

# Presentation of the Swedish Phosphorous Recycling Policy

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# Long-term objective

Nutrients in wastewater are returned to the soil, where needed, without jeopardising health and the environment

# 16 Environmental Objectives

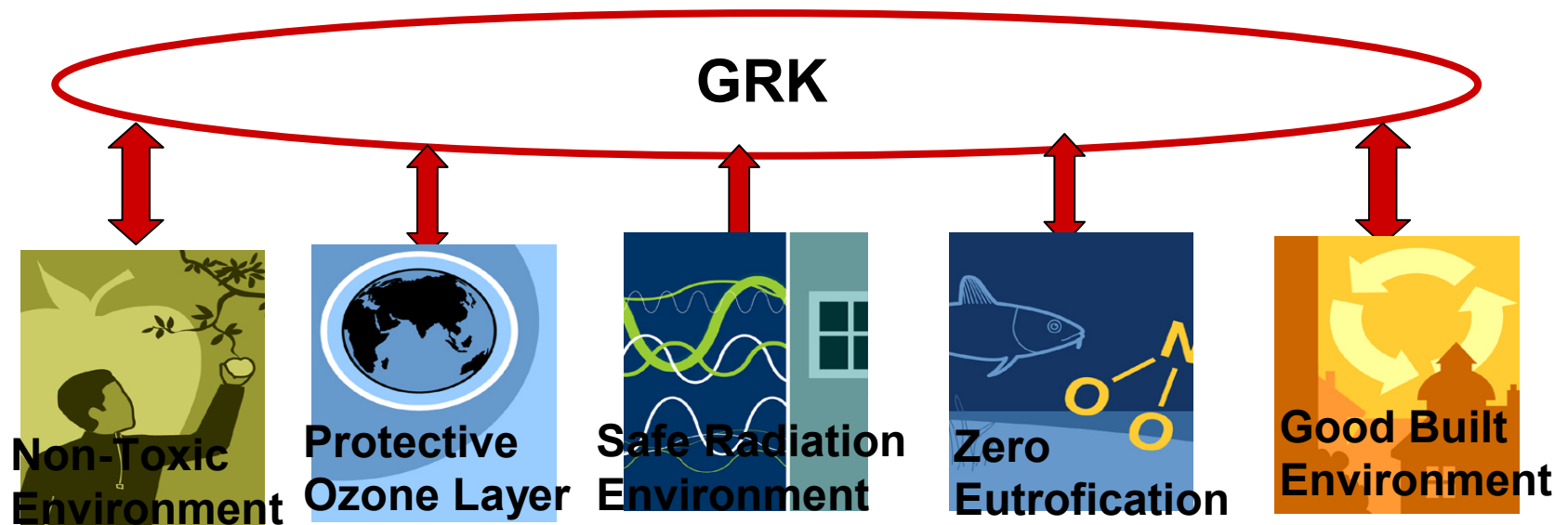


1. Reduced Climate Impact
2. Clean Air
3. Natural Acidification Only
4. A Non-Toxic Environment
5. A Protective Ozone Layer
6. A Safe Radiation Environment
7. Zero Eutrofication
8. Flourishing Lakes and Streams
9. Good-Quality Groundwater
10. A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos
11. Thriving Wetlands
12. Sustainable Forests
13. A Varied Agricultural Landscape
14. A Magnificent Mountain Landscape
15. A Good Built Environment
16. A Rich Diversity of Plant and Animal life

# Why reuse of phosphorous?

## *Strategi for Non toxic and Effective reuse of resources*

Each kilo phosphorous missused need to be imported for food production.



# Why reuse of phosphorous?

## ***Strategi for Non toxic and Economical use resource***

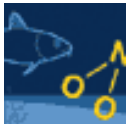
Each kilo phosphorous missused need to be imported for food production.

### **Environmental Objectives:**



#### Good Built Environment

60% of the phosphorus in sewage should be reused by 2015.



#### Zero Eutrofication

Reasonably reuse



#### Non-Toxic Environment

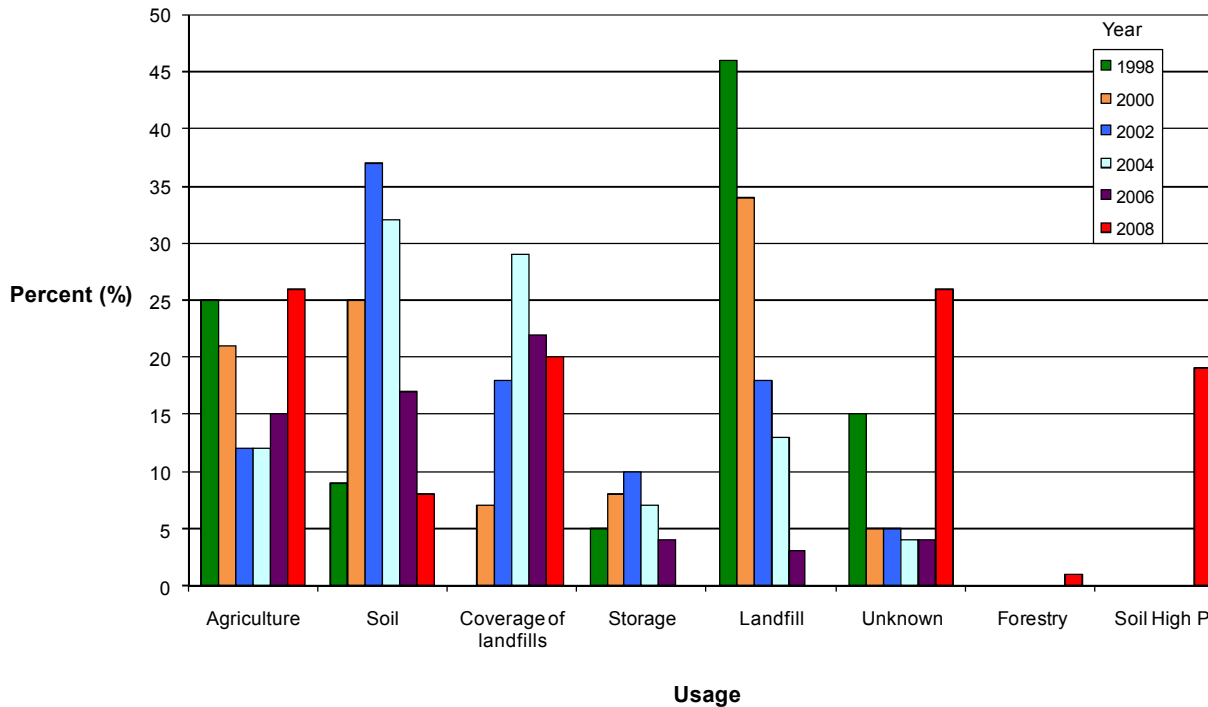
Requirements on fractions from sewage enforce to upstream work.

# Intermediate target

Part of the 15th Environmental Objective:

By 2015 at least 60 % of the phosphorus in wastewater shall be restored to productive soil, of which half should be returned to arable land.

# Use of sludge in Sweden



# Possibilities

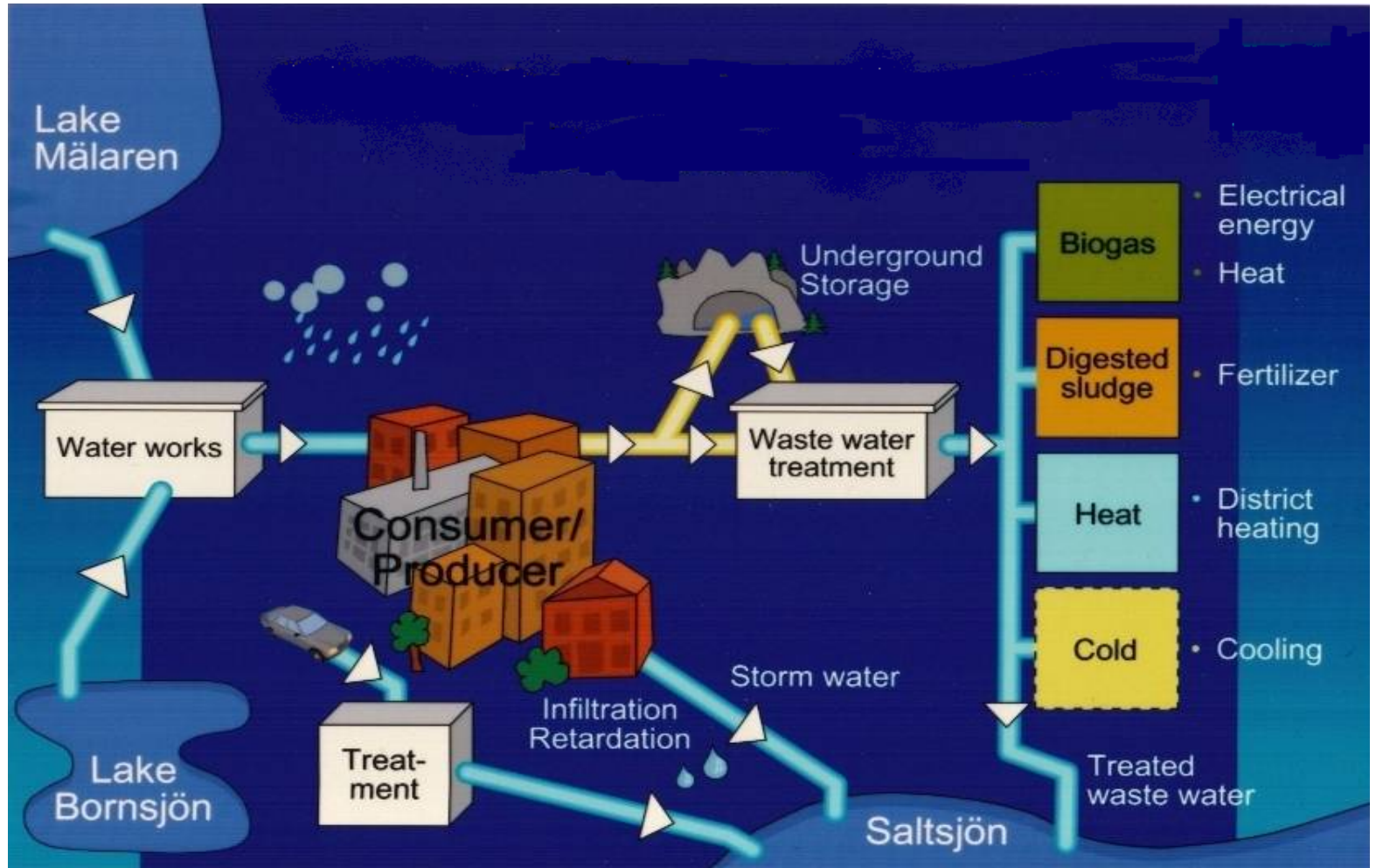
- Rich in nutrients
  - Phosphorus (P)
  - Nitrogen (N)
  - Sulphur (S)
  - Copper (Cu)
  - Zinc (Zn)
- Improved structure
- Decreased use of fertilizer
- Reuse of endless resources



# Problems

- Unwanted known pollutants
  - Mercury (Hg)
  - Cadmium (Cd)
  - Silver (Ag)
  - Lead (Pb)
  - Tin (Sn)
  - Organic pollutants
- Unknow pollutants
- Hygine aspect

# Water pathways



# Proposal on legislation for the use of sludge

An ordinance for use of waste water fractions on land.

- Metal related requirements for agricultural and forestry use.
- Hygienic requirements for all land use.

# Ordinance – new proposal metals

In sludge (milligram / kg DS alt P)				
Metal	EU Direcitive	Swedish legislation	New prop.	Newer prop.
Lead	750 – 1 200	100	100 / 3 600	
<b>Cadmium</b>	<b>20 – 40</b>	<b>2</b>	<b>1,7 / 61</b>	<b>1,5 / 45</b>
Copper	1 000 – 1 750	600	600 / 21 000	
Chromium	-	100	100 / 3 600	
<b>Mercury</b>	<b>16 – 25</b>	<b>2,5</b>	<b>1,8 / 64</b>	<b>1,0 / 30</b>
Nickel	300 – 400	50	50 / 1 800	
Zinc	2 500 – 4 000	800	800 / 29 000	
<b>Silver</b>	-	-	<b>15 / 540</b>	<b>8 / 240</b>
<b>Tin</b>	-	-	<b>35 / 1 200</b>	-

# Ordinance – new proposal metals

Supply to farmland (gram / ha & year)				
Metal	EU Directive (10 y)	Swedish legislation (7 y)	New prop.	Newer prop. (5 y)
Lead	15 000	25	25	
<b>Cadmium</b>	150	<b>0,75</b>	<b>0,75 – 0,35</b>	<b>0,55 - 0,35</b>
Copper	12 000	300	300	
Chromium	-	40	40	
<b>Mercury</b>	100	<b>1,5</b>	<b>1</b>	<b>0,8</b>
Nickel	3 000	25	25	
Zinc	30 000	600	600	
<b>Silver</b>	-	-	<b>8</b>	<b>6</b>
<b>Tin</b>	-	-	-	-

# Ordinance – new proposal hygiene

Class	Treatment method	Parameter to fulfill
A	Thermal drying	80° C, 10 min
A	Pasteurising	70° C, 60 min
A	Thermofilic digestion and Wet composting	a) 52° C, 10 hours b) 55° C, 6 hours c) 60° C, 2,5 hours
A	Lime treatment (unburned)	55° C, 2 hours, pH 12
B	Lime treatment (burned)	3 months, pH 12
B	Treatment in reed- or drybeds	1 year without supply
B	Storage	1 year without supply

# System of certificates

The federation of Swedish Farmers (LRF) accept sewage sludge that comes from a treatmentplant with certificate.

The system has been elaborated by the Swedish Water & Wastewater Association (SWWA) in collaboration with LRF, Swedish grocers federation and Lantmännen. SEPA has been involved in the work as well.

## Purpose

- Sewage fractions produced in a responsible way with quality fulfilling demands.
- A process that is open and transparent to all actors.
- To secure an never ending process to improve the quality on the incoming water, this means reduce the amount of not wanted pollutant in the sewage.

**REVAQ**

Återvunnen växtnäring Certifierat slam

# Upstream work among waste water treatment companys - ADVERTISING



Avloppet är inte gjort för  
färg och kemikalier.  
Inte vår miljö heller.

Kemikalier är något som reningsverken har svårt att rena bort. Snälla, håll inte ut lacknaffa, färg och andra kemikalier i avloppet.

Lämna dem till miljöstationen istället så kan de tas om hand på rätt sätt. Därmed hjälper du till att skapa en bättre miljö för allt levande liv.

En liten förändring för dig. Men en stor skillnad för miljön.



På [www.stockholmvatten.se](http://www.stockholmvatten.se) visar vi hur du enkelt tar hand om dina kemikalier och var din närmaste miljöstation ligger.

FC. ENK. STÅN. BILD. ÖRE. DLA. HÅR. NISSELD. S'MARK. ETTER. FOTOCENTRERINGEN.

**The wastewater system is not made for chemicals – nor the nature**



# Upstream work among waste water treatment companys - MERCURY

- Ban the use of mercury in the dentist sector
- Mercury traps on all waste water discharges from dentist care
- Change pipes in houses of old dentist care centres (60%state granted)
- Monitor and remove old sediments in sewers in dentists care and laboratory areas.

# Mercury content in sludge Stockholm 1973-2004

mg/kg dry substans

