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Date: Dec 2017. god.
Place: Novi Sad

Knowledge FOr Resilient soCiEty

Special Mobility Strand (SMS)

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„Communication and Risk Perception“

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RISK COMMUNICATION?

- ✓ *phrase „risk communication“ first appeared in 1984*
- ✓ *exchange of information about risks*
- ✓ *key to risk communication success:*
  anticipation, preparation, and practice

- ✓ ***ISO 31000** (Communication and consultation):*

„continual and iterative processes that an organization conducts to provide, share or obtain information and to engage in dialogue with stakeholders regarding the management of risk“

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CONTEXTUAL OBSERVATION

- ✓ ***Theoretical*** *context:*
  knowledge applied in risk management theory and practice, standardization, good RM practice, etc.
- ✓ ***Educational*** *context:*
  knowledge and experience dissemination, education, training,..
- ✓ ***Practical*** *context:*
  in management models design, safety techniques modernization, improvements in RM, etc.
- ✓ ***Managerial*** *context:*
  communication within management structures and decisiona making
- ✓ ***Administrative*** *context:*
  in process of experience and practice exchange in laws implementation
- ✓ ***Investigative*** *and* ***forensic*** *context:*
  in identifying causes of unwanted events, mechanisms of occurrence, failures that led to unwanted events, etc.

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COMMUNICATION THEORIES [3]:

- ✓ ***„Menthal Noise Theory“****:*
  when people are upset, angry, fearful, outraged, under high stress, involved in conflict, or feel high concern, they often have difficulty processing information.
- ✓ ***„Trust Determination Theory“****:*
  when people are upset, angry, fearful, outraged, under high stress, involved in conflict, or feel high concern, they often become distrustful.
- ✓ ***„Negative Dominance Theory“****:*
  when people are upset, angry, fearful, outraged, under high stress, involved in conflict, or feel high concern, they often give greater weight to negative information than to positive information.
- ✓ ***„Risk Perception Theory“****:*
  Perception equals reality. What matters the most in determining risk perceptions and public outrage are factors such as trust, benefits, familiarity, voluntariness, control, dread, uncertainty, memorability, fairness, and accountability.

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Communication domain in RM observation

- ✓ *Time dimension*
- ✓ *Space dimension*
- ✓ *Organizational dimension*
- ✓ *Sectoral dimension*
- ✓ *Social dimension*

Communication is complicated. You're always saying more than you think. (teacherhead.com)

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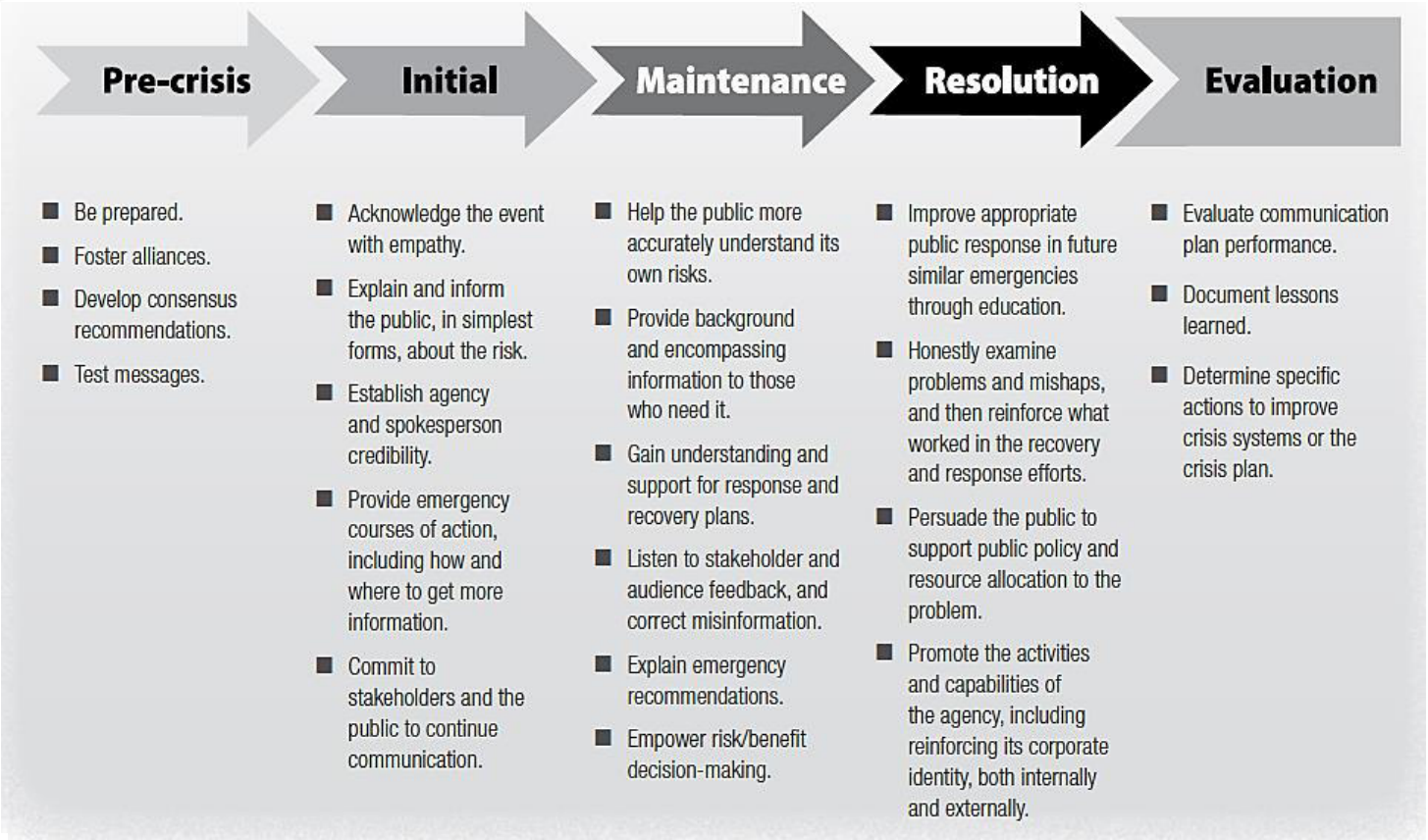
Crisis and Emergency Risk Communication (CERC) Lifecycle [18]



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Risk communication in risk management process, source: [18]

RISK MANAGEMENT STEP	RISK COMMUNICATION TASK
Initiation	• Identify stakeholders • Consult with stakeholders in defining scope of issue
Preliminary Analysis	• Develop stakeholder analysis for ongoing verification and refinement
Risk Estimation	• Discussion of source, exposure issues • Communication of results with stakeholders • Assess changes in knowledge/perception in light of new information
Risk Evaluation	• Elicit stakeholder perceptions of the risks and benefits, and the reasons for these, if possible • Assess stakeholder acceptability of the risk
Risk Control	• Consult with stakeholders to gain input into identifying and evaluating control options • Inform stakeholders of chosen risk control and financing strategies; • Inform stakeholders of benefits, costs, and any new risks associated with proposed control options; • Evaluate acceptance of control options and residual risks; • Determine if risk trade-offs might be possible
Implementation (Action)	• Communication of risk control decision and implementation
Monitoring	• Ensure implementation of communication strategies • Monitor changes in needs, issues, concerns of existing or new stakeholders

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Initial („pre-crisis“) communication [18]

- ✓ *Monitor and recognize emerging risks.*
- ✓ *Educate general public about risks.*
- ✓ *Prepare the public for possibility of an adverse event.*
- ✓ *Increase self-efficacy by suggesting actions that reduce likelihood of harm.*
- ✓ *Provide warning messages regarding an imminent threat.*
- ✓ *Collaborate and cooperate by developing alliances with agencies, organizations, and groups.*
- ✓ *Develop consensus recommendations by experts and first responders.*
- ✓ *Create messages and test them for use in later stages.*
- ✓ *Build and test communication systems*

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Communication during crisis [18]

- ✓ *Ensure that the public is updated, understands ongoing risks, and knows how to mitigate these risks.*
- ✓ *Provide background and supportive information to those who need it.*
- ✓ *Encourage broad-based support and cooperation with response and recovery efforts.*
- ✓ *Gather feedback from the affected public - listen, learn, and assess.*
- ✓ *Correct misunderstandings, rumors, or unclear facts.*
- ✓ *Continue to help people believe they can take steps to protect themselves, their families, and their community. Continue to explain those steps.*
- ✓ *Support informed decision-making by the public based on their understanding of risks and benefits.*

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Communication during resolution phase [18]

- ✓ *Explain ongoing cleanup, remediation, recovery, and rebuilding efforts to your audience.*
- ✓ *Motivate them to take action if needed.*
- ✓ *Facilitate broad-based, honest, and open discussion about causes, blame, responsibility, resolutions, and adequacy of the response.*
- ✓ *Improve individual understanding of new risks.*
- ✓ *Promote behaviors that avoid risks.*
- ✓ *Promote personal preparedness.*
- ✓ *Promote the activities and capabilities of agencies and organizations by reinforcing positive identities and images.*
- ✓ *Persuade the public to support public policy and resource allocation to the problem*

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Post-crisis communication [18]:

- ✓ *Discuss, document, and share lessons learned.*
- ✓ *Determine specific actions to improve crisis communication and crisis response capability.*
- ✓ *Evaluate the performance of the communication plan.*
- ✓ *Implement links to pre-crisis activities.*

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Effective Communication Recommendations [18]:

Phase	Basic principles
Pre-crisis	- Provide an open and honest flow of information to the public. - Emphasize that there is a process in place.
Initial	- Don't over-reassure. - Acknowledge uncertainty. - Emphasize that a process is in place to learn more. - Be consistent in providing messages.
Maintenance	- Acknowledge fears. - Express wishes. - Give people things to do. - Acknowledge shared misery. - Give anticipatory guidance (foreshadow). - Address the "what if" questions, when appropriate. - Be a role model and ask more of people.
Resolution	- Acknowledge failures.

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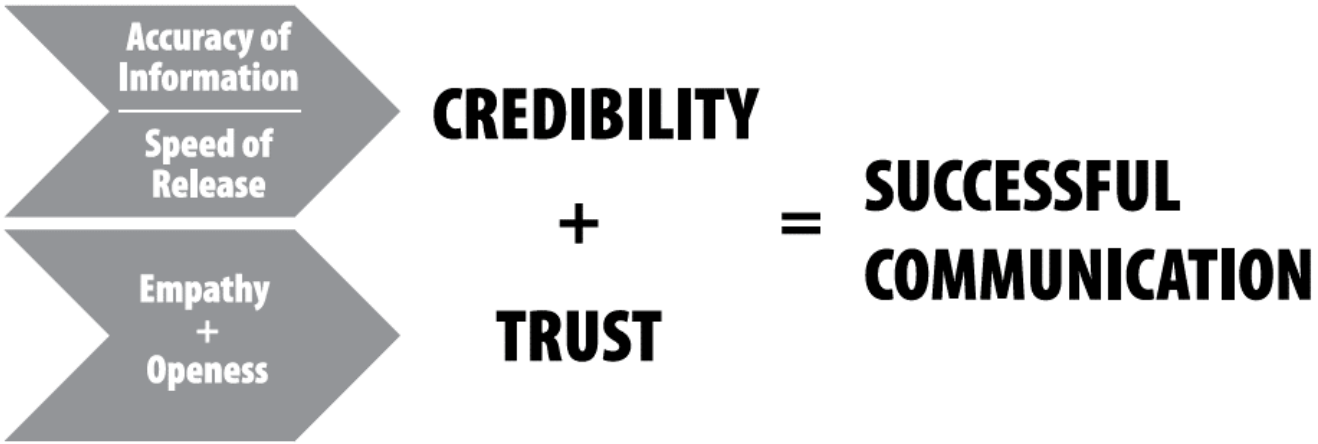
Elements of Successful Communication [18]



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Purpose of risk communication

- ✓ *Normative or legislative - management bodies consistently apply regulations as well as other stakeholders.*
- ✓ *Informative - disseminating information on hazards and maintaining readiness for crisis response.*
- ✓ *Advocacy - impact on process participants, public opinion on risk.*
- ✓ *Educational - continuous education of vulnerable groups and participants.*
- ✓ *Propaganda - affirmative influence on individual opinions and attitudes, awareness, active participation in reducing likelihood or consequences ...*
- ✓ *Behavioral - changing forms of risk behavior - avoiding dangerous actions.*
- ✓ *Innovative - scientific and research interest in studying and improving crisis management systems.*

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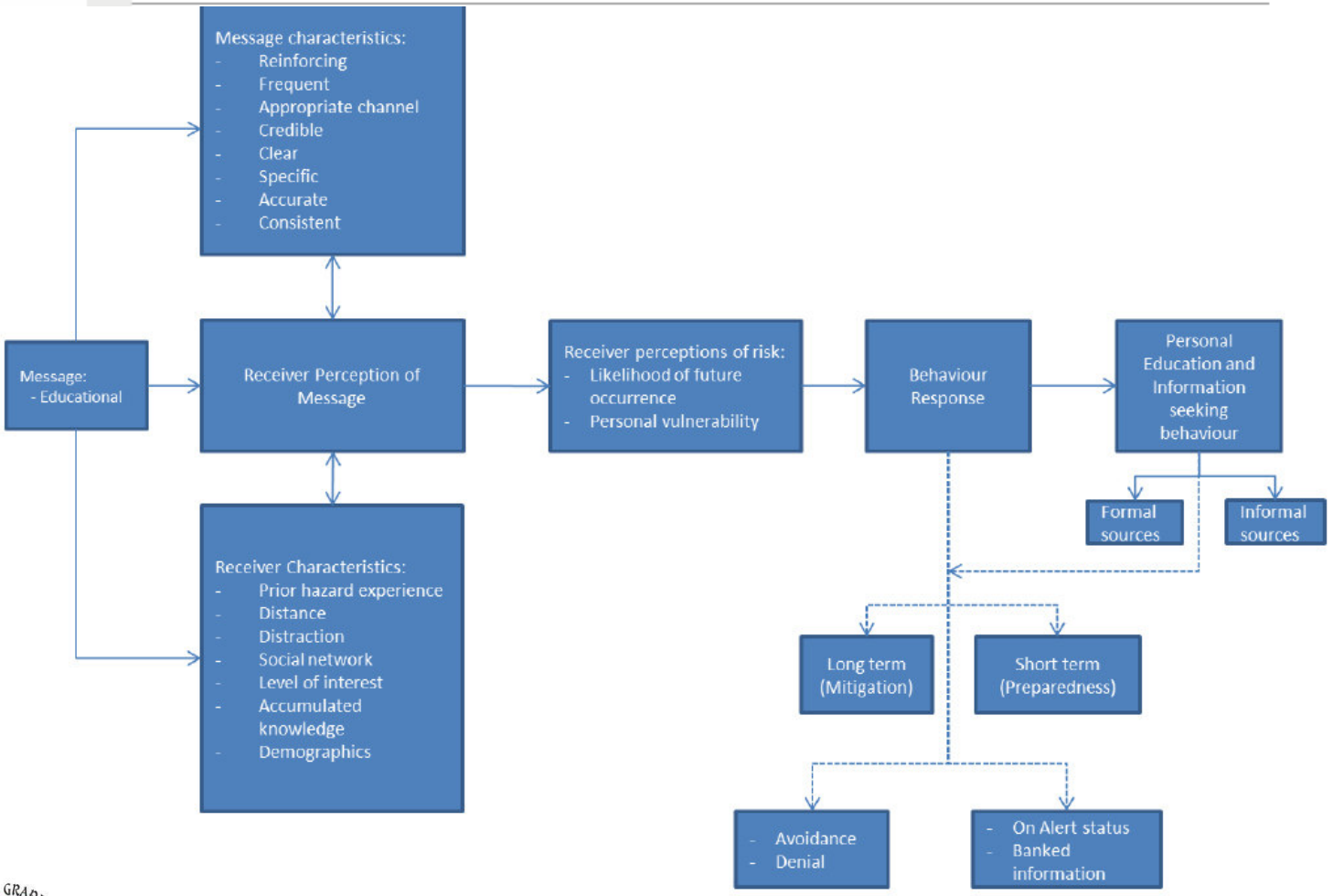
General Model of Hazards Risk Communication [2]



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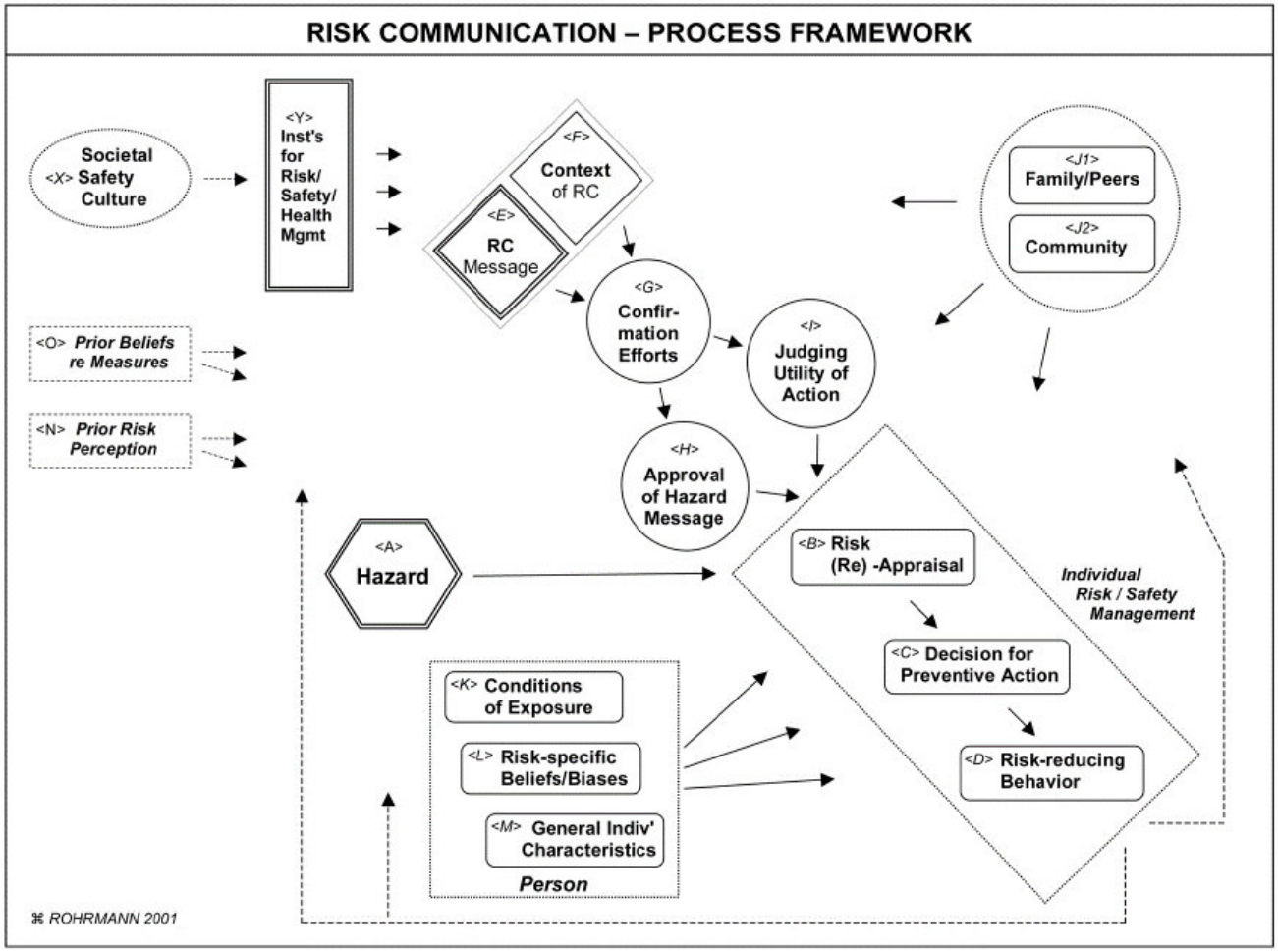
Components of risk communication and the related socio-psychological processes [16]



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RISK PERCEPTION?

- ✓ *resultant factor: psychological, sociological, empirical, cultural, educational, daily-political, etc*
- ✓ *all that can lead to a change of opinion, attitude or emotional response to challenge of exposure to certain risks*
- ✓ *subject of both - social debate and scientific research for decades*
- ✓ *risk rejection and risk appetite*

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RISK PERCEPTION RESEARCH

- ✓ *the sphere of researches emerged in psychology, included sociology perspectives, as well as concepts of philosophy*

- ✓ *to determine motivating factors of risk reduction behavior:*
  combined expectancy theory, the theory of reasoned action, planned behaviour theory, protection motivation theory, person-relative-to-event (PrE) theory, protective action decision model

- ✓ *issues are the cognitive structure of risk ratings, subjective concepts underlying risk judgments, the determinants of perceived risk magnitude and risk acceptance, links to actual behaviour, and differences between societal groups or countries and cultures*

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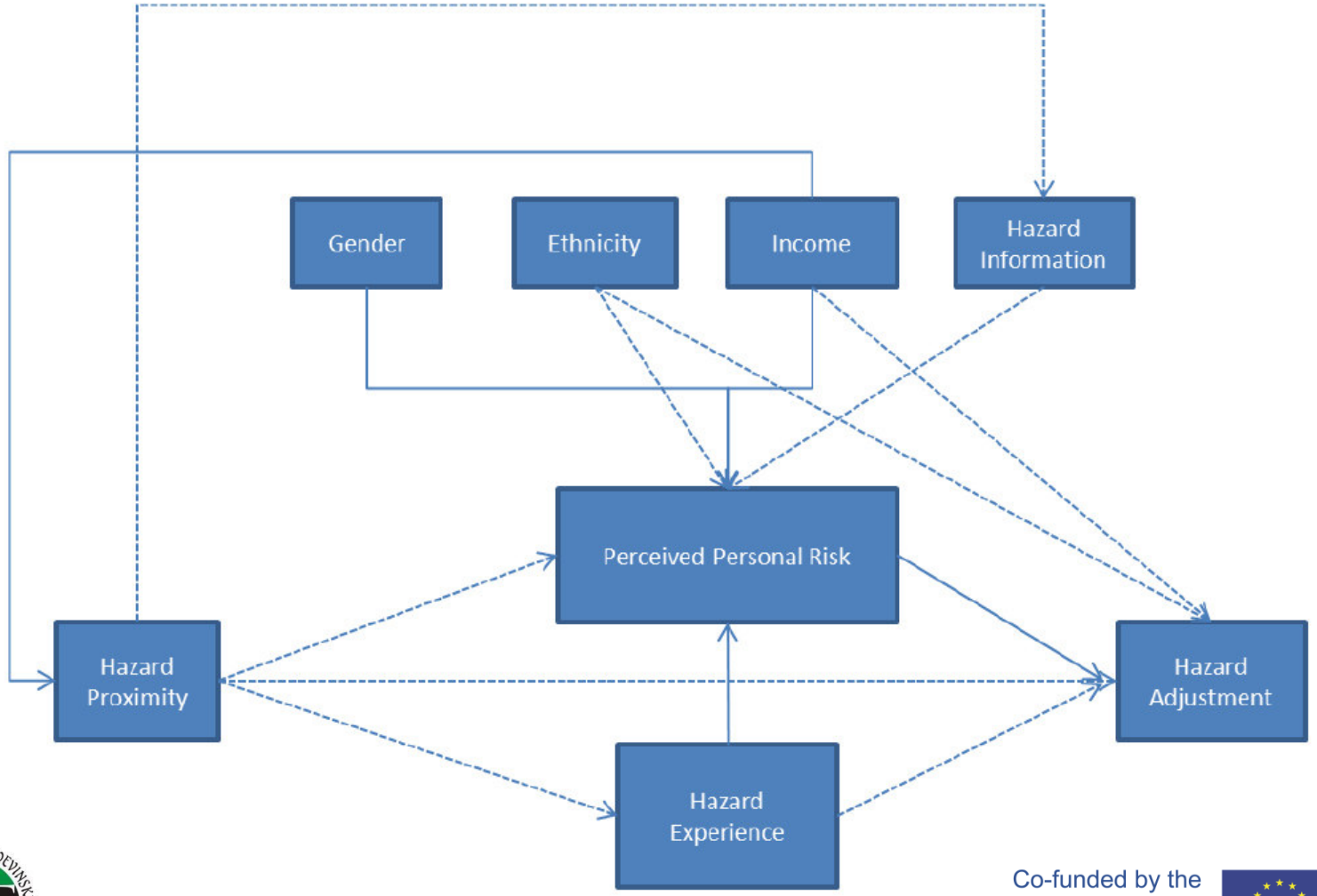
Lindell and Hwang's model to explain response to natural hazards [8]



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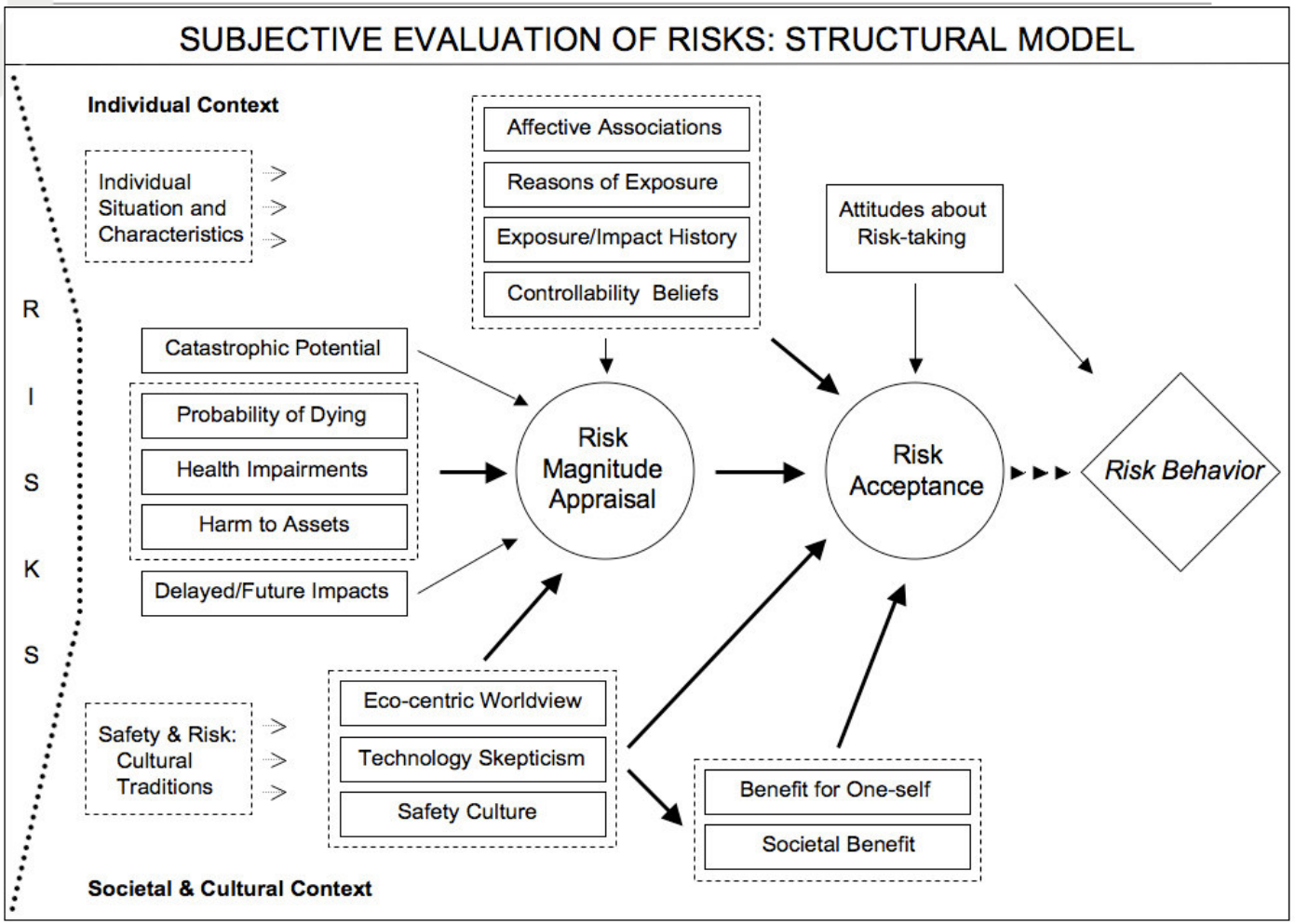
Conceptual risk perception model [20]



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Findings about socio-psychological risk perception processes are significant for:

- ✓ *analyzing discrepancies between statistical risk data and subjective judgments,*
- ✓ *understanding the influence of professional and societal orientations,*
- ✓ *separating differences between countries and those amongst social groups,*
- ✓ *expounding why various people underrate or ignore existing hazards,*
- ✓ *clarifying the roots of controversies about risky technologies,*
- ✓ *identifying needs for risk communication and disaster preparedness programs,*
- ✓ *designing risk information in line with people's thinking about hazards,*
- ✓ *recognizing reasons for shortcomings of safety campaigns,*
- ✓ *considering cultural differences in conceptualizing and conducting risk communication.*

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RISK PERCEPTION

- ✓ *interpretation of the world, based on experience and/or beliefs*
- ✓ *embedded in norms, values systems and cultural characteristics of the society, and distinguished by social groups and states*

- ✓ *„risk communication“ and „risk perception“ - integral part of risk management*

„Facts alone literally have no meaning until our emotions and instincts and experiences and life circumstances give rise to how we feel about those facts“. (Ropeik, D. 2014)

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CASE STUDY – FLOODS 2014 B&H, MODRAC LAKE DAM

- ✓ *Bosnia and Herzegovina: very high risk of flooding*
- ✓ *„floods represent the greatest danger to the community and its population“*
- ✓ *May 2014 – Federation of B&H suffered severe rainstorms*
- ✓ *14 to 16 May 2014, rainfall is recorded in quantities of 200-250 l/m²*
- ✓ *Spreca River basin wider area, the amount of 247.8 l/m² in 3 days, 25% of total average annual rainfall*
- ✓ *catastrophic discharge - as once in 500 years, Sava River in FB&H with level of appearance once in 1000 years*

- ✓ *Natural disaster, historical perspective, the social context in which it occurred analyzed in case study = Case study*

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Modrac Hydroaccumulation

- ✓ *formed in 1964 by the construction of a dam on Spreca River*
- ✓ *accumulation for local population needs in water, industry, flood protection downstream of dam, provision of the hydro-biological minimum for Spreca river, tourism development, production of electricity on a small hydroelectric power plant using surplus water*

- ✓ *dam was constructed at a height 203.00 m asl slowdown and the crown spillway at a height 200.00 m asl*

Lake Modrac Hydroaccumulation

accumulation capacity is reduced by approximately 25%

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All registered major flood waves are given in table:

Flood wave dates	Maximum level H (m asl)	Inflow Q_{dot} (m^3s^{-1})	Discahrge Q_{ist} (m^3s^{-1})	Retention capacity of accumulation (%)	Percipitation (mm)
14.4. – 24.4.1985.	201,09	406,50	201,10	50,53	81,16
15. – 25.7.1986.	200,74	272,10	154,90	43,07	117,57
3.5. – 13.5.1987.	201,60	730,00	331,45	54,60	112,30
17.6. – 27.6.2001.	202,12	619,10	466,36	24,56	60,20
29.5. – 8.6.2010	201,18	411,11	252,54	38,57	92,60
14. – 23.5.2014.	203,42	1602,00	1137,00	29,00	213,90

Characteristics of Registered Flood Waves (Matic, 2001.; Suljic, 2010.)

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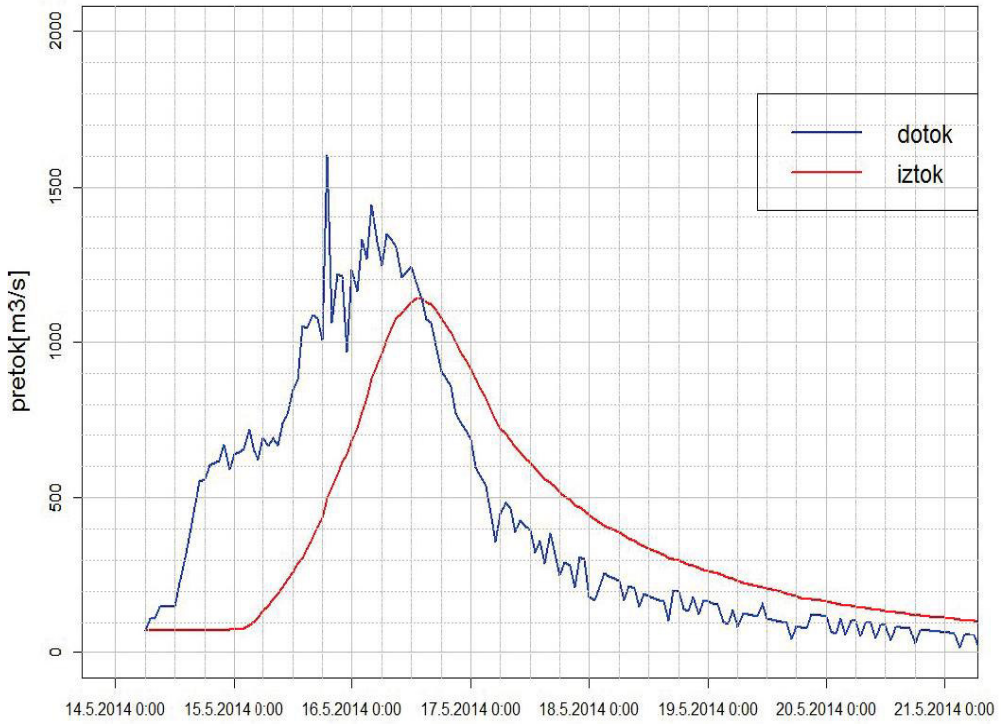
May 16, 2014 the highest ever recorded level of 203.42 m asl, with a water level of 342 cm over the spillway (the spillway is at 200 m asl)



Inflow and discharge diagram of Modrac hydroaccumulation (Data source: Spreca d.d. Tuzla)

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The dam at Modrac lake during maximum water overflow

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The dam at Modrac lake during maximum water overflow

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The lake Modrac dam in „normal“...

.... and emergency conditions

Risk perception, media and authorities

- ✓ *In Spring, 2000 RTV Lukavac – radio drama „Catastrophe“*

- ✓ *May 2013, Municipal Council of Lukavac adopted Protection and rescue Program of People and Material Goods in case of Natural or other Accidents (for period 2013-2017):*

„... it is evident .. a great danger for people and material goods downstream of the dam, in case of its collapse ...“.

„…The largest damage would have been caused by flood waves whose height varies depending on the river valley profile and would be for the worst variant 11.5 m at 1 km downstream of dam to 8.75 m on Berkovica profile and 14.55 m in front of the entrance to the municipality of Gracanica, moving at a speed of 40 m/s right below the dam to 4.4 m/s at confluence of Spreca and Bosna. The flow from dam to the Sprece and Bosna confluence would be passed in 273 minutes...“

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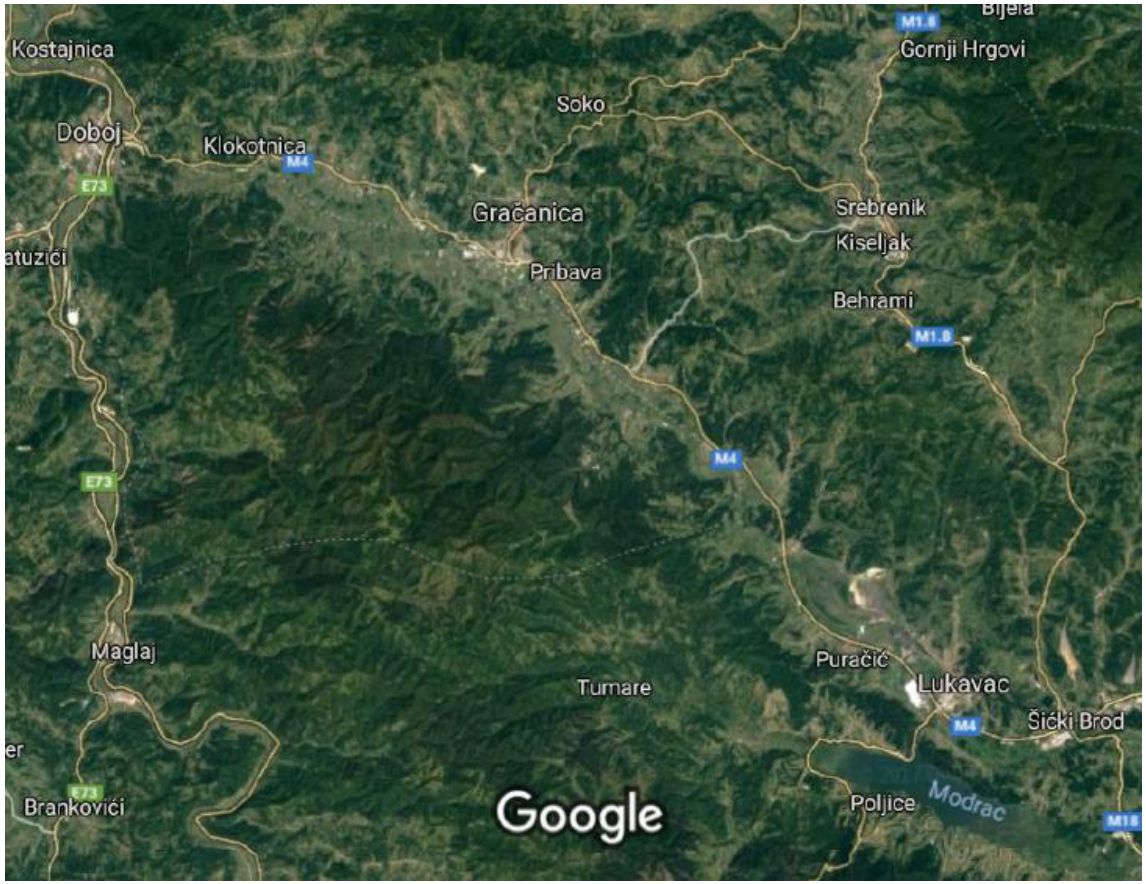
Tuzla Canton downstream from Modrac lake (Spreca river valley)



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More media and authorities

✓ *Cantonal Television „RTVTK“ has passed statements:*
„..The lake Modrac dam is old it is true. It is true that the cracks repairs were done and this will be continued, ***but I do not think*** *that collapse could happen and bigger problems with the dam..“- Cantonal Civil Protection Administration Director (Tuzla Canton)*

✓ *headlines :*
“The dam at Modrac under great pressure: Water discharge doubled, what will next morning bring?" (www.tuzlainfo.ba);
„The TK Assembly seeks investigation, 16 companies filed a lawsuit: The Dam on Modrac this time has endured, next time will not“ (www.tip.ba)

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More media and authorities

- ✓ *16 May 2014, the Cantonal Civil Protection Chief of Staff stated that the situation on Modrac Lake dam was severe, submission of half-hour safety reports was ordered, spillway was still high and the mayors of the most threatened municipalities said everything was ready even in the worst case scenario which is the dam collapse (Source: RTV TK)*

- ✓ *Meeting in Lukavac: Lukavac, Doboj Istok and Gracanica mayors and Civil Protection Chiefs of Staff*

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Tuzla Cantonal Assembly, May 29, 2014

- ✓ *„... it must not be allowed that 25,000 citizens live under a conditionally stable dam ...“*
- ✓ *Director of the Cantonal CP Administration stated: it was then estimated that Doboj East and Gracanica had enough time to evacuate endangered population and Lukavac and surrounding area „were silently evacuated by sending internal messages to citizens to go to safer places until they see what will happen with dam ... **Fortunately** incident did't happen and everything ended well“.*
- ✓ *Who were then the recipients of „internal messages“?? Selected population?*
- ✓ *frightening images of people leaving their homes in panic*

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Chronology of events in BiH May 2014

- ✓ *May 13, 2014, B&H Ministry of Security Operational and Communications Center of B&H Ministry of Security forwarded a notice of early flood hazard warning to the Entities.*
- ✓ *May 14, many towns were flooded..*
- ✓ *15 May, the Government of the FB&H declared the state of the natural disaster, and the RS Government declared on 17 May an emergency situation.*
- ✓ *B&H Presidency has decided to deploy available human resources and material-technical means of the Armed Forces of B&H - about 1500 members of the Armed Forces have been engaged.*
- ✓ *CP staffs are involved in management and coordination of rescue operations; the lack of appropriate equipment and financial means, there is no high-quality coordination system, and there is no established and properly trained specialised units.*
- ✓ *Citizens have been self-organized and volunteered to provide assistance to people in vulnerable areas.*
- ✓ *B&H Council of Ministers did not declare a state of natural disaster (for the whole country), with the justification that there was no request from the institutions.*
- ✓ *At least 23 people died and thousands were temporarily or permanently evacuated from their homes.*

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Conclusions from participants

- ✓ *Cantonal Civil Protection Directorate authorities:*

- *confirmed - planning documents have a lot of „improvisation and ambiguity“ which doesn't allow an adequate response to natural or other disaster*
- *no municipal civil protection center carried out mobilization and provided 24-hour work, and many weaknesses were noted in their work*
- *no civil protection units or appointed trustees were formed and placed in function*
- *identified the necessity to „..Federal Civil Protection Administration prepare and to adopt the appropriate regulation regulating public relations and crisis communication procedures during natural and other disasters..“*
- *urged to speed up procurement of necessary equipment and activation a unique system for population informing and alerting*

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Conclusions from participants

✓ *Council of Ministers of B&H:*

- *limited resources and capacities of Civil Protection and the Armed Forces of B&H, it was estimated that B&H was not able to fully respond to all requests and on the proposal of the B&H Ministry of Security, the B&H Council of Ministers issued a Decision on Request for International Assistance on 15 May 2014*

✓ *Rapid Response Team (RRT) of Civil Emergencies Planning (CEP):*

- *there is a need for disaster management training (especially regarding coordination, cooperation and information management)*
- *inadequate information flow led to communication problems, which had a significant impact on coordination and cooperation, early warning, flood management and other necessary tactical and operational response activities*

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Lessons Learned

September 2017, a civilian NATO exercise:

- ✓ *exercise related to flood scenarios was held on the shores of Lake Modrac organized by the Ministry of Security of B&H and NATO's Euro-Atlantic Disaster Response Coordination Centre (EADRCC), brought together about 1300 participants from 34 countries*

- ✓ *aim of this exercise was, among other, to verify the readiness for action and cooperation in the event of floods, which ultimately helps to ensure life-saving through timely and efficient multinational coordination*

NATO civil exercise at the locality of Lake Modrac

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Civil Protection - Lukavac:

- ✓ *„Public invitation for citizens entry into the Civil Protection Register of Lukavac Municipality“*
- ✓ *first meeting with registered candidates for the Civil Protection Unit was held (the only one in Canton, and probably the only one in Bosnia and Herzegovina, which started this process)*
- ✓ *In the forthcoming period - exercises and education*

JP „Spreca“:

- ✓ *has not yet established a system for early warning and prevention of the possible consequences of floods and other natural disasters on Modrac Lake and in Spreca River valley*

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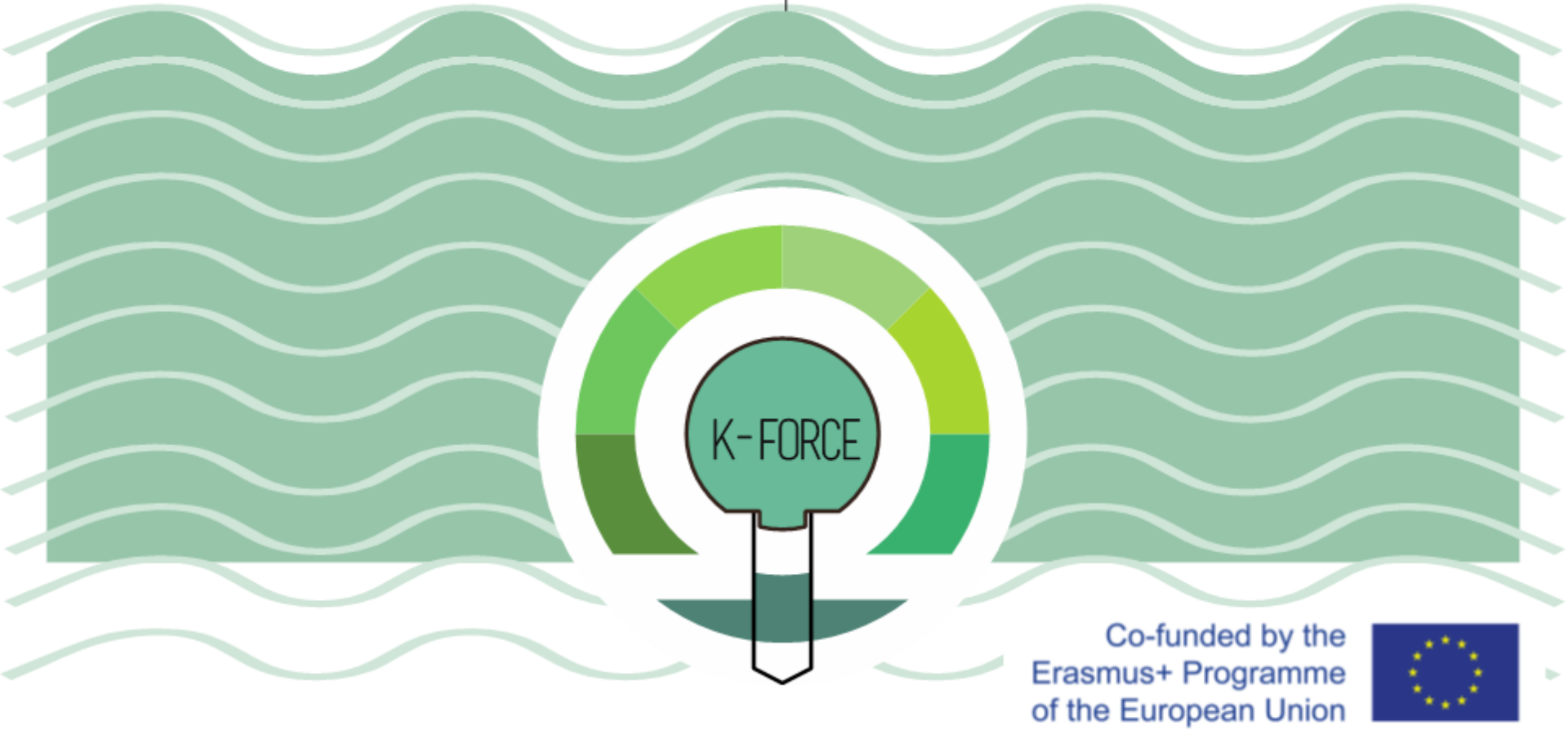

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