost options to minimize damage to existing energy system assets in future;
- reviewing emergency procedures for future floods and insurance coverage

Medium-term recommendations encompass a time period between 13 and 24 months, with a focus on relocating key facilities away from known flood areas, new design parameters and/or practices for energy infrastructure and assets to improve performance and resilience and provision of emergency equipment and material inventory.

### **Livelihoods**

In the 81 municipalities affected by the floods and landslides, a total of 466,000 persons were employed as wage workers for a total population of 2.64 Million. At the same period, 478,564 people of working-age were registered as unemployed or inactive in the same localities.

The floods have caused severe damages to commercial and industrial, equipment and machinery, raw materials and finished products across all of BiH amounting to 677.80 Million BAM. Enterprises in FBiH recorded damage of 397.73 Million BAM, 276.17 Million BAM in the RS and 3.9 Million BAM in BD.

Additional losses in terms of increased costs of business operations and reduction in productivity and turnover amount to no less than 873.26 Million BAM across the country. In FBiH 507.32 Million BAM of losses were recorded, followed by 360.38 Million BAM in RS and 5.56 Million BAM in BD.

At the time of the assessment, more than 3,000 people had lost their jobs. It is estimated that 13,500 people are at high risk of job loss and 50,171 are at low to medium risk. Accordingly and taking into account that the dependency rate in BiH is estimated at 4.4, close to 300,000 people are at risk of being

severely affected, to which the informal employment sector must be added, estimated at between 30% to 40% according to various relevant surveys.

The overall reconstruction and recovery needs are estimated in total at 1,048.64 Million BAM (595.63 Million FBIH, 438.98 Million RS and 14.03 Million BD), of which 32% (337.27 Million BAM – 185.69 Million FBIH, 147.25 Million RS and 4.33 Million BD) are for immediate reconstruction and recovery needs; 63% (665.45 Million BAM – 384.44 Million FBIH, 272.26 Million RS and 8.75 Million BD ) for medium term reconstruction and recovery needs; and 4% (45.92 Million BAM – 25.50 Million FBIH, 19.47 Million RS and 0.95 Million BD) for the long-term recovery needs.

The Recovery and Decent Employment Promotion Strategy should consist of a “package” of multiple key interrelated components or “entry points” to bridge the continuum from immediate job preservation to longer-term local development. This includes better disaster coping mechanisms and workers protection while at workplace.

In the short-term (up to 12 months), the following measures could be implemented:

- Short cycle skills training and kits for recovery and construction-related skills;
- Through existing MFIs and/or local banking system, rapid launching of a finance programme for enterprises (possibly grants or concessional credit for micro and small enterprises, and credit lines at feasible terms for medium and large ones) to recover full operation, replenish inventories, repair equipment, and reconstitute working capital;
- Temporary employment creation in the recovery and reactivation of forward and backward linkages of the various sectors (power supply, input supply, public infrastructure repairs, and other related needs) in order to foster the reactivation of the economy in affected areas and sectors;
- Quick recovery of assets and livelihoods for most vulnerable groups, including Roma and displaced communities through multidisciplinary employment recovery project implemented by local government and local NGOs;
- Short-term vocational and business start-up and management training for job seekers and micro/small entrepreneurs, targeting specifically the most vulnerable women and youth implemented by existing public and private training providers

In the medium and long-term, domestic capacities should be developed: to improve employability, especially for the most vulnerable groups; to cater for starting entrepreneurs; to understand “Multi-hazard Business Continuity Management”, including climate change adaptation; to create an enabling environment for resilient enterprises; and to facilitate and establish canton/municipality broad-based public-private dialogue mechanisms to define local economic and disaster risk reduction strategies.

## **Transport**

The estimated cost for damages in total for the transportation and communications sector is 512 Million BAM, of which 221.06 in FBIH, 278.3 in RS and 12.6 in BD. Losses have been estimated on the basis of information available during the assessment to the total amount of 168.08 million BAM, based on the affected traffic flows due to the interruption or longer time required for travel. The breakdown of total damages and losses is 82.12 Million BAM for FBIH, 84.46 in RS and 1.5 in BD.

For the recovery and reconstruction process short, medium and long-term needs are inclusive of risk reducing measures and resilience building (“Build Back Better”). The total estimated amount is the result of using 35% of the damages cost (approximately 180 Million BAM). The exact amount needed requires in-depth studies of soil dynamics of slopes, estimate return period of similar level flooding and engineering studies, which are recommended to be undertaken for the long-term reconstruction.

The Transport and Communications sector recovery plan is probably one of the most important as many of the other sectors rely on transport. The plan should entail the following:

- Remove debris and landslip material from the roads and railways. Cleaning the areas affected is quick and relatively inexpensive and enables transport and therefore the economy to start moving. This should be done in the priority of main, regional and then local network;
- Repair minor damage, once again in the priority of main, regional and local;
- Undertake surveys on all the landslip areas that are affecting the transport assets (other landslide areas will also need to be surveyed by other sectors);
- Analyze the landslips as necessary;
- Survey and analyze the damage to the tunnels;
- Survey and analyze the damage to the bridges and culverts;
- Undertake design of the proposed new/replacement rail or highway and the associated landslides;
- Construction of new/replacement asset

## **Water and sanitation**

Access to clean water due to the intensive rains and floods was compromised by the limited damages suffered by the water utilities, serving some 60% of the country’s population. Nonetheless, the restoration of basic water supply and sanitation services in flood affected area was relatively quick, and in the majority of affected communities it took under one week to bring water supply systems back into operation, and around two weeks to restore water supply quality to drinking water standards.

The impact on the facilities has been estimated at 14.69 Million BAM, of which 6.58 in FBIH, 6.85 in RS and 1.26 in BD. Out of the total, 10.64 Million BAM are damages and 4.05 Million BAM are losses. The losses are due to service interruption caused by damage to pipelines and pumps. Losses were especially felt due to decrease in demand from affected households and industrial customers. A total of approximately 18.19 Million BAM (8.08 Million FBIH, 8.35 Million RS and 1.76 Million BD) will be needed

to fully restore water supply and sanitation infrastructure and resume full service delivery at improved standards and quality by the public water utilities.