

Integrated flood management



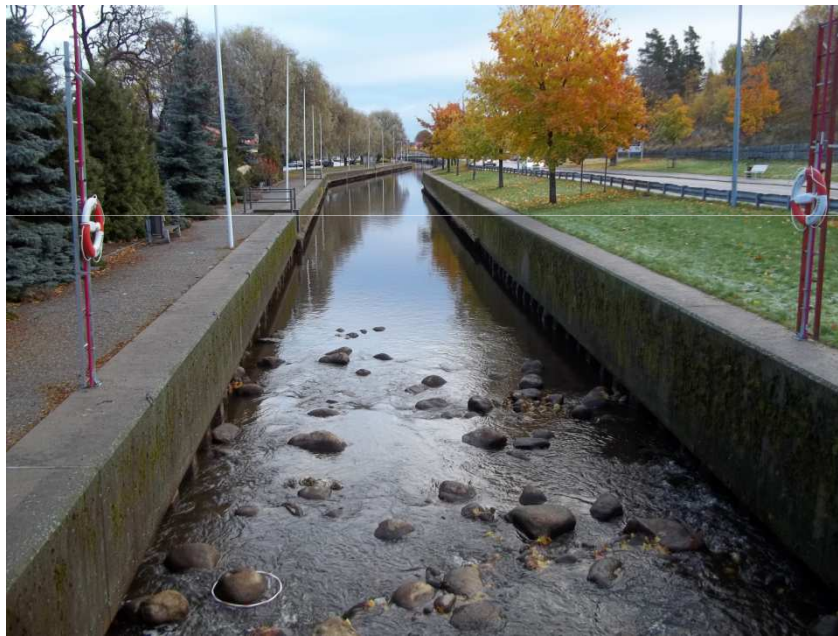
Johan Kling
Marine and Water administration
Dep. for Marine and Water management

Havs
och Vatten
myndigheten

Flood management – how should our rivers look like?

Havs
och Vatten
myndigheten

This?



Or this....



Ecosystem services?

Integrated flood management – the concept

- Accepted rationale since the Dublin Conference 1992 and Ministerial Declaration of the Hague on water Security in the 21st Century.
- *Integrated Flood Management, IFM is a process promoting an integrated – rather than fragmented – approach to flood management. It integrates land and water resources development in a river basin, within the context of integrated water resource management, and aims at maximizing the net benefits from flood plains and minimizing loss to life from flooding. (WMO, Global Water Partnership)*

Flood risk management

Conclusions of the Council of the European union, 2004

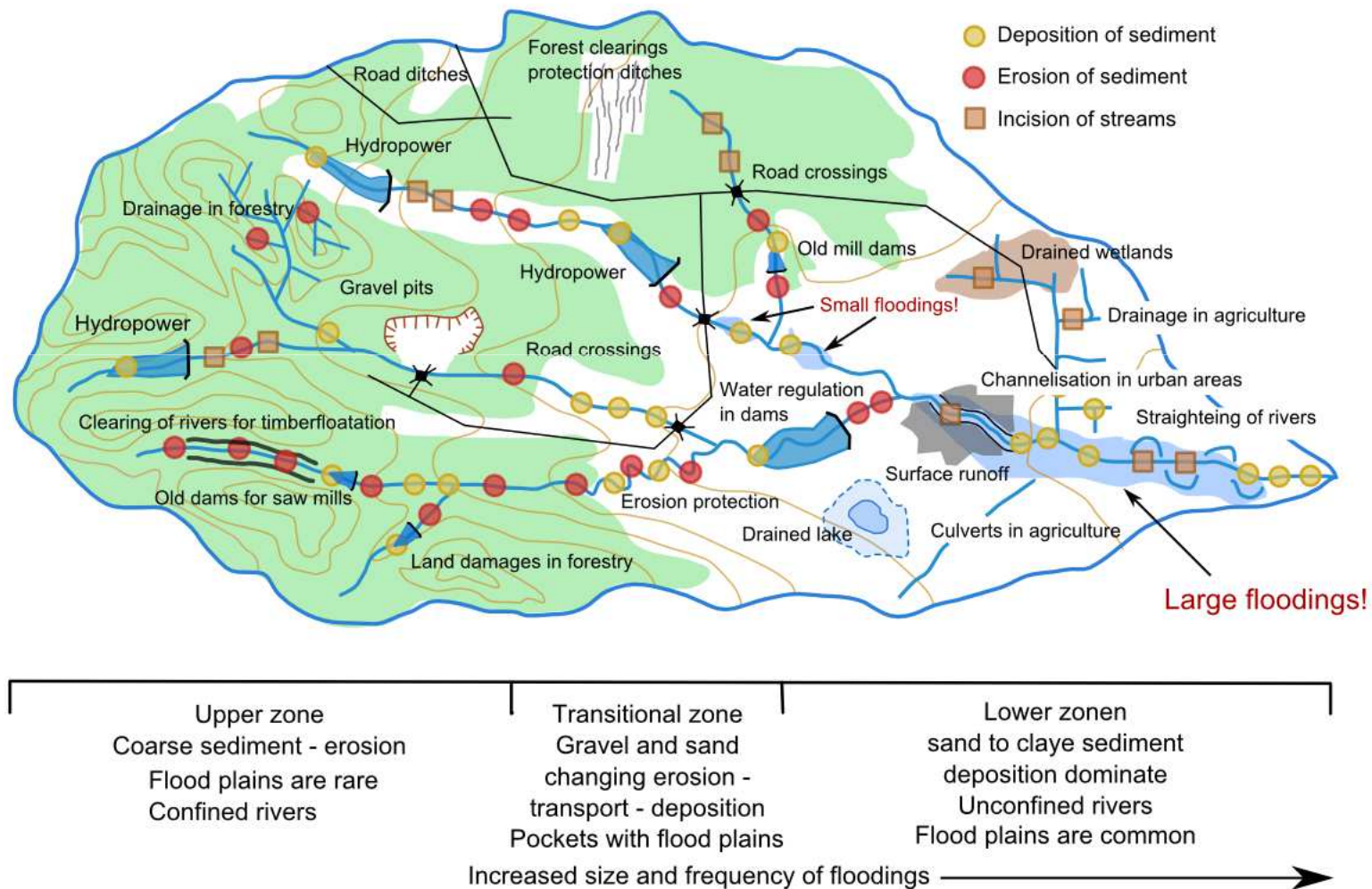
- Flood risk management is a part of integrated river basin management, should be guided by a holistic approach and should take account of related policy field as well as efforts already taken.
- Human activities contributes to the increase in the likelihood and adverse impact of flood events and that climate change will cause an increase of floods as well.
- Integrated approaches through spatial planning on the different levels (national, regional and local) will also provide in a better use of land, river basins and coastal areas

IFM – a new way of thinking?

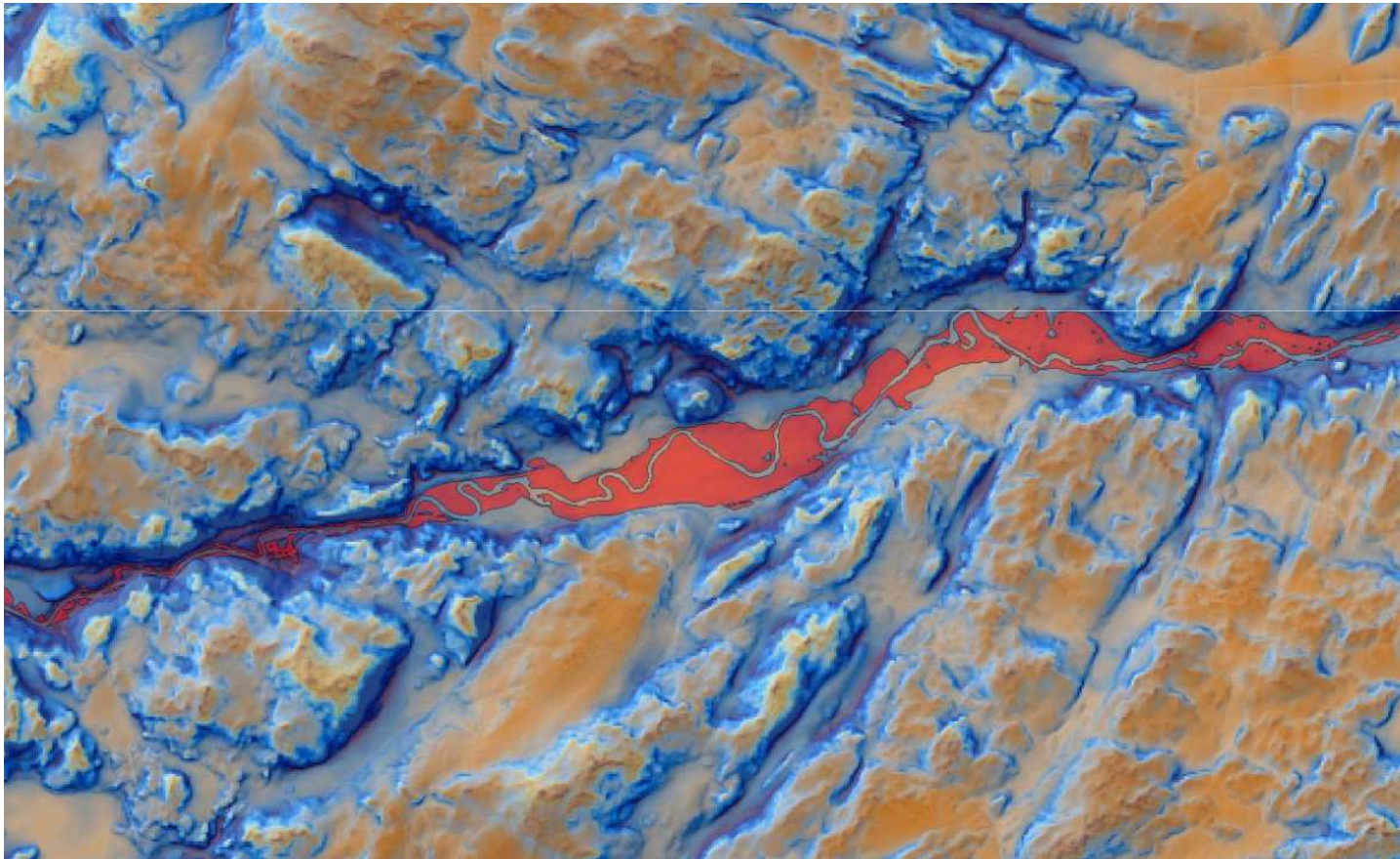
- Treating floods as problems in isolation almost necessarily results in a fragmented, localized approach. IFM calls for a paradigm shift from the traditional fragmented approach of flood management.
- IFM regard river catchments as a integrated system. Socio-economic activities, land-use patterns, hydromorphology, ecology etc. is recognized as part of the system.
- The entire hydrological cycle is considered, no differentiation of floods and droughts.

A typical catchment...

Havs
och Vatten
myndigheten

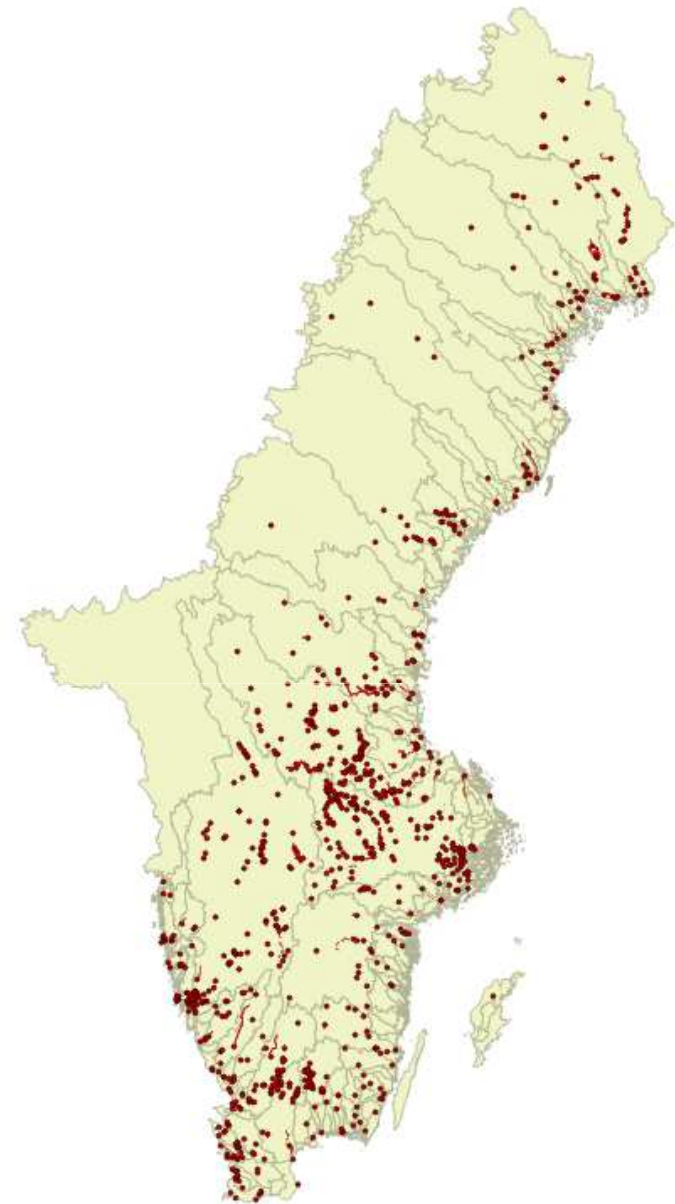


Flood plain = Areas prone to
be flooded



Do we need IFM in Sweden?

- Sweden has few floodings with significant adverse impact on human health but... many small floods with impact on economic activities.
- Permits for water regulation, constructions, etc., tend to have a local view point, lacking the catchment perspective.
- Sweden has large amount of water uses which is based on a legislation which is 100 years or older. Lack of understanding of accumulative effects and impact on other water uses and ecosystem services.
- Understanding of hydromorphological processes is not well spread in Sweden.
- Risk for floodings will probably increase in the future due to climate change.

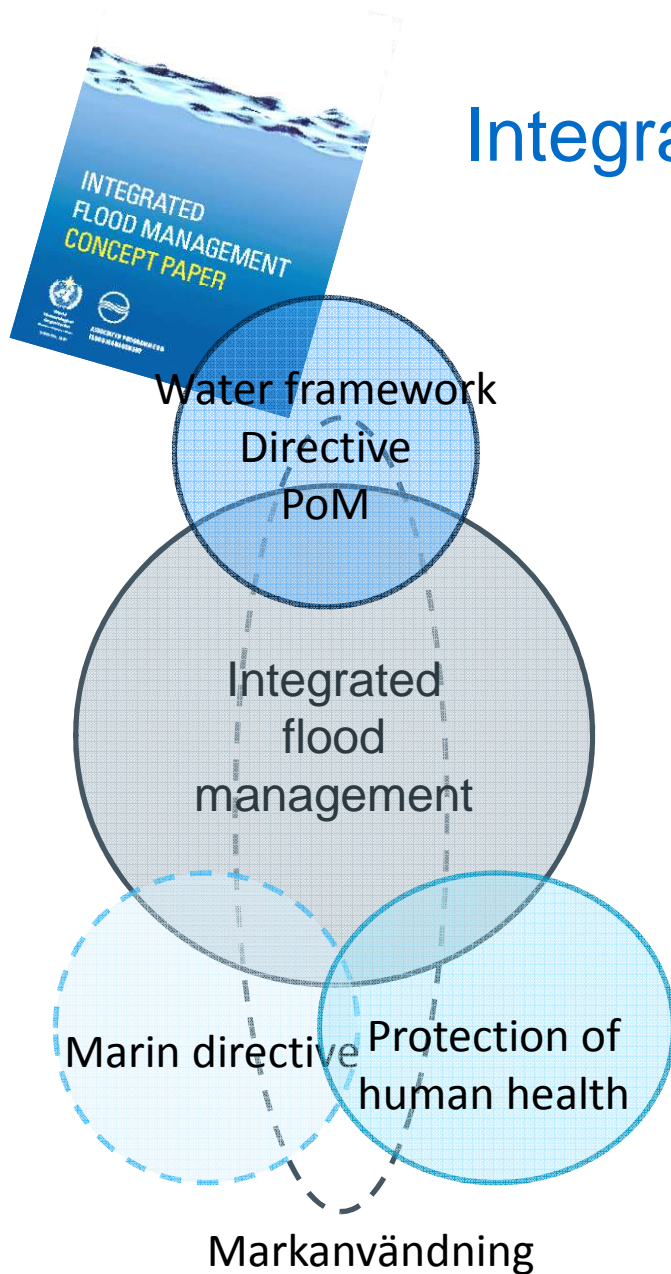


Floodings in SVAR archive

Floodplain management measures principals

- Land-use measures: *keeping people away from floods.*
- Structural measures – *keeping flood waters away from the people.*
- Flood preparedness measures – *getting people ready for floods.*
- Flood emergency measures – *helping affected people cope with floods.*

Integrated flood management och Havs- och Vattenmyndigheten



- Include all types of floodings
- Floodings have positive effects (e.g. sustaining ecosystem services).
- Measures related to reduce flood risk might have negative impact on drought.
- A strategy for floodings must include all flooding not just extreme events.
- Land use and water uses affecting hydrology must be included in the strategy.
- Integrates Water framework directive with Flood directive.
- Just be based on a catchment perspective and be based on solidarity principle.

IFM - Guiding principles

1. Every flood risk scenario is different: there is no flood management blueprint.
2. Designs for flood management must be able to cope with a changing and uncertain future.
- 3. Rapid urbanization requires the integration of flood risk management into regular urban planning and governance.**
4. An integrated strategy requires the use of both structural and non-structural measures and good metrics for “getting the balance right”.
5. Heavily engineered structural measures can transfer risk upstream and downstream.
6. It is impossible to entirely eliminate the risk from flooding.
7. Many flood management measures have multiple co-benefits over and above their flood management role.
8. It is important to consider the wider social and ecological consequences of flood management spending.
9. Clarity of responsibility for constructing and running flood risk programs is critical.
10. Implementing flood risk management measures requires multi-stakeholder cooperation.
11. Continuous communication to raise awareness and reinforce preparedness is necessary.
12. Plan to recover quickly after flooding and use the recovery to build capacity.

Flood risk management - today

Structural measures

Diffuse measures

- Water retention in catchment
- Erosion protection
- Measures to reduce flood pulse
- Increased infiltration
- Measures in urban areas

Local measures

- Dikes
- Dams and reservoirs
- Dredging and clearing of streams
- Increased drainage

Adaption measures

Land regulation

- Landscape zoning
- Land planning

Preperness

- Early warning system
- Beredskapsåtgärder
- Evacuation
- Relocation of people

Insurance

- State
- Private

Efter: Petry 2002

Flood risk management

Structural measures

Diffuse measures

- Water retention in catchment
- Erosion protection
- Measures to reduce flood pulse
- Increased infiltration
- Measures in urban areas

Local measures

- Dikes
- Dams and reservoirs
- Dredging and clearing of streams
- Increased drainage

Adaption measures

Land regulation

- Landscape zoning
- Land planning

Preperness

- Early warning system
- Contingency measures
- Evacuation
- Relocation of people

Insurance

- State
- Private

Efter: Petry 2002