MONITOR II

2012

MONITOR II – PP11:
STAKEHOLDER FEEDBACK REPORT

Project period 6
(01.09.2011 – 29.02.2012)

Questionnaire answers:

- Mesta test-bed:
  - Gotse Delchev municipality
- Maritsa test-bed:
  - Haskovo district
  - Svilengrad municipality

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Within the framework of MONITOR II, the team of Institute of Mathematics and Informatics – Bulgarian Academy of Sciences (IMI-BAS) proposed to use an integrated methodological approach for establishing a comprehensive viewpoint of the flood prevention and risk assessment. It integrates different sub-processes as:

(i) creating the flooding hazard maps,
(ii) building the hydrological simulation models,
(iii) gathering questionnaire based experts' evaluation, and
(iv) scenario based modelling.

As a generalization of all these data an integrated solution is received that fuses all provided information for certain endogenous and exogenous factors historical and prognosis dynamics (i.e. integration of the mentioned three steps and taking into account: climate changes, hydrological dynamics, soil composition and structure changes, demographic changes, critical infrastructure dynamics, etc.) in a reasonable scenario context.

The used models development approach is based on the utilization of the General Systems Theory[1]. For refining the model interpretation Delphi filtering for data convergence is used[2]. The software implementation is based on the E-R paradigm developed in the object oriented environment Borland Delphi 7® as I-SCIP-SA v.2.0[3] [Minchev and Petkova, 2010].

For gathering the information from the experts of IMI-BAS proposed a "Questionnaire for evaluation support of the flooding risk zones". It contained the classification of the importance of certain infrastructure objects in a three lateral scale: vital, important, and other in a different scenario contexts for long term, medium term and short term time horizons, as well as the scenario likelihood and scope (local, regional), together with likelihood/vulnerability objects ratio.

The Questionnaire is filled by experts from the corresponded authorities, resp.:

- for Mesta river valley for Gotse Delchev region:
  - Gotse Delchev municipality;
- for Maritsa river valley for the border territory of the Republic of Bulgaria and the Republic of Greece:
  - Haskovo district;
  - Svilengrad municipality.

[1] Bertalanffy, L.: General System Theory: Foundation, Development, Applications. New York, 1968.

[2] Minchev, Z., Shalamanov, V.: Scenario Generation and Assessment Framework Solution in Support of the Comprehensive Approach. In Proc. of SAS-081 Symposium on "Analytical Support to Defence Transformation", RTO-MP-SAS-081, Sofia, 2010, pp.22-1 – 22-16.

[3] Minchev, Z., Petkova, M.: Information Processes and Threats in Social Networks. A Case Study. In Proc. of the Conjoint Scientific Seminar "Modelling and Control of Information Processes", Sofia, Bulgaria, 2010, pp.85-93.

Q U E S T I O N N A I R E

for evaluation support of the flooding risk zones

River: *Mesta river valley, Gotse Delchev region*

Respondent: *Gotse Delchev municipality*

Dear respondents,

With the present questionnaire we would like to request your support for the process of experts' validation of the flooding models and zone risk assessment, in the framework of EC Project MONITOR II. We guarantee anonymous and generalized data usage and results presentation.

Q1. List ten significant, potentially critical zones/architectural objects for your geographical area, while classifying them in a three degree scale (A – vital, B – important, C – other) filling-up the table below:

No.	Object Name	Classification
1.	Mesta River – The catchment	B
2.	Dam "Sushitsa 1"	B
3.	Dam "Sushitsa 2"	B
4.	Mesta River – Malko Borovo Village	B
5.	The Old Mosque	B
6.	Mesta River – Place "Ormana"	B
7.	Reservoir – Dobrotino Village	B
8.	Mesta River – Place "Ribarnitsite"	B
9.	Mesta River – Place "Baroto"	B
10.	Mesta River – the Delta of "Gradska reka" River	B

Q2. Evaluate the potential **Critical Impact** and **Likelihood** for the following three scenarios, regarding potential real-life accidents: A – breaking a dam wall flooding, B – flooding due to increased river level from intensive rainfall and/or snowmelt, C – other scenario proposed by your side. Use the following scale: 1(low), 2 (moderate), 3 (high), and fill-up the table below:

Scenario	Critical Impact	Likelihood
A (breaking a dam wall flooding)	1 (low)	2 (medium)
B (flooding due to increased river level from intensive rainfall and/or snowmelt)	2 (medium)	2 (medium)
C (…)[4]	2 (medium)	2 (medium)

Q3. Evaluate the level of potential **Vulnerability** and **Critical Likelihood** for each of the already listed ten significant, potentially critical zones/architectural objects for your geographical area (see Q1) together with the three scenarios (A – breaking a dam wall flooding, B – flooding due to increased river level from intensive rainfall and/or snowmelt, C – other scenario proposed by your side, see Q2). Use the following scale: 1(low), 2 (moderate), 3 (high) and fill-up the table below after the grey-colored example:

[4] please, write the scenario proposed by your side

Object	Scenario	Critical Likelihood	Vulnerability
0	A,B,C	2,1,3	1,3,3
1	B	2	1
2	A	2	1
3	A	2	1
4	B	2	1
5	B	2	1
6	B	2	1
7	A	2	1
8	B	2	1
9	B	2	1
10	B	2	1

Q4. Evaluate the level of the local/regional coordination improvement necessity during real flooding events for each of the three scenarios (A – breaking a dam wall flooding, B – flooding due to increased river level from intensive rainfall and/or snowmelt, C – other scenario proposed by your side, see Q2). Use the following scale: 1(low), 2 (moderate), 3 (high), and fill-up the table below:

Scenario	Local evaluation	Regional evaluation
A	2	2
B	2	2
C	2	2

Q5. Evaluate the level of you marks (concerning Q1 – Q4) possible dynamic changes for three time horizons (short-term horizon: $\leq$ 1 year, medium-term horizon: $\leq$ 5 years, long-term: $>$ 5 years). Use the following scale: 1(low), 2 (moderate), 3 (high), and fill-up the table below:

Question	Short-term horizon	Medium-term horizon	Long-term horizon
Q1 (significant, potentially critical zones/architectural objects)	1	2	2
Q2 (Scenarios, critical impact and likelihood)	1	2	1
Q3 (level of potential vulnerability and critical likelihood)	1	2	2
Q4 (level of the local/regional coordination improvement necessity)	1	2	1

Q6. Do you believe that preventive analysis like this one are supporting the real flood protection?

A). Yes;

~~B). No;~~

~~C). Indefinite;~~

~~D). Comment: …~~

Q7. Do you have any proposals for other (additional) directions concerning such kind of experts' flood analyses?

Q U E S T I O N N A I R E

for evaluation support of the flooding risk zones

River: *Maritsa river valley for the border territory of the Republic of Bulgaria and the Republic of Greece*

Respondent: *Haskovo district*

Dear respondents,

With the present questionnaire we would like to request your support for the process of experts' validation of the flooding models and zone risk assessment, in the framework of EC Project MONITOR II. We guarantee anonymous and generalized data usage and results presentation.

Q1. List ten significant, potentially critical zones/architectural objects for your geographical area, while classifying them in a three degree scale (A – vital, B – important, C – other) filling-up the table below:

No.	Object Name	Classification
1.	Checkpoint Kapitan Andreevo - Svilengrad	A
2.	Kapitan Andreevo village – Svilengrad municipality	B
3.	Generalovo village – Svilengrad municipality	B
4.	Gebran quarter - Svilengrad	B
5.	Pumping station Yabalkovo – Dimitrovgrad municipality	B
6.	Pumping station Bulgarin – Harmanli municipality	B
7.	The bridge on Maritsa river in Skobelevo village – Dimitrovgrad municipality	B
8.	Shishmanovo village – Harmanly municipality	C
9.	Chernokonevo quarter – Dimitrovgrad	C
10.	Maritsa River in Simeonovgrad	C

Q2. Evaluate the potential **Critical Impact** and **Likelihood** for the following three scenarios, regarding potential real-life accidents: A – breaking a dam wall flooding, B – flooding due to increased river level from intensive rainfall and/or snowmelt, C – other scenario proposed by your side. Use the following scale: 1(low), 2 (moderate), 3 (high), and fill-up the table below:

Scenario	Critical Impact	Likelihood
A (breaking a dam wall flooding)		
B (flooding due to increased river level from intensive rainfall and/or snowmelt)	3 (high)	2 (medium)
C (…)[5]		

[5] please, write the scenario proposed by your side

Q3. Evaluate the level of potential **Vulnerability** and **Critical Likelihood** for each of the already listed ten significant, potentially critical zones/architectural objects for your geographical area (see Q1) together with the three scenarios (A – breaking a dam wall flooding, B – flooding due to increased river level from intensive rainfall and/or snowmelt, C – other scenario proposed by your side, see Q2). Use the following scale: 1(low), 2 (moderate), 3 (high) and fill-up the table below after the grey-colored example:

Object	Scenario	Critical Likelihood	Vulnerability
0	A,B,C	2,1,3	1,3,3
1	B	3	2
2	B	3	2
3	B	3	2
4	B	3	2
5	B	3	2
6	B	2	2
7	B	3	3
8	B	3	3
9	B	2	2
10	B	2	2

Q4. Evaluate the level of the local/regional coordination improvement necessity during real flooding events for each of the three scenarios (A – breaking a dam wall flooding, B – flooding due to increased river level from intensive rainfall and/or snowmelt, C – other scenario proposed by your side, see Q2). Use the following scale: 1(low), 2 (moderate), 3 (high), and fill-up the table below:

Scenario	Local evaluation	Regional evaluation
A		
B	2	2
C		

Q5. Evaluate the level of you marks (concerning Q1 – Q4) possible dynamic changes for three time horizons (short-term horizon: $\leq$ 1 year, medium-term horizon: $\leq$ 5 years, long-term: $>$ 5 years). Use the following scale: 1(low), 2 (moderate), 3 (high), and fill-up the table below:

Question	Short-term horizon	Medium-term horizon	Long-term horizon
Q1 (significant, potentially critical zones/architectural objects)	2		
Q2 (Scenarios, critical impact and likelihood)	3		
Q3 (level of potential vulnerability and critical likelihood)		2	
Q4 (level of the local/regional coordination improvement necessity)		2	

Q6. Do you believe that preventive analysis like this one are supporting the real flood protection?

A). Yes;

~~B). No;~~

~~C). Indefinite;~~

~~D). Comment: …~~

Q7. Do you have any proposals for other (additional) directions concerning such kind of experts' flood analyses?

Q U E S T I O N N A I R E

for evaluation support of the flooding risk zones

River: *Maritsa river valley for the border territory of the Republic of Bulgaria and the Republic of Greece*

Respondent: *Svilengrad municipality*

Dear respondents,

With the present questionnaire we would like to request your support for the process of experts' validation of the flooding models and zone risk assessment, in the framework of EC Project MONITOR II. We guarantee anonymous and generalized data usage and results presentation.

Q1. List ten significant, potentially critical zones/architectural objects for your geographical area, while classifying them in a three degree scale (A – vital, B – important, C – other) filling-up the table below:

No.	Object Name	Classification
1.	"Kankliiska uva" - floodplain zone /area/	B
2.	„Ormanya"- floodplain zone /area/	B
3.	"Chermenska uva","Brantiata","Pashekyovska uva" - floodplain zone /area/	A
4.	River Kalamitsa, dam Kalamitsa – Kapitan Andreevo checkpoint –floodplain zone /area/	A
5.	Village Generalovo – the dike	A
6.	Dam "Birgu" – village Shtit – floodplain zone, IV class road and agricultural lands Dam "Kertelia"- on the territory of villages Mustrak, Levka, and Raikova mogila, floodplain zone – agricultural lands and village Dimitrovche	A
7.	Dams "Mladinovo 1","Mladinovo 2" – floodplain zone, agricultural lands and village	B
8.	The old bridge - Svilengrad	A
9.	„Turkish bath"- Svilengrad	A

Q2. Evaluate the potential **Critical Impact** and **Likelihood** for the following three scenarios, regarding potential real-life accidents: A – breaking a dam wall flooding, B – flooding due to increased river level from intensive rainfall and/or snowmelt, C – other scenario proposed by your side. Use the following scale: 1(low), 2 (moderate), 3 (high), and fill-up the table below:

Scenario	Critical Impact	Likelihood
A (breaking a dam wall flooding)	3	3
B (increased river level)	3	3
C (breaking a dam dikes)	3	3

Q3. Evaluate the level of potential **Vulnerability** and **Critical Likelihood** for each of the already listed ten significant, potentially critical zones/architectural objects for your geographical area (see Q1) together with the three scenarios (A – breaking a dam wall flooding, B – flooding due to increased river level from intensive rainfall and/or snowmelt, C – other scenario proposed by your side, see Q2). Use the following scale: 1(low), 2 (moderate), 3 (high) and fill-up the table below after the grey-colored example:

Object	Scenario	Critical Likelihood	Vulnerability
0	A,B,C	2,1,3	1,3,3
1	B	3	3
2	B	3	3
3	B	3	3
4	B	3	3
5	A, B	3, 3	3, 3
6	C	3	3
7	B	3	3
8	B	3	3
9	A	3	3

Q4. Evaluate the level of the local/regional coordination improvement necessity during real flooding events for each of the three scenarios (A – breaking a dam wall flooding, B – flooding due to increased river level from intensive rainfall and/or snowmelt, C – other scenario proposed by your side, see Q2). Use the following scale: 1(low), 2 (moderate), 3 (high), and fill-up the table below:

Scenario	Local evaluation	Regional evaluation
A	3	3
B	3	3
C	3	3

Q5. Evaluate the level of you marks (concerning Q1 – Q4) possible dynamic changes for three time horizons (short-term horizon: $\leq$ 1 year, medium-term horizon: $\leq$ 5 years, long-term: $>$ 5 years). Use the following scale: 1(low), 2 (moderate), 3 (high), and fill-up the table below:

Question	Short-term horizon	Medium-term horizon	Long-term horizon
Q1 (significant, potentially critical zones/architectural objects)		2	
Q2 (Scenarios, critical impact and likelihood)		2	
Q3 (level of potential vulnerability and critical likelihood)		2	
Q4 (level of the local/regional coordination improvement necessity)		2	

Q6. Do you believe that preventive analysis like this one are supporting the real flood protection?

A). Yes;

~~B). No;~~

~~C). Indefinite;~~

~~D). Comment: …~~

Q7. Do you have any proposals for other (additional) directions concerning such kind of experts' flood analyses?