



NL Agency
Ministry of Infrastructure and the Environment

Sediment management Dutch approach

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» *Focus on environment*



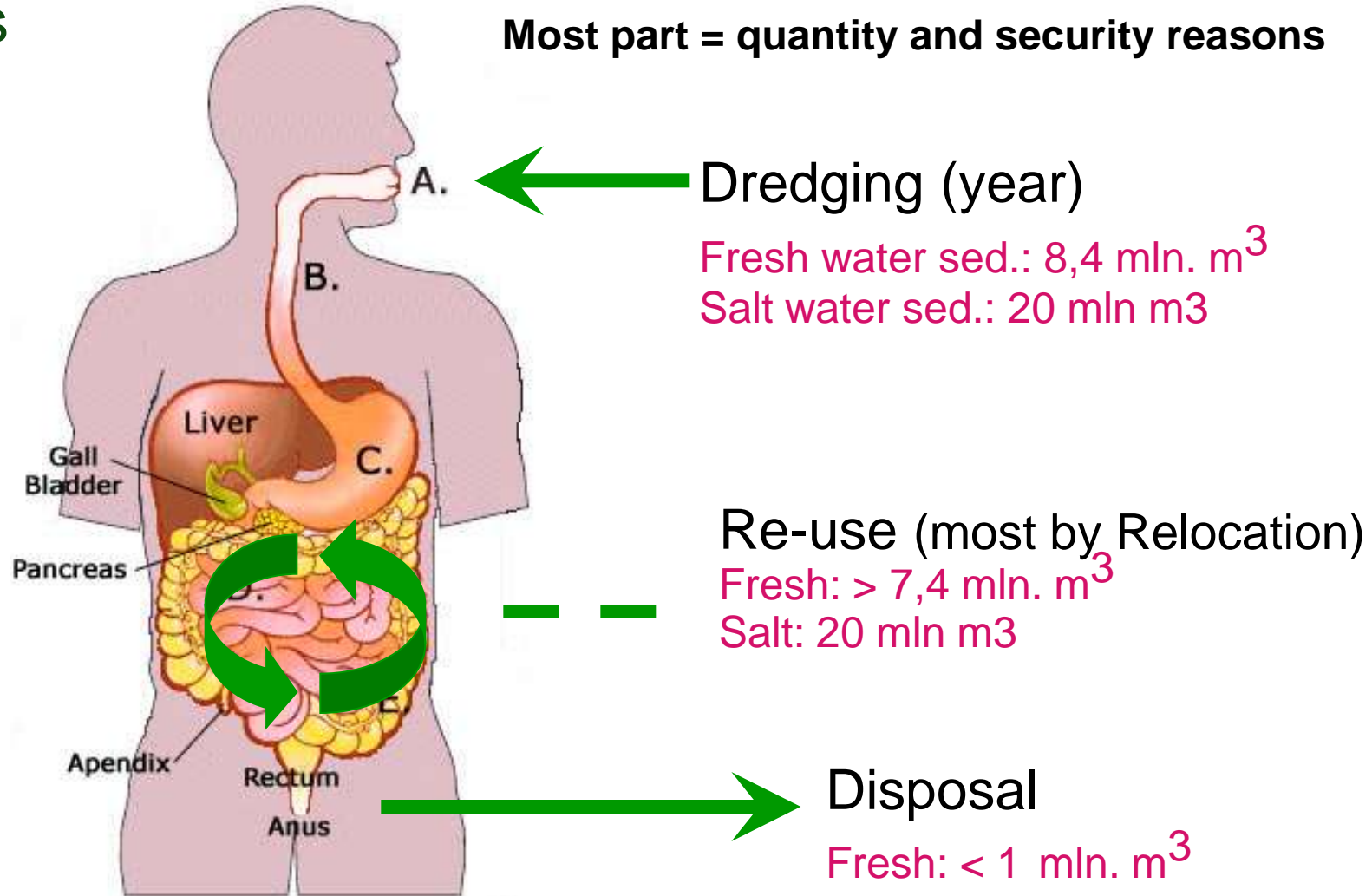
Goal: vital watersystem

- A watersystem with a good quality in terms of:
 - > Security (climate changes)
 - > Quantity (water & economic transport)
 - > Chemical and ecological Quality (EU Water Framework Directive, goals, functions of parts of the system)
- Quality of the watersystem is leading : Sediment is ‘only’ one part of the watersystem.
- Dredging for chemical of ecological quality reasons is only necessary if:
 - > insufficient waterquality, AND
 - > Investigation showed that no other measures are more effective to obtain a vital watersystem





Figures



Impression





Need for sediment asks for re-use

- Sediment is a basic **need** for water(eco)system and because of soil subsidence
- Goal watermanagers= re-use in the watersystem and on landsites directly beside waterways ('sedimentcycle')
- Beneficial re-use of lightly contaminated sediment
- Goal = balans:



Environmental protection

Need Sediment for
water/soilsystem, Costs
and social
developments



Re-use.... disadvantage of a bad history and brand.....

- Before the '80's: re-use, most by relocation, was common practise
- Since the '80's: aware of consequences of contamination
- A brand that sediment is waste.... Public acceptance is sometimes critical
- Public and politic interest in large constructive works such as deep lakes.
- Lack of trust in the government because of conflicting interests
- Sense of lack of enforcement and control on re-use
- Stubborn NIMBY-effect
-Beneficial and substainable re-use takes communication, communication and communication about risks...





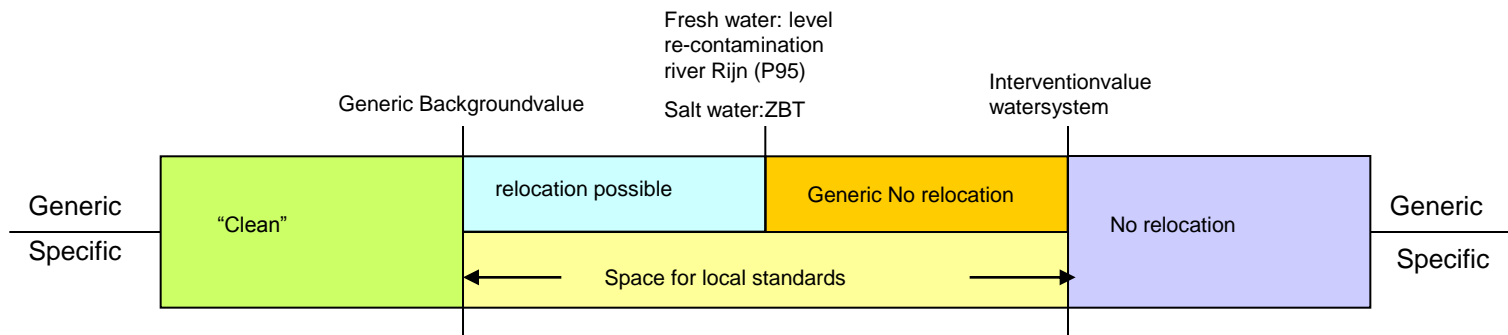
Assessment of sediment: change of approach

Reuse of sediment	Intervention / measures in watersystem
Assessment of sediment	Assessment of water
<u>Content</u> of contaminants	<u>Bioavailability</u> of contaminants <i>(in the past Content)</i>
Basis = sediment quality - Quality standards most by classification - Different for land and watersystem	Basis = waterquality <i>(in the past classification)</i>



Re-use: relocation

- In watersystem: No assessment on 'stand still'
 - > Possibility for decentralised standards in a local soilmanagement plan
 - > For example: if the waterquality (assessment for intervention) asks for a lower standard

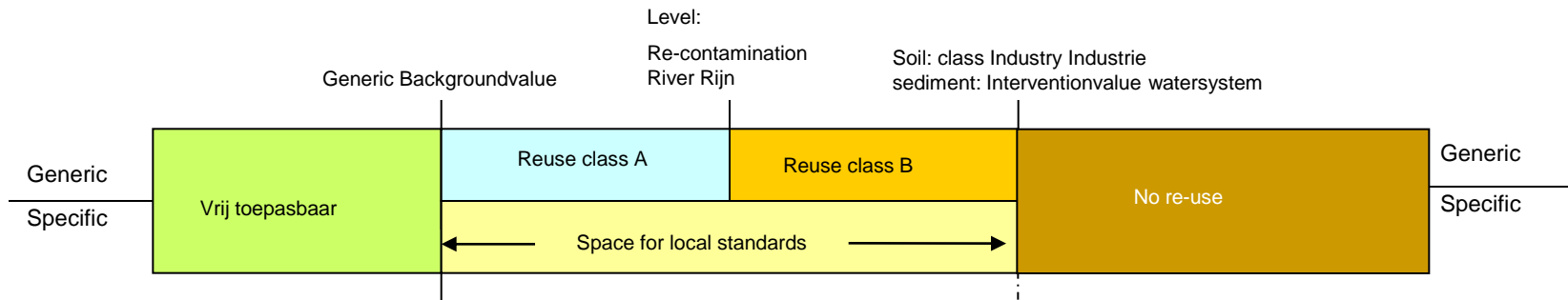


- On land: Ecological standard (msPAF)
 - > No possibility for decentralised standards



Re-use: in construction works (after dewater)

- Assessment on 'stand still' (same or better class)
- Also for construction works the possibility for assessment on lixiviation
- Possibility for decentralised standards in a local soilmanagement plan
 - > For example: if the waterquality (assessment for intervention) asks for a lower standard

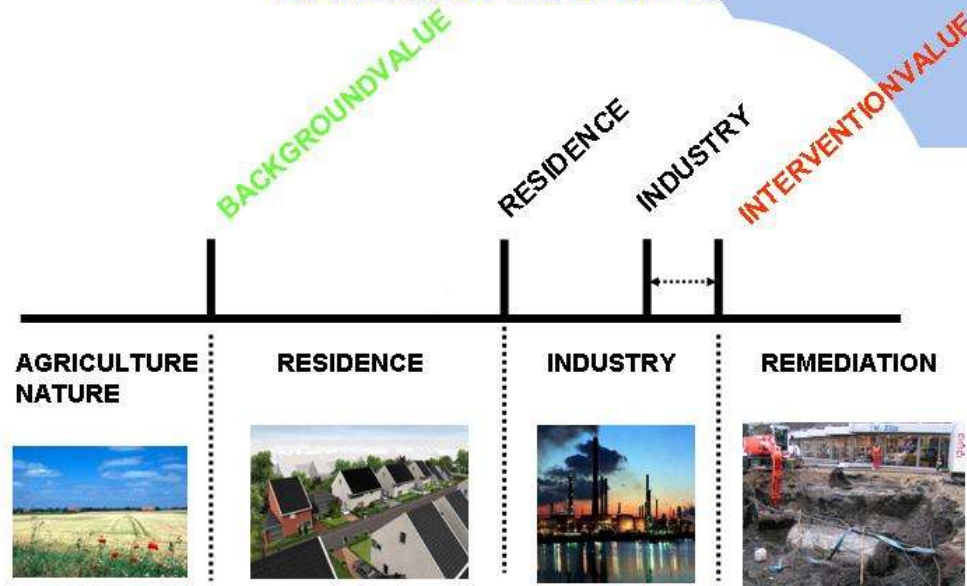




Re-use: classification on land

- For construction works: 3 classes
 - > Fit for landuse
 - > Stand still on class
 - > Possibility decentralised standard
- Also for constructions: on lixiviation
 - > no assesment on stand still
- For relocation:
 - > Ecological standard (msPAF)
 - > No assessment on stand still
 - > No possibility decentralises standard

SOIL QUALITY STANDARDS AND LANDUSE SCHEMES





Intervention & measures in watersystem (1)

- Planprocess watermanagement:
 - > Definition of goals for the watersystem
 - > Determine reasons for insufficient quality, for example: Influence contaminants in sediment on the waterquality
 - > Determine which measures in the watersystem are effective to get a good quality, f.e. whether dredging (or another measure with sediment) is effective, more vegetation or disable functions
 - > Measures in (next) watermanagementplan





Intervention & measures in watersystem (2)

- Assessment influence sediment: different ball game ...
 - > Testing through: “handreiking beoordelen waterbodems” (Hin, Osté, Schmidt, RWS & Deltares)
 - > Plain methods: calculation on content contaminants and nutrients
 - > Specific methods: such as bioavailability (methods like Tenax)
- At the moment hardly no information about amount of areas where dredging of another measure with sediment is needed





Re-use in watersystems..... Search for better risk based methodes

- Re-use asks for a different approach in sensitive watersystems
- More research and knowledge required of
 - > the relation between contaminants in sediment and dry soil and (ground)water
 - > the relation between content and bioavailibility
 - > nutrients in the toplayer relating to waterquality
 - > effects on waterquality during workingprogress
 - > sediment remediation as effective measure
- Protocols for using new methods such as bioavailibility
- Quality assurance of use new methods, for example certification
- Translation of this knowledge to simple reliable generic standards for re-use, both for sediment and dry soil.....
- Maybe in the future in watersystems only assessment on bioavailibility ?

