

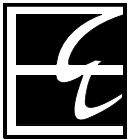
# Rationality or power?

## Environmental issues as constraints of maritime infrastructure projects



1. Why do we develop maritime infra
2. The current ecobureaucratic reality
3. Where is the beef?
4. The nature of power
5. Analysis of the ecobureaucratic power explosion
6. Consequences of the power process
7. What can be done?

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**Dr. of Science**



## Some reasons for maritime infrastructure development



- In global markets winners and losers are separated by small differences and logistics is an important cost component
- Industrial development requires that maritime infrastructure adapts to market changes
- Ports are dynamos of local economy
- Better and deeper maritime infra improves cost efficiency and safety of water transport and reduces emissions

**Maritime infrastructure development means jobs and prosperity!**



# Megatrends in development of maritime infrastructure

- Ever growing EIA studies
- Increasingly complicated and lengthy permitting processes
- Harmful project delays and expensive permit conditions
- Seasonal restrictions ruining project schedules
- Monitoring programmes extending to basic research



Vuosaari harbour project

- A decade of permitting
- Over 30 environmental permit and zoning processes
- Cost of permit conditions 100 million euros

**Are the permitting processes and project conditions proportional to environmental impacts?**

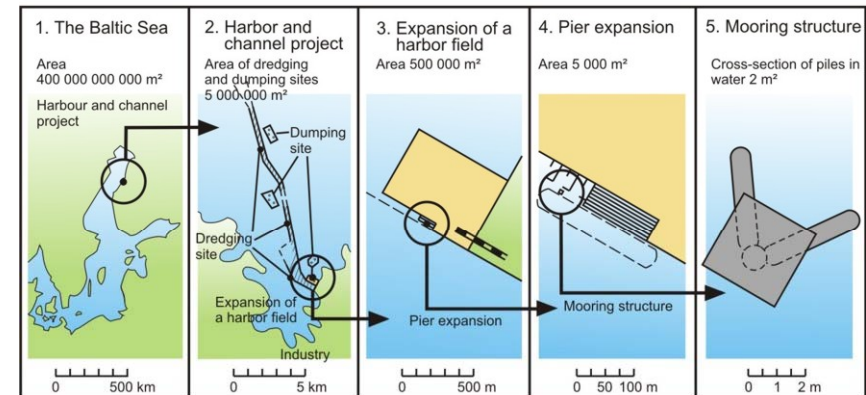


# Orders of magnitude in maritime infrastructure projects

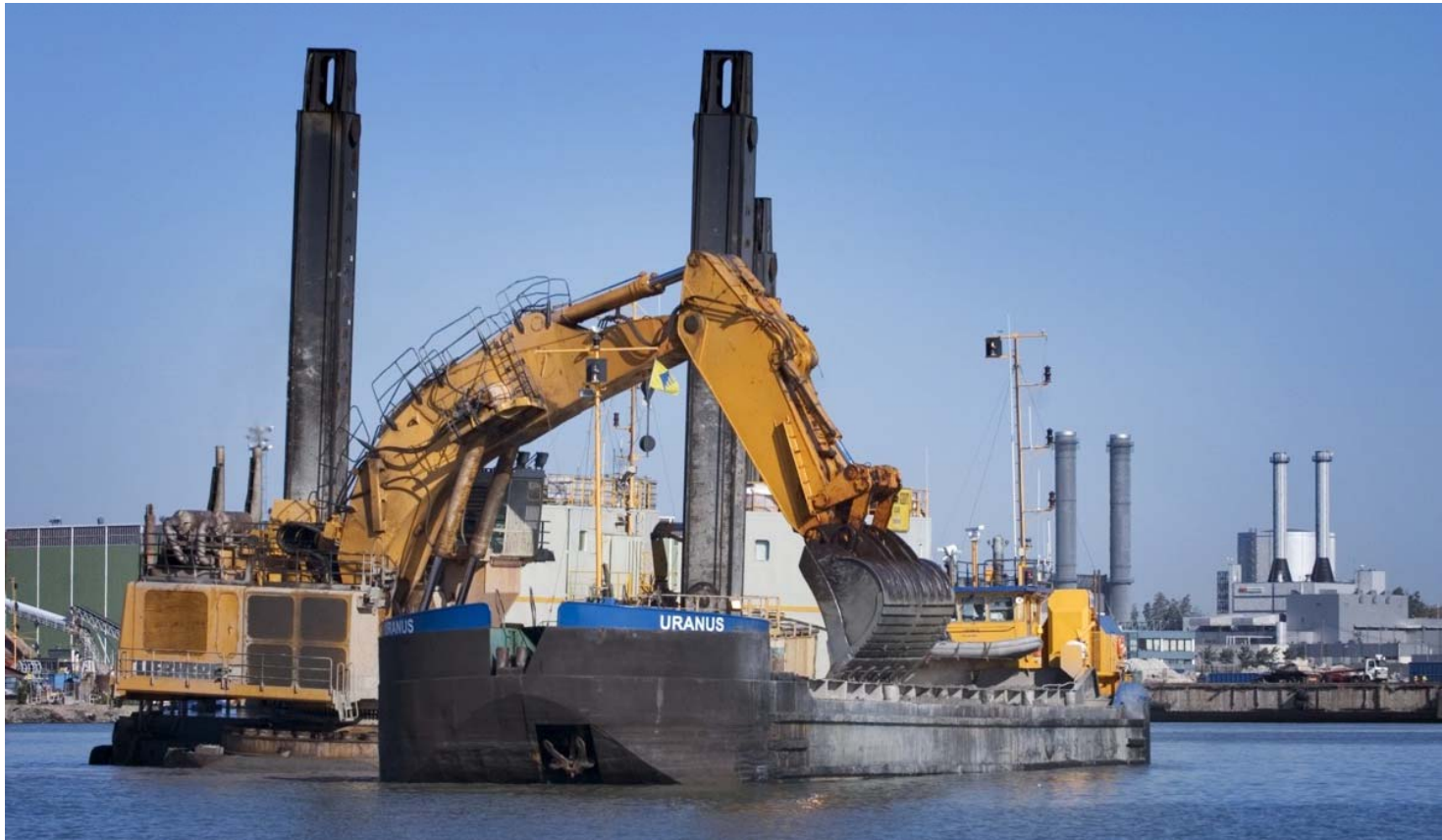
<b>Size of Investment</b>		<b>Mass quantity</b>	
Tiny	< 0,1 million euros	Tiny	<1 000 m <sup>3</sup>
Very small	0,1 - 1 million euros	Very small	1 000 - 10 000 m <sup>3</sup>
Small	1 - 10 million euros	Small	10 000 - 100 000 m <sup>3</sup>
Medium size	10 - 100 million euros	Medium size	100 000 - 1 000 000 m <sup>3</sup>
Large	100 - 1000 million euros	Large	1 000 000 - 10 000 000 m <sup>3</sup>
Very large	> 1000 million euros	Very large	>10 000 000 m <sup>3</sup>
<b>Fill or cut area in the bottom</b>		<b>Duration of environmental impact</b>	
Tiny	< 0,1 hectares	Very short	< 1 day
Very small	0,1 - 1 hectares	Short	1 day - 1 month
Small	1 - 10 hectares	Medium	1 month - 1 year
Medium size	10 - 100 hectares	Quite long	1 year - 10 years
Large	100 - 1000 hectares	Long term	10 years - 100 years
Very large	>1000 hectares	Very long term	>100 years
<b>Suspension, sedimentation</b>		<b>Current speed</b>	<b>Erosion on dumping sites</b>
Not detectable		Very weak, < 0,2 m/s	Not detectable
In common range		Weak, 0,2 - 0,5 m/s	Within natural variation
10 x normal		Moderate, 0,5 - 1,0 m/s	Considerably larger than natural
100 x normal		Strong, 1,0 - 3,0 m/s	Significant part of mass will erode
1000 x normal		Very strong, over 3,0 m/s	Major portion of mass will erode

**Average amount of harmful compounds in dredged and dumped mass**  
 Minor (under the target value or the background level at the dumping site)  
 Within the background variation at the dumping site  
 Dirty (over the target value and background concentrations at the dumping site)  
 Polluted (over the limit value)  
 Heavily polluted (one order of magnitude over the limit value)  
 Very heavily polluted (two or more orders of magnitude over the limit value)

**Character of the ecosystem**  
 Insignificant (bottom or harbor area, dumping site, poor or spoiled bottom)  
 Ordinary  
 Notable (spawning area, wandering route of the fish)  
 Quite important (protection area)  
 Very important (key area for biodiversity or ecosystem)



# Dredging is earth removal in water environment



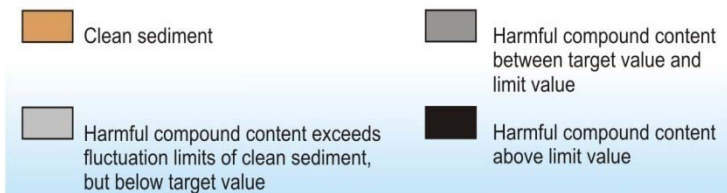
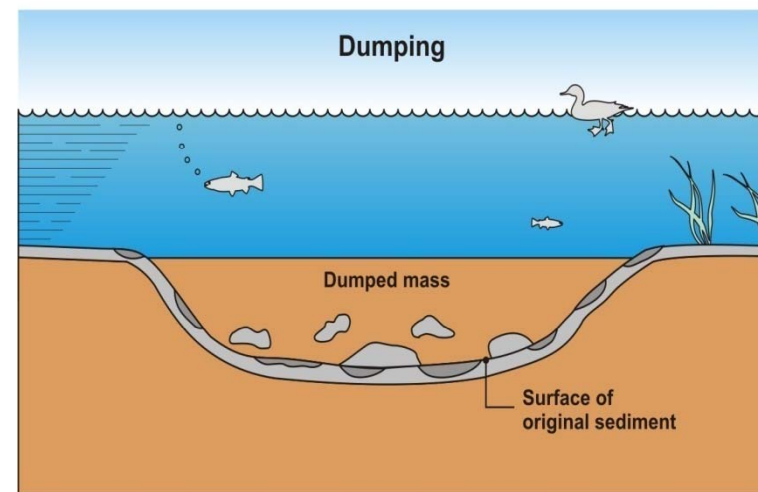
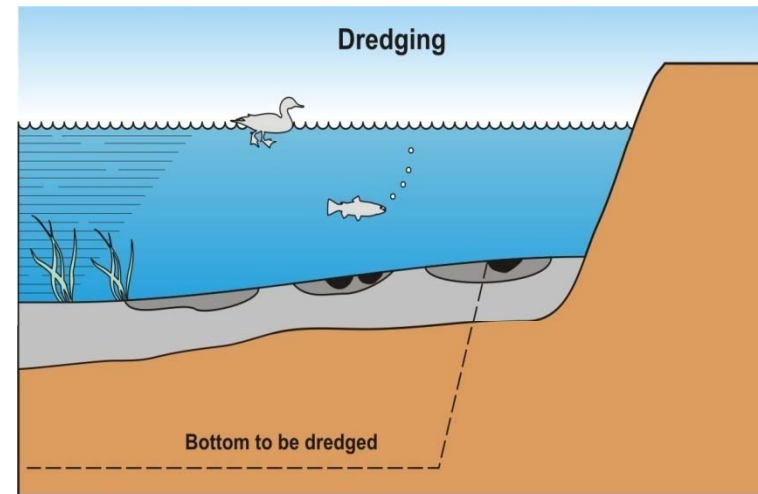
- Dredging volume in Finland is of the order of 2 million m<sup>3</sup>/year
- Environmental impacts of dredging are footprint effect, suspension and release of harmful substances



# The effects of dredging on the bottom

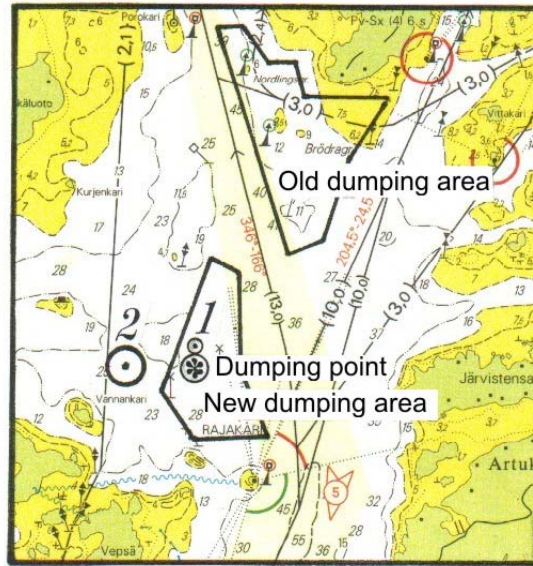
## Conclusions:

- Generally the biologically active bottom layer is cleaned up both in the dredging area and in the dumping area.
- Bottom ecosystem recovers in a few years



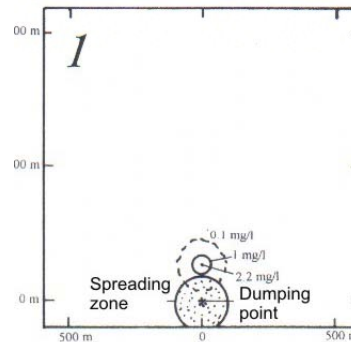
# Suspension

- Up to 5% of sediments suspended
- Up to 5% of sediments suspended at dumping
- Majority of suspended matter settles in the immediate vicinity of operation
- Visible suspension effects generally contained within 200-400m from the point of erection
- The chemical composition of suspended matter is generally similar to or cleaner than the one of particulate matter floating naturally in the water mass
- Dredging operations have generally negligible effects on the areal amount of suspended matter

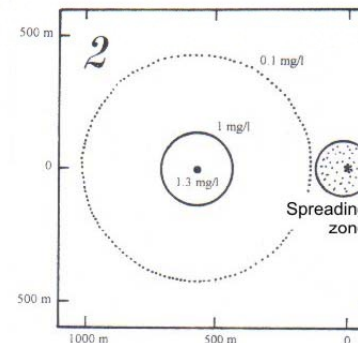


Detectable suspension connected to a dumping event,  
current velocity 0,04m/s  
Scale 1:50 000

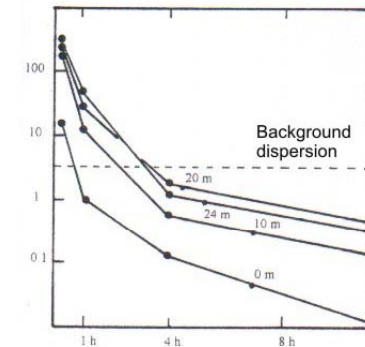
Suspension surface  
1h from dumping



Suspension at bottom  
4 hours from dumping

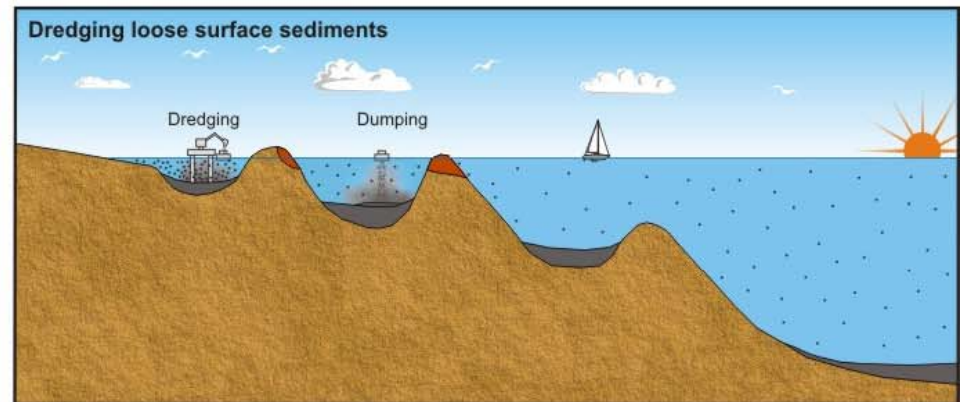
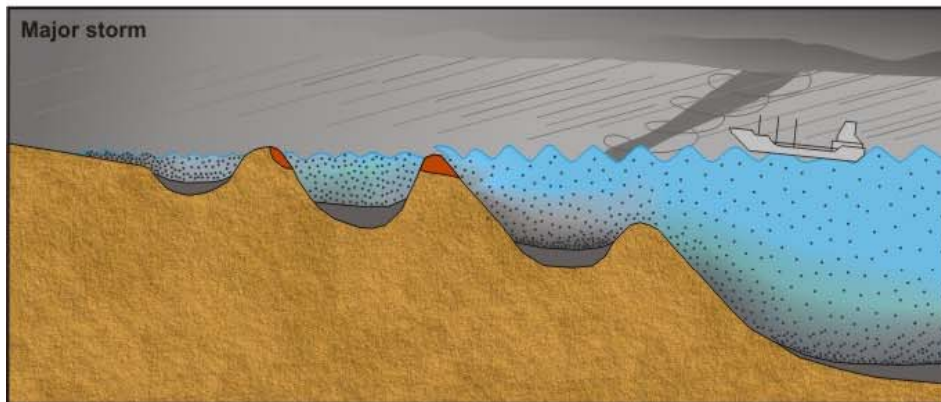
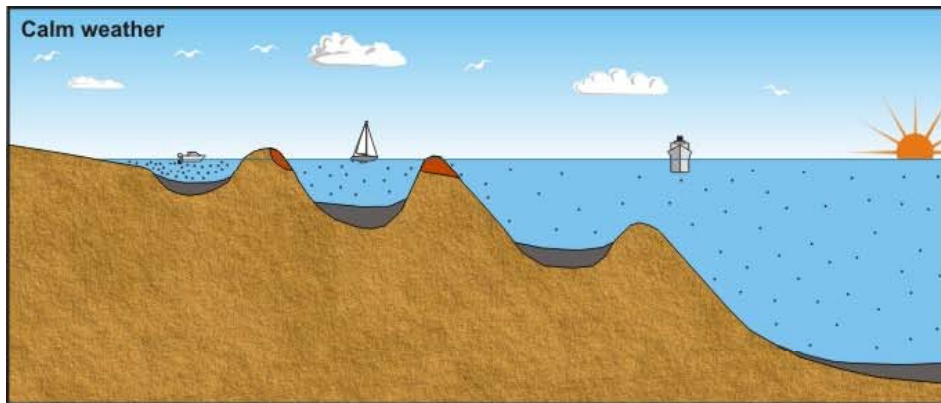


Maximum concentration of suspended matter at different depths



# Natural suspension and sediment dynamics in the Gulf of Finland

- Area 30 000km<sup>2</sup> volume 1100km<sup>3</sup>, average depth 37m
- Net sedimentation about 10 million tons/year
- Typical suspension 2-4 mg/l, current 5cm/s
- Typical amount of suspension 2 million tons
- Typical suspension stream 200-400 tn/(km x day)
- During a major storm 10 million tons of sediment is suspended from sea bottom
- Suspension may locally exceed 10 000 mg/l and suspension stream 10 000 tons/(km x day)
- In the dredging operation suspension may increase by 50 tons and local suspension stream by 50 tons/ day



# Vuosaari dredging project and tributyltin

Years of extensive media coverage focusing on

- TBT concentrations up to two orders of magnitude higher than the unofficial limit value
- Permitting drama
- Environmental crime
- TBT harms the reproductive abilities of organisms living in seabed
- Should there be limitations for eating fish from Vuosaari?



## Vuosaari dredging project and tributyltin

### No attention to the following

- Finland´s TBT emissions had been 20 000 kg/year for decades
- The total amount of TBT in Vuosaari sediments was 100 kg of which 10 kg would have suspended in a normal dredging operation
- 10 kg equals a two month legal release of a traditional ocean liner at the time of dredging
- If a woman weighting 60 kg eats 0,5 kg of Vuosaari fish every day health hazard is of the same order of magnitude as if she drank a glass of wine once a month



# Impacts of navigation and port activities

## Port activities

Carbon dioxide emissions from energy usage	-3,6 km <sup>2</sup> eq.
Harbor fields and channel areas, footprint effect	-2,0 km <sup>2</sup> eq.
Dredging and dumping activities	-0,1 km <sup>2</sup> eq.
	-----
	-5,7 km <sup>2</sup> eq.

## Common effects of sea traffic and port activities

Water service and management waste water from ships	-0,2 km <sup>2</sup> eq.
Garbage service for ships	-0,1 km <sup>2</sup> eq.
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	-0,3 km <sup>2</sup> eq.

## Environmental impacts of navigation in the harbour area

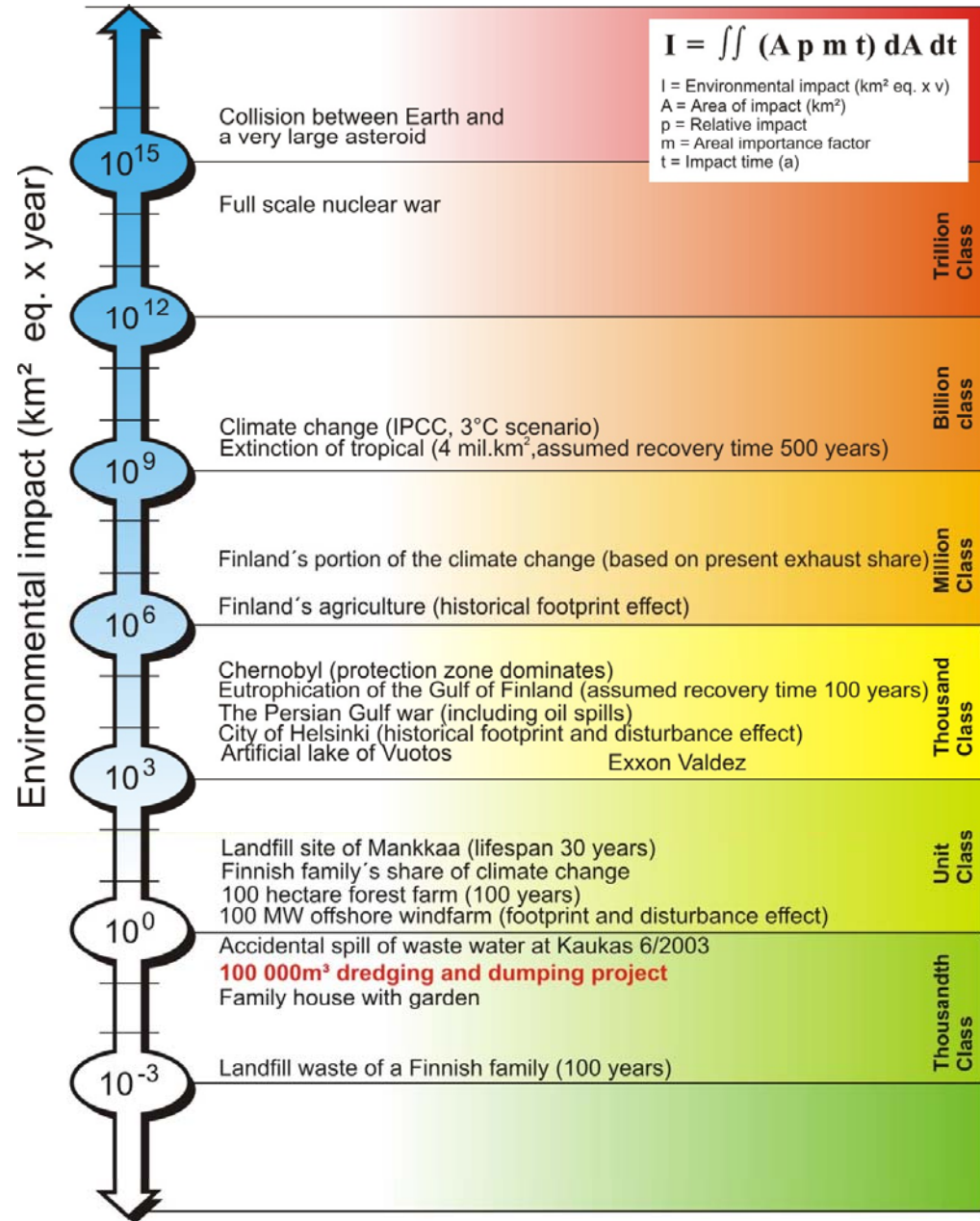
Carbon dioxide emissions	-18,0 km <sup>2</sup> eq.
Nitrogen oxide and sulphur dioxide emissions	-1,0 km <sup>2</sup> eq.
Tributyltin emissions (from foreign ships, Finnish ships have epox paints)	-0,1 km <sup>2</sup> eq.
Other effects (risk of accidents, erosion caused by sea traffic etc.)	-1,0 km <sup>2</sup> eq.
	-----
	-20,1 km <sup>2</sup> eq.

## Comparison of environmental impacts of port activities with other common activities

Port activities, environmental impacts (1500 employees)	-0,004 km <sup>2</sup> eq. / employee
Finland's agriculture, footprint effects (50 000 employees)	-0,1 km <sup>2</sup> eq. / employee
Finland's forest industry, footprint effect (50 000 employees)	-0,25 km <sup>2</sup> eq. / employee



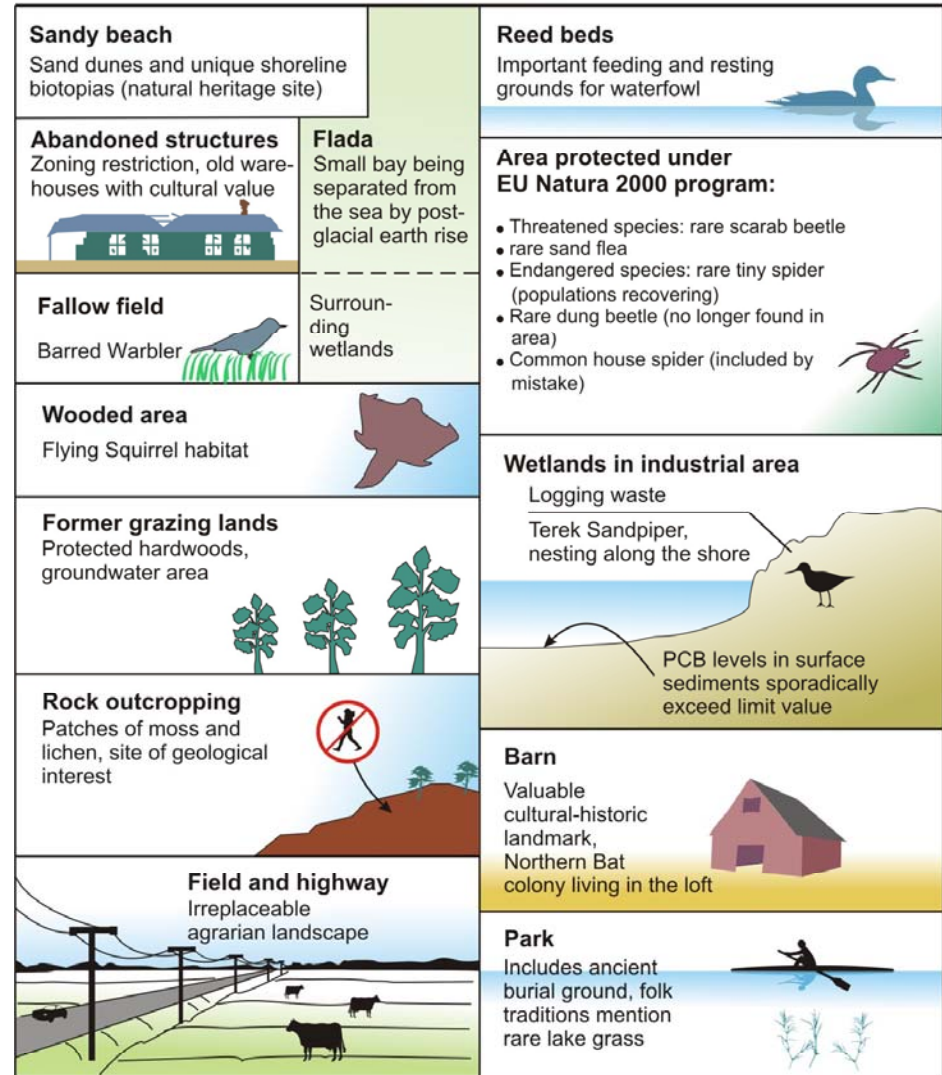
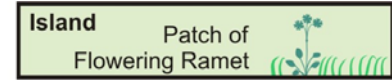
# Dredging project in the open ended environmental impact scale



# Problems everywhere

Maritime infrastructure has been developed for hundreds of years. Suddenly a large number of issues has emerged making development complicated, time consuming, expensive and even impossible.

**The ecosystem is versatile, robust and self healing!**



## Where is rationality and justice?

**Answer:**

**This is not  
about rationality  
and justice.**

**This is about  
power!**



## Power theory

### **Weber:**

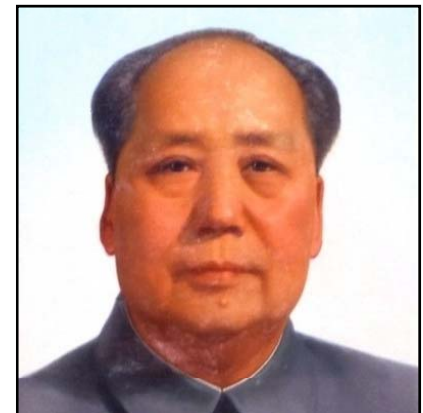
Power is the possibility of imposing one's will upon the behaviour of other people. Mankind is caught up in an eternal struggle for power.

### **Galbraith:**

State bureaucracy has tendency to make the state an instrument of its own purposes. It uses consign power (stick) compensatory power (carrot) and conditional power (possibility to change beliefs) eg in alliance with the media

### **Mao:**

Power grows out of the barrel of the gun



**People have a will to power but power corrupts!**



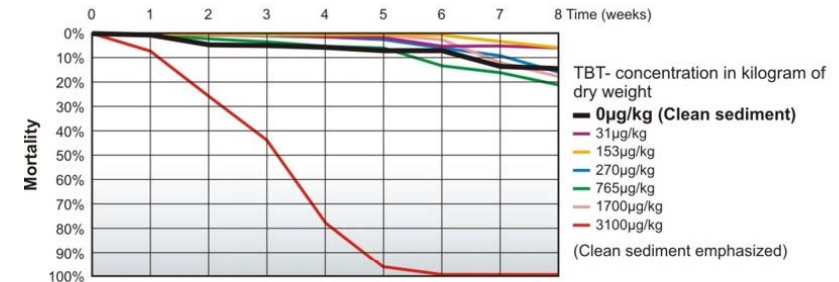
# Public manipulation of the tributyltin issue



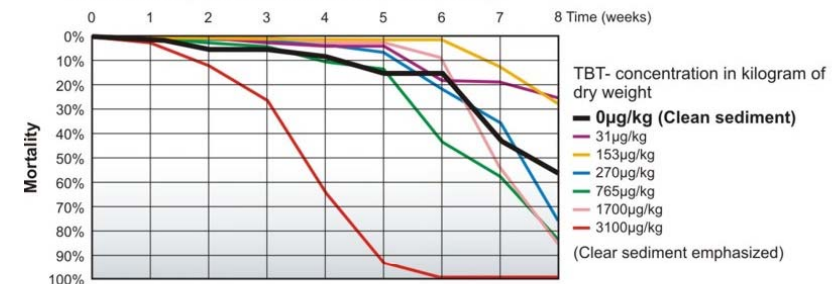
**Bengt Flyvbjerg:**

- Power defines reality
- Rationality is context-dependent; the context of rationality is power; and power blurs the dividing line between rationality and rationalization;
- Rationalization presented as rationality is a principal strategy in the exercise of power;
- The greater the power; the less the rationality

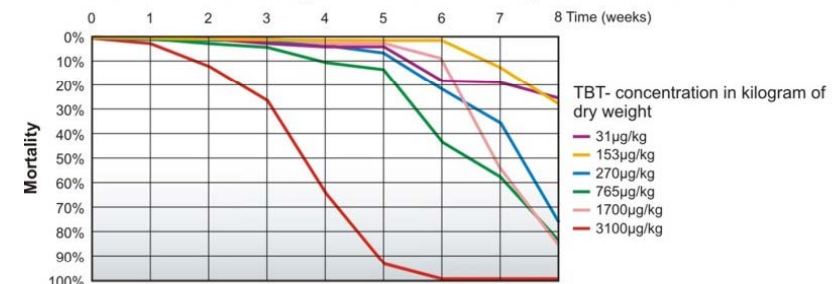
1. **Sleight of hand trick:** Change of perspective from impacts of dredging to impacts of tributyltin (TBT).
2. **Tendency:** Choice of sensitive mussel as research object, procurement of research from a reliable source and choice of method known to exaggerate the impact.
3. **Original results:** Finnish journal for professionals in the water sector 4/2006, TBT has no impact on mussel mortality at concentrations found in Finnish surface sediments.



4. **Changed results:** Chart sent to Helsingin Sanomat. Mortality increased but TBT in dredging mass has no particular effect on mussel mortality.



5. **Scientific forgery:** Chart published by Helsingin Sanomat, mortality curve in clean sediment has been removed. TBT appears to increase mortality even at low concentrations.



## Cognitive dissonance

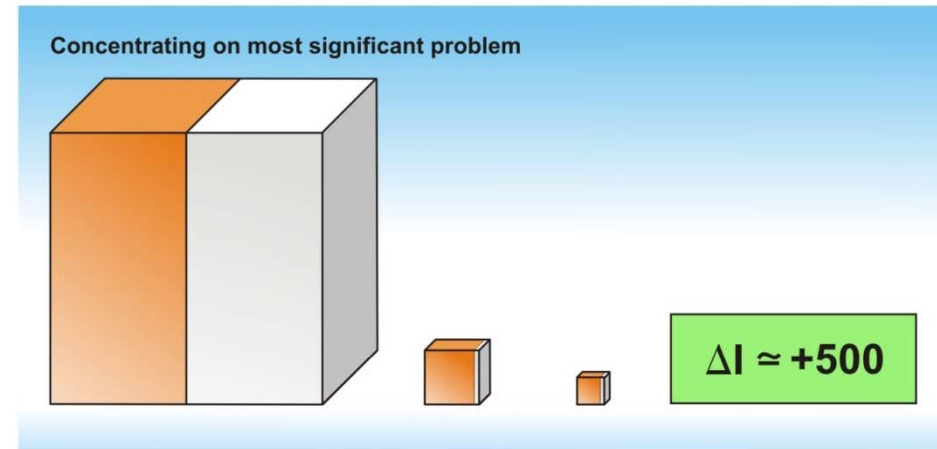
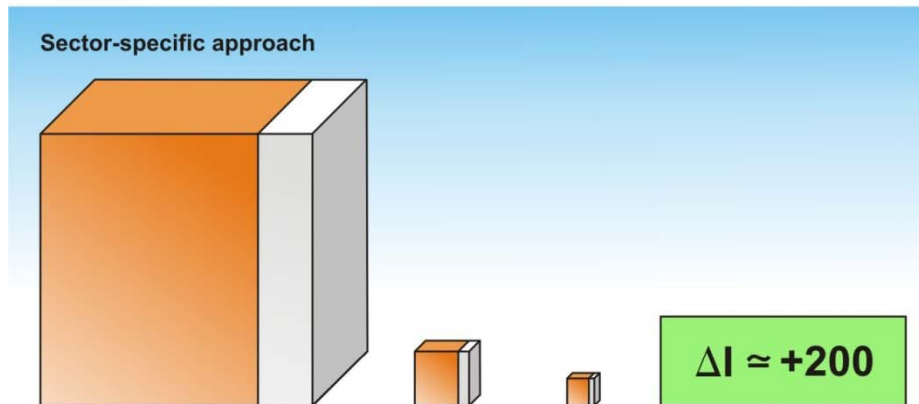
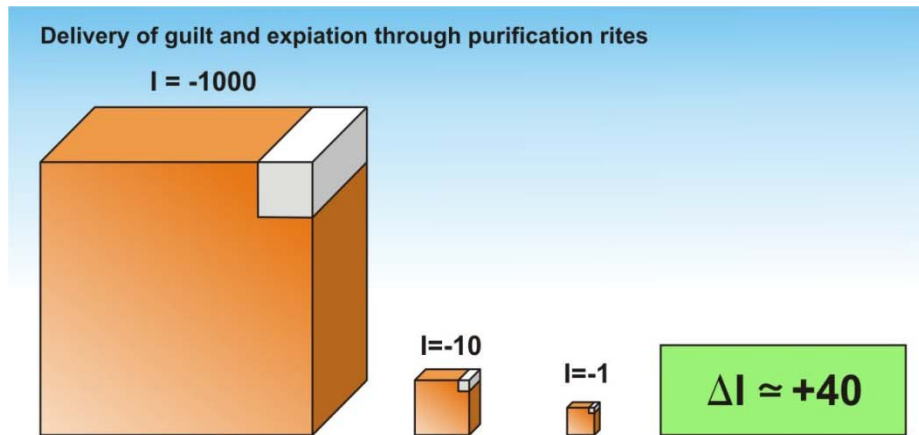
Cognitive dissonance is a state of tension that occurs whenever a person holds two cognitions (ideas, attitudes, beliefs, opinions) that are psychologically inconsistent. Dissonance produces mental discomfort that may be unbearable. It is the process of reducing dissonance that the self justification accelerator steps in.

Shermer, M,  
Scientific American, May 2007

**Inability to admit and correct errors is the mortal weakness of the power elite!**

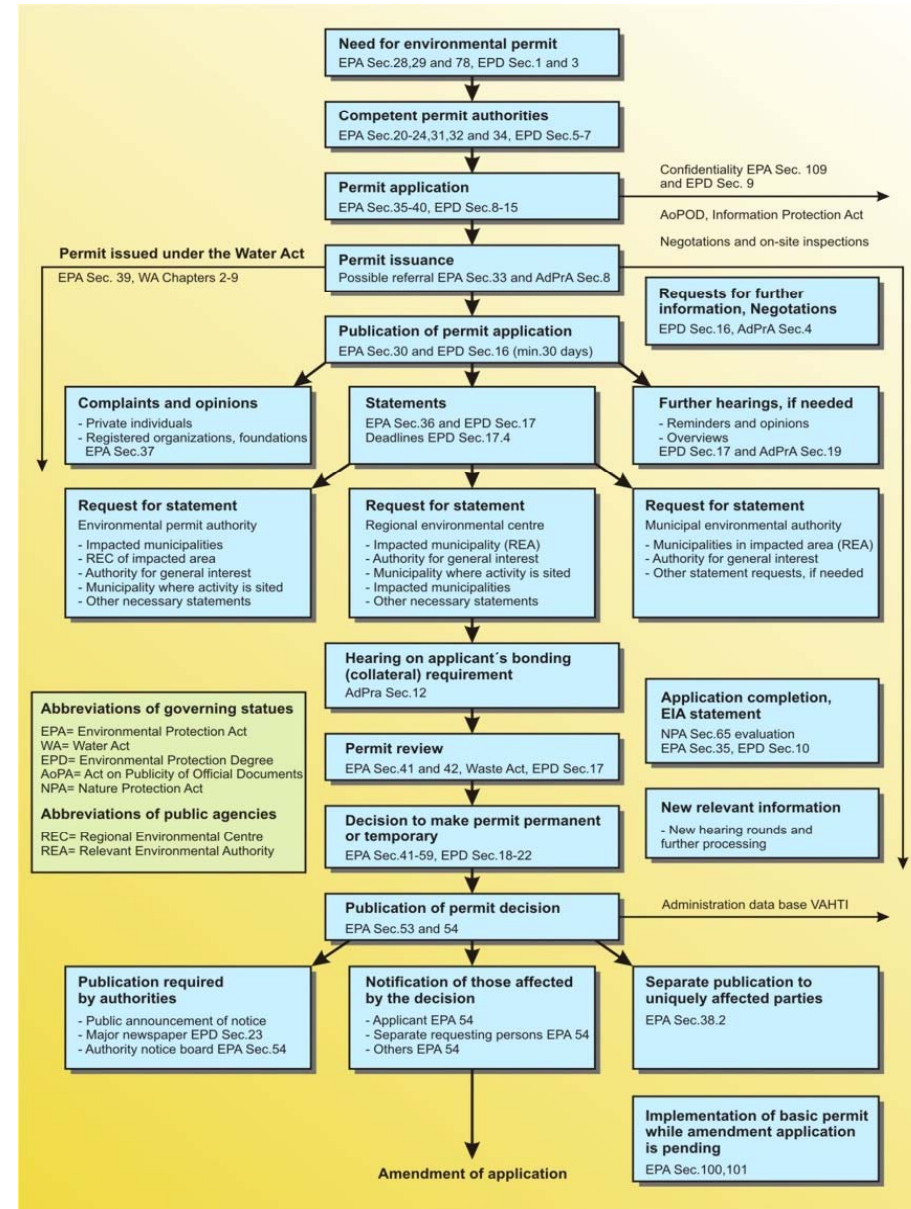


# Fragmentation of environmental administration

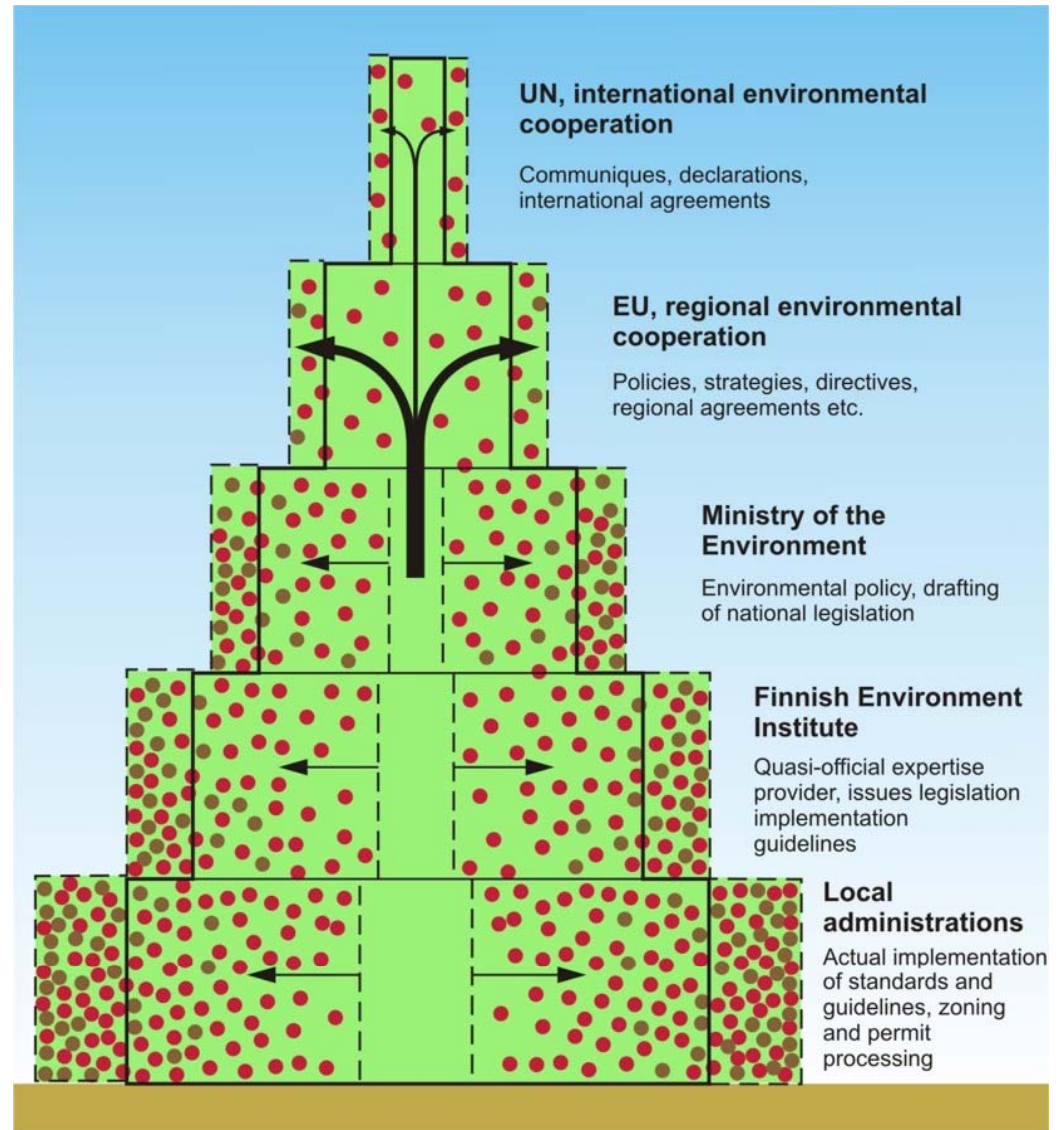




# The bureaucratic heaven

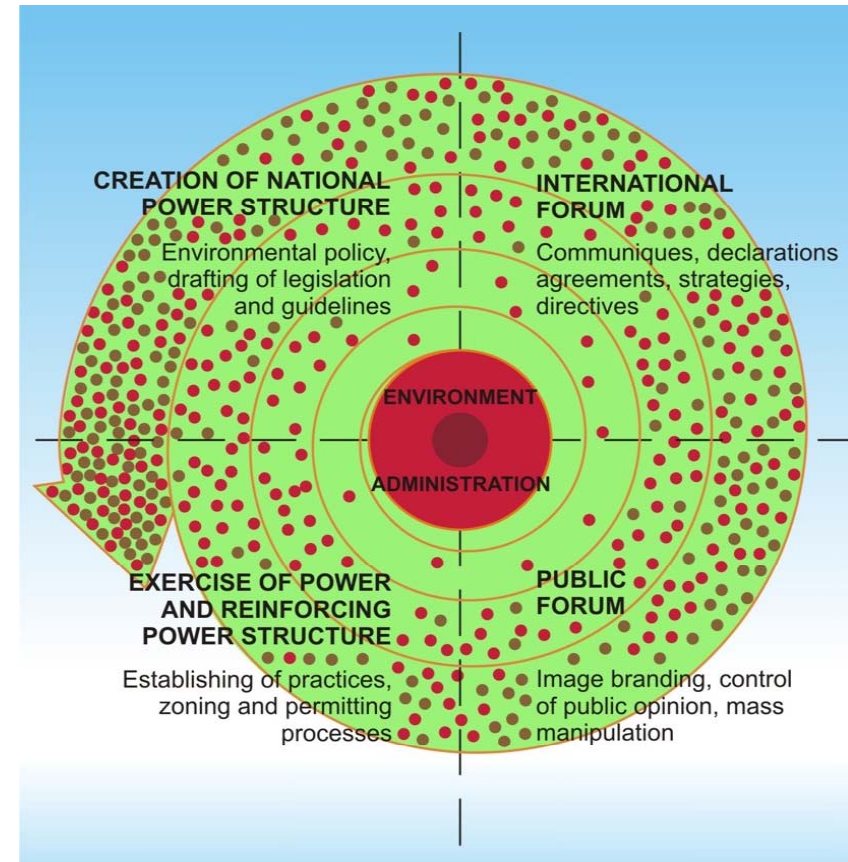


# The growing pyramid of ecobureaucratic power



## Interaction between environmental administration, state research institutes and media

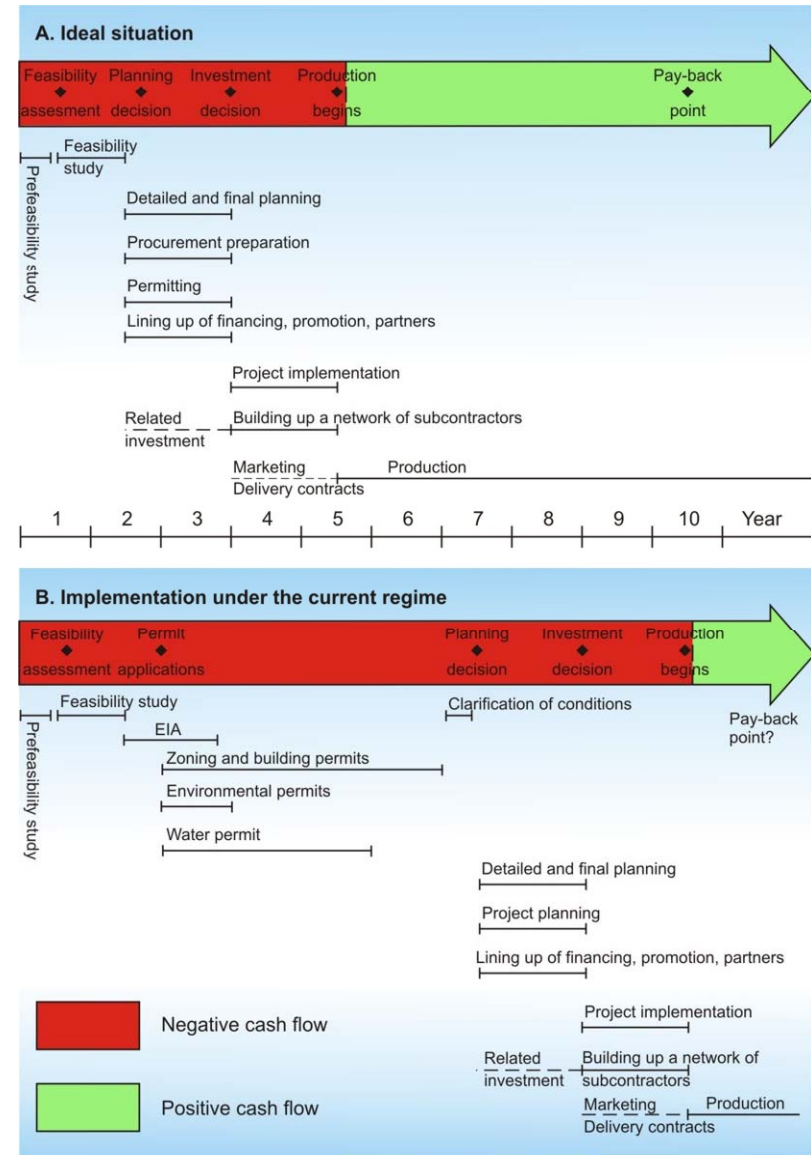
- Environmental administration and politicians struggle for power and resources using classic methods: ideology (sustainable development), unknown threat, delivering guilt, manipulation and hypocrisy
- Many people in the state research institutes have specialized in producing new unknown threats and politically correct phrases for the power structure and media
- Unknown threat, delivering guilt, politically correct hypocrisy and manipulation resonate extremely well in the media. It applies the golden rule of journalism: "Always try to tell the truth but there is no need to tell the whole truth!"



# Implementation of an investment project

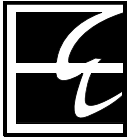
Ability to sink investment projects in to a limbo of never ending permitting process without any accountability is the principal source of ecobureaucratic power.

**This problem is at the core social and economic decline of Europe!**



## Explanation based on power theory

- Scale issues are ignored because rational thinking decreases opportunities to power
- Environmental details like limit values exceeded everywhere within human influence, are power capital for the minister fighting for important party issues with those wanting to promote local projects
- The administration can use the capital to submit administrative subordinates, to finance it's own goals and to create new practices
- Maritime infrastructure is a strategic target since there is money to grab and it is an artery of economy



# The EU-mission

Article 2 of the consolidated version of the Treaty Establishing the European Community

*The Community shall have as its task, by establishing a common market and an economic and monetary union and by implementing common policies or activities referred to in Articles 3 and 4, to promote throughout the Community **a harmonious, balanced and sustainable development of economic activities, a high level of employment and of social protection, equality between men and women, sustainable and non-inflationary growth, a high degree of competitiveness and convergence of economic performance, a high level of protection and improvement of the quality of the environment, the raising of the standard of living and quality of life, and economic and social cohesion and solidarity among Member States.***

What have we got?

- Explosion of ecobureaucratic power
- Degradation of our industrial base
- Jobs and prosperity pushed elsewhere
- Mockery of justice
- Decline of economic fundamentals

**What can be done?**



## Ridicule power

Jan-Erik Enestam, the former Finnish minister of environment on the administrative guideline for dredging activities

”From the environmental standpoint, the guideline looks to sustainable methods, because we have no other options.”



In other words sustainable development is threatened by TBT that is no longer used and is disappearing from the environment through breakdown. For some reason the treat is acute in the specific case when there is a marginal amount of TBT in dredging spoil. What could be behind this apparent insanity?

**Answer: The corruptive nature of power!**



## Deliver guilt

- Helsingin Sanomat has been painting the horrors of dredging and tributyltin in 10 editorials and 100 articles
- It has refused to publish information that puts this issue into perspective
- It has censored a paid response contradicting it's articles
- Helsingin Sanomat has dealt with Greenpeace activities (1000 articles in the last 10 years) more often than Finnish Foreign Trade (800 articles)

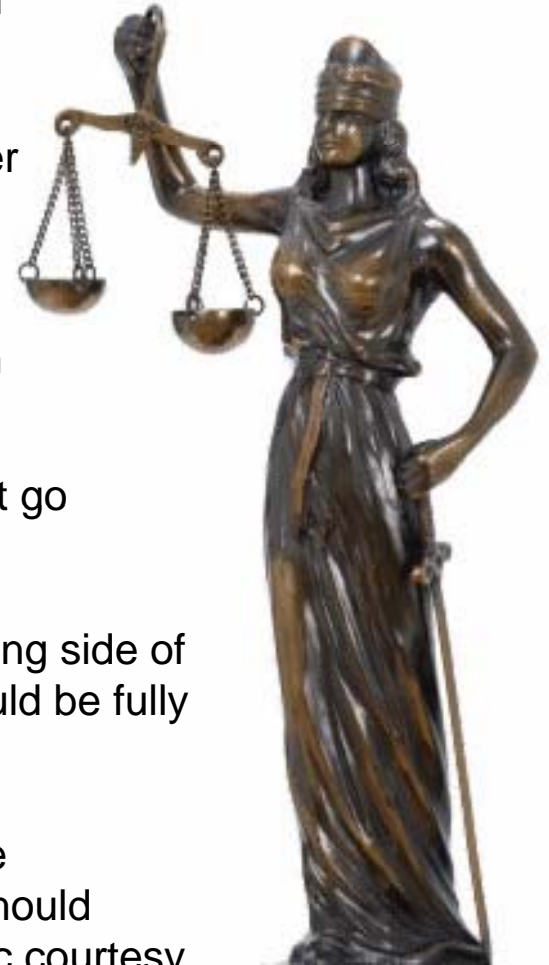


**The champion of free speech and truth searching has forgot it's role as a guardian of power and become a political actor. It has destroyed thousands of jobs while abusing it's position!**



## Demand change

- Over regulation and bureaucratic power are at the core of Europe ´ s social and economic decline. The European parliament and commission must be split. The new entities should be given the responsibility of protecting administrative subordinates from the abuse of EU legislation and the power to overturn bad policies and legislation.
- We can ´ t afford a ministry that is working in an ideological hybris. The ministry of environment must be broken down with it ´ s tasks split between other ministries.
- Justice delayed is justice denied. All permitting and zoning processes must go through the permitting and appeals process in one year.
- Bureaucrats should know what the law means. If they are found at the wrong side of the law, they should be punished and the administrative subordinates should be fully compensated.
- Media has huge power in a modern society but it is not accountable for the consequences of filtering and manipulation of facts. Public broadcasting should arrange every day one hour of primetime media criticism free of journalistic courtesy.



## Conclusions

- The recent difficulties in developing maritime infrastructure are not rational. We are just one productive sector dealing with a huge sociological process.
- Rationality alone is inefficient in dealing with this process. The combination of power and cognitive dissonance sits tight.



- Abuse of power eventually creates a reaction. Now that millions of people are losing their jobs and welfare systems are shaking, people are questioning the basis of governance. If we really want rationality and justice, now is the time to fight back!

