

# Waste materials in civil engineering

*Dutch experience*

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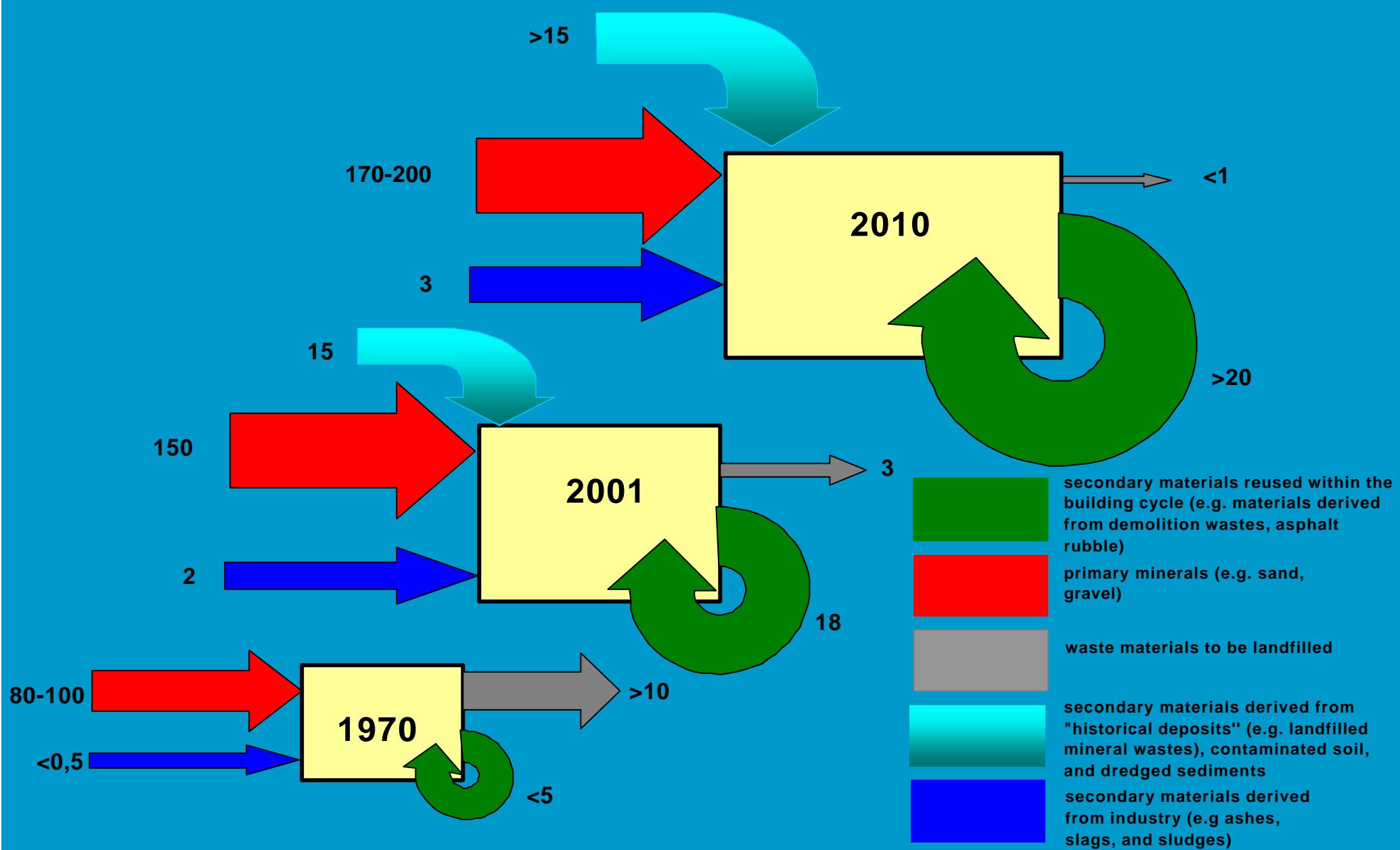
# Introduction

Excavation of primary surface minerals has come to be under increasingly pressure and is now maintained at ~150 Mton/y;

Reuse of secondary materials derived from industrial wastes and demolition wastes has been very successful in the past ten years (up to 100 % of reuse, ~20 Mton/y);

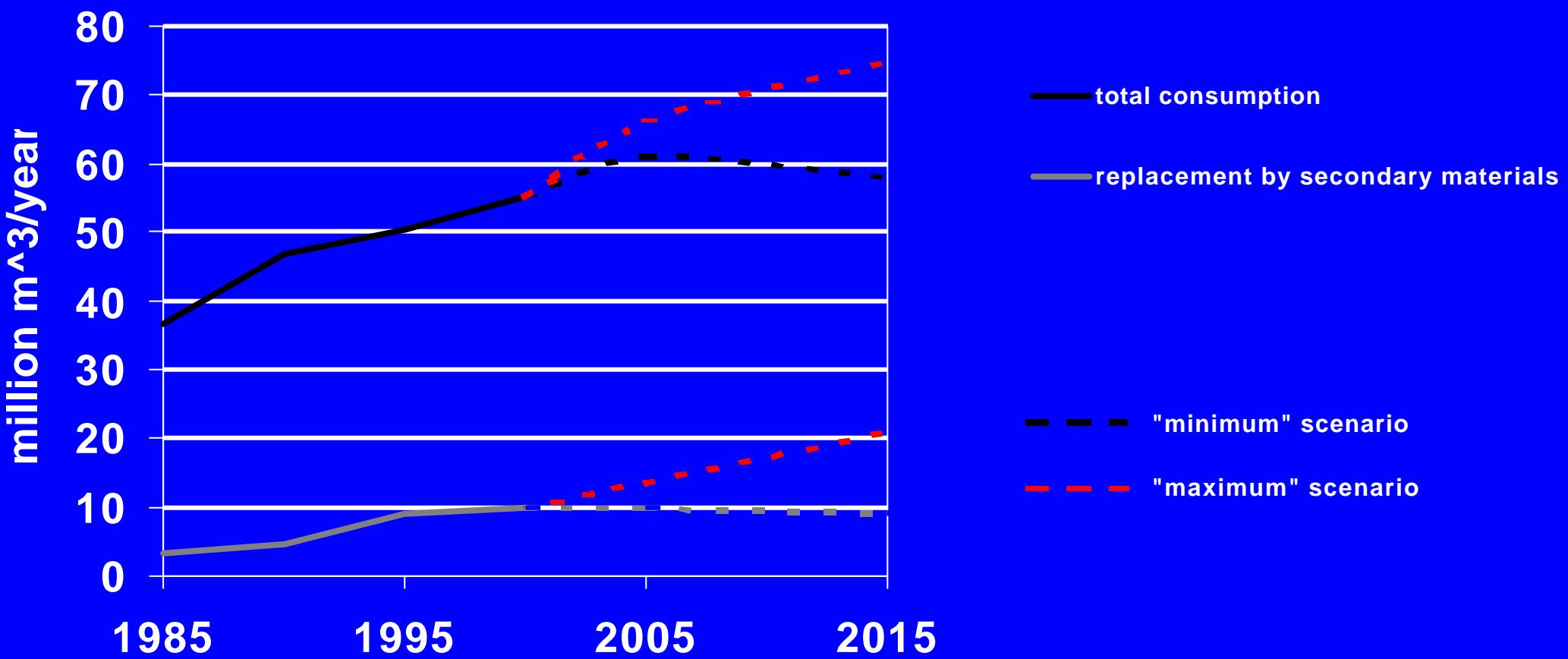
Emphasis on sustainable building is steadily growing, which results in the usage of alternative materials (e.g. secondary materials and wood);

**Figure 1; Supply and demand of primary minerals, secondary and primary substitute materials (in Mtonnes/year): past, present and future**



## *Materials for embankments/supplementations*

(source: Dienst Weg- en Waterbouwkunde)



# Actual and future demand of secondary materials

(in Mton/y)

	1996	2015
embankm/suppl.	9.7	21.8
road foundations	11.6	9.7
concrete/asphalt	2.8	14.4
shore protection	0.6	1.8

Extracted from Paul Ike (2000)



# Secondary materials derived from alternative sources

Historical landfills	120 Mton
Contaminated soil	7-12 Mton/y
Dredged sediments	100 Mton/y
S/S-products	0.5 Mton/y

# Trends and challenges

The demand of secondary and primary substitute materials in the next decades will continue to exceed its availability.

Future supply of building materials will be increasingly dependent on the availability of **secondary** materials derived from alternative sources, such as landfill mining, brownfield redevelopment, dredging activities, and s/s-technologies.

To optimise the reuse of these materials eco-efficient and cost effective approaches based on scientific knowledge, best practices and experiences across sectors and disciplines should be developed.



# Concluding remark

ISCOWA may provide an ideal forum to stimulate and coordinate these interdisciplinary activities.

