Specific aspects related to floods and potential cascading effects, focusing on cross-border dimension

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First OIE regional workshop on the role of Veterinary Services on animal welfare in natural disasters for Balkan countries 26-28 November 2018, Teramo, Italy

Photo source: https://www.jutarnji.hr/vijesti/hrvatska/najveca-prirodna-katastrofa-u-modernoj-hrvatskoj-evo-kako-izgleda-zivot-sest-godine-nakon-velike-poplave/7350612/

Floods

- Increased risk of flooding due to climate change
- Caused by: heavy rainfall (storm), snow melt, tide flood, tsunami following an earthquake or heavy coastal rock falls, human intervention in natural river courses
- Could affect small (local) regions or bigger regions
- Seasonal or unexpected

Floods and cascading effects [1]

- „A cascade is understood as a chain of causality that emerges when hazards, risk and accumulated vulnerabilities connect across multiple scales to produce a disaster” /R. Zehra Zaidi, Beyond the Sendai indicators: Application of a cascading risk lens for the improvement of loss data indicators for slow-onset hazards and small-scale disasters, International Journal of Disaster Risk Reduction, Volume 30, Part B, September 2018, Pages 306-314
- Domino effect – several events followed by each other
- Series of events – increasing damage and consequences
- The worst-case scenarios

Floods and cascading effects [2]

- Different factors has to be considered:
  - Impact:
    - Primary (trigger)
    - Secondary
  - Vulnerabilities (critical infrastructure)
  - Resilience
  - Duration (exposure)
  - Timetable

Floods and cascading effects [3]

- Critical infrastructure (vulnerabilities)
  - Transportation
  - Energy – electricity, fuel, gas and oil
  - Water and sanitation
  - Health – human and public health
  - Food – agricultural production
  - Information technology, telecommunications

Transportation

- Direct impact – broken bridges, roads

- Indirect impact – delayed supply of
  - Fuel
  - Water
  - Food

  - Delayed recovery phase

Energy

- Electricity generators – direct impact
- Fuel, gas, oil – due to transport disruption
- Additional cascade effects on:
  - Communication paths
  - Heating or cooling facilities
  - Water and food supply

Water and sanitation

- Access to drinking water
- Water pollution on a flooded area
- Private and public wells
- Drainage and waste water management

Human and public health

- Water and food supply
- Shelters
- Disease surveillance
- Hospital facilities
- Social aspects

Food and feed

- Food processing facilities
- Feed processing facilities
- Storage facilities
- Fertilizer and pesticide industry
- Farming lands (pollution)
- Wholesales, shops

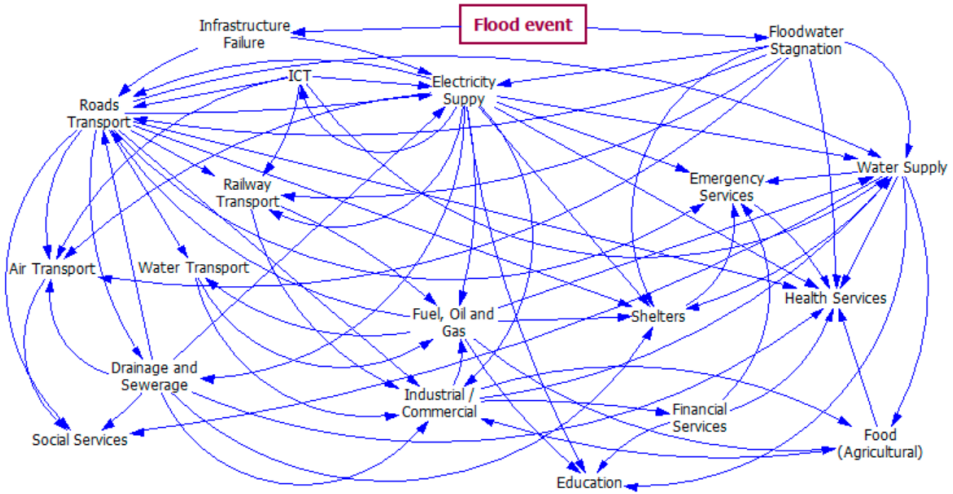
Communication paths

- Telecommunication
- Information technology
  - Communication devices

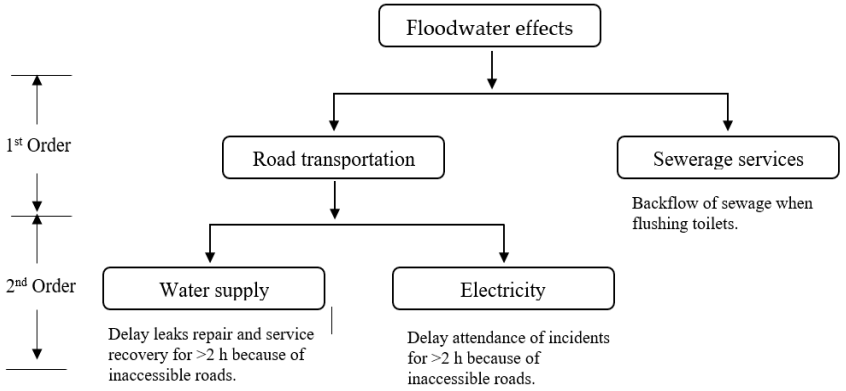
Visualisation of cascade effects – examples

Methodological Framework for Analysing Cascading Effects from Flood Events:
The Case of Sukhumvit Area, Bangkok, Thailand, Geofrey Hilly *et al*

Causal Loop Diagram



Tree diagram



Croatian example - flood

- Trigger – heavy rainfall

  Major fall of the embankment in two places on the river Sava on May 17, 2014

Chronology

- The major impact on villages Rajevo Selo and Račinovci, than villages Gunja, Drenovci, Vrbanja, Soljana, Bošnjaci and Strošinci followed by Đurići and Posavski Podgajci
- First actions only focused on rescue of people and animals due to direct life threat
- No organised disaster management during first days –

  NO PLAN! NO PREDICTION OF THE WORST CASE SCENARIO!
- Only local and regional authorities were involved
- Self organising of residents, NGOs activists and other volunteers
- On May 20, the Government declared state of natural disaster for Vukovar-srijem county and established National Crisis Center
- All relevant authorities were involved: The Croatian Army Forces, the Croatian Police, the National Protection and Rescue Directorate, the Croatian Mountain Rescue Service, Firefighters, the Red Cross, the Health authorities and the Veterinary authorities and many others
- Duration of main activities – 30 days: two people drowned, thousands evacuated, more than 6000 evacuated animals, 7500 family houses and public buildings destroyed
- The total damage cost was estimated to more than 1,2 billions of kunas (162 mil €).

Critical infrastructure

- Roads – transportation
- Public and private buildings
- Water supply
- Energy supply
- Farms
- Food producing facilities
- Industry
- Availability of relevant services and resourses

Dealing with consequences

- Veterinary service – carcasses collection and disposal, biosecurity measures, taking care and health monitoring of rescued animals
- Human health service – drinking water monitoring
- Red cross – social issues, help, shelter, supply of food and hygiene needs
- Building (construction) service – evaluation of buildings after flood – identifying unstable buildings (houses)
- Environment protection service –waste disposal
- Demining service – evaluation of the mine suspect areas
- Electrical power service – restoration of electrical network
- Water management service – dealing with water withdrawal, forecast and situation on the field
- Transportation service – road reconstruction
- Cross-border activities – rescue teams and humanitarian convoys

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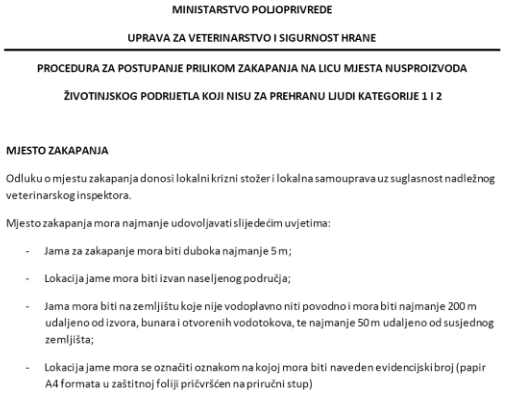
Cross-border activities

- Disinfection on the borders
- ABPs disposal
- Regional cooperation and exchange of information

Veterinary activities

- Previous experiences and organisational charts based on animal diseases contingency plan – fast response
- Several specific procedures has been developed
  - collecting data on rescued and dead animals
  - euthanasia of sick or injured animals
  - biosecurity measures
  - safe disposal of dead animals and other ABPs (burial, incineration)
  - risk assessment for slaughtering of rescued animals
    (missing food chain information)
  - recovery and returning of rescued animals to their owners



MINISTARSTVO POLJOPRIVREDE

UPRAVA ZA VETERINARSTVO I SIGURNOST HRANE

PROCEDURA ZA POSTUPANJE PRILIKOM ZAKAPANJA NA LICU MJESTA NUSPROIZVODA ŽIVOTINJSKOG PODRIJETLA KOJI NISU ZA PREHRANU LJUDI KATEGORIJE 1 I 2

MJESTO ZAKAPANJA

Odluku o mjestu zakapanja donosi lokalni krizni stožer i lokalna samouprava uz suglasnost nadležnog veterinarskog inspektora.

Mjesto zakapanja mora najmanje udovoljavati slijedećim uvjetima:

- Jama za zakapanje mora biti duboka najmanje 5 m;
- Lokacija jame mora biti izvan naseljenog područja;
- Jama mora biti na zemljištu koje nije vodoplavno niti povodno i mora biti najmanje 200 m udaljeno od izvora, bunara i otvorenih vodotokova, te najmanje 50 m udaljeno od susjednog zemljišta;
- Lokacija jame mora se označiti oznakom na kojoj mora biti naveden evidencijski broj (papir A4 formata u zaštitnoj foliji pričvršćen na priručni stup)

- Information flow chart – one central point for collecting and distributing information

Organisation of veterinary teams

- Veterinary crisis unit lead by veterinary inspector
- Local veterinary teams (four teams) – local authorised veterinary organisations
- Other services: the army, firefighters and the rescue forces involved in cleaning and collecting of dead animals on the field

Lessons learned
Critical points –veterinary point of view

- Information flow
- Proper records
- Resources, equipment, vehicles
- Involvement of other services
- Different approaches in terms of different risk aspects(human health versus animal health)

Lessons learned - general

- Chain of command
- Information flow
- Communication with media and public
- Different interests and priorities, but common goal
- Cooperation between different authorities
- Joint activities

Planning and preparedness

- Based on real experiences
- Including cascade effects
- Based on lessons learned
- Improvement of procedures and capacity building

Improvement of procedures and capacity building

- Proposal for one of the workshop outputs

A plan content

Thank you very much!