

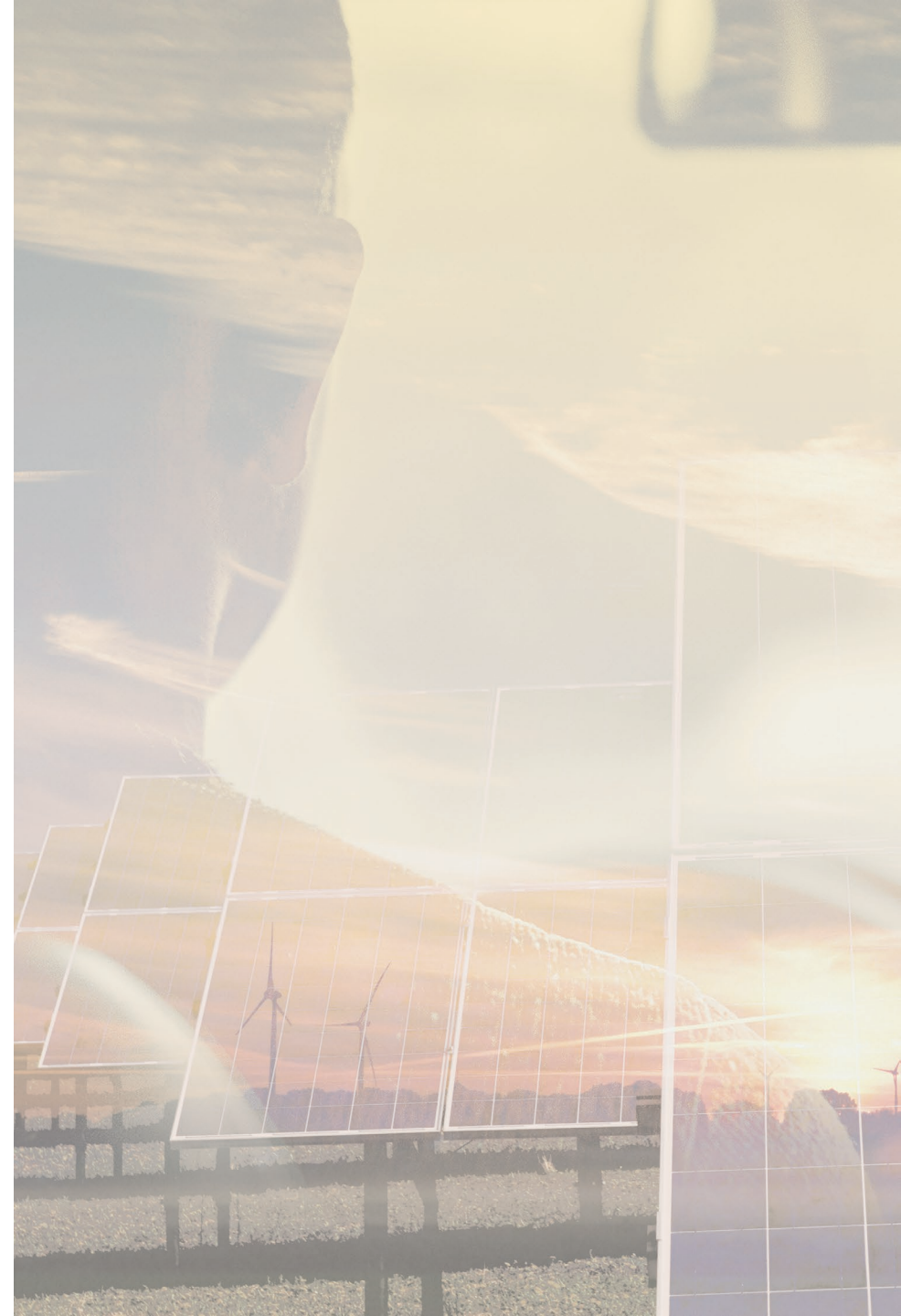
# Klimarådet.

- 
- 
- 
- 
- 
- 
- 
- 
- 
- 

## The economic framework of climate change mitigation

*Frederik Silbye, Head of Analysis  
Danish Council on Climate Change*

- 
- 
- 
- 
- 
- 
- 
- 
- 
- 



## Climate change = a market failure

- A stable climate is a **public good**
- Emissions are an **externality** = a consequence of an activity which affects other parties without this being reflected in market prices
- The cost of this 'consequence' is called the **social cost of carbon (SCC)**
- Solution: **Global CO<sub>2</sub> price** that reflects the SCC



# Why is the market failure not solved?

## Two main reasons:

- The world is divided into independent nations
- People and policymakers are shortsighted



## Agenda:

Targets and policy

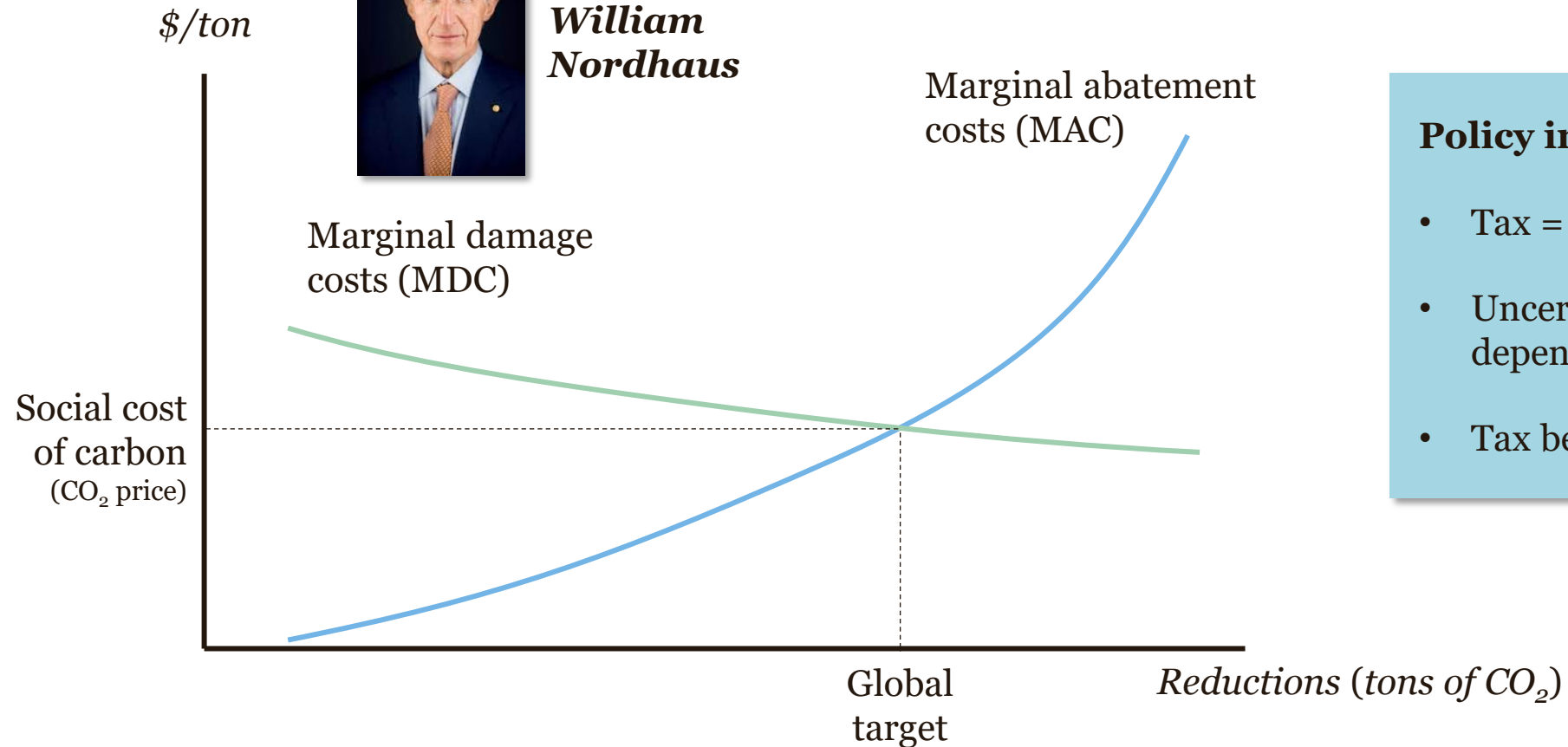


Time preferences

# The optimal climate policy in a global perspective



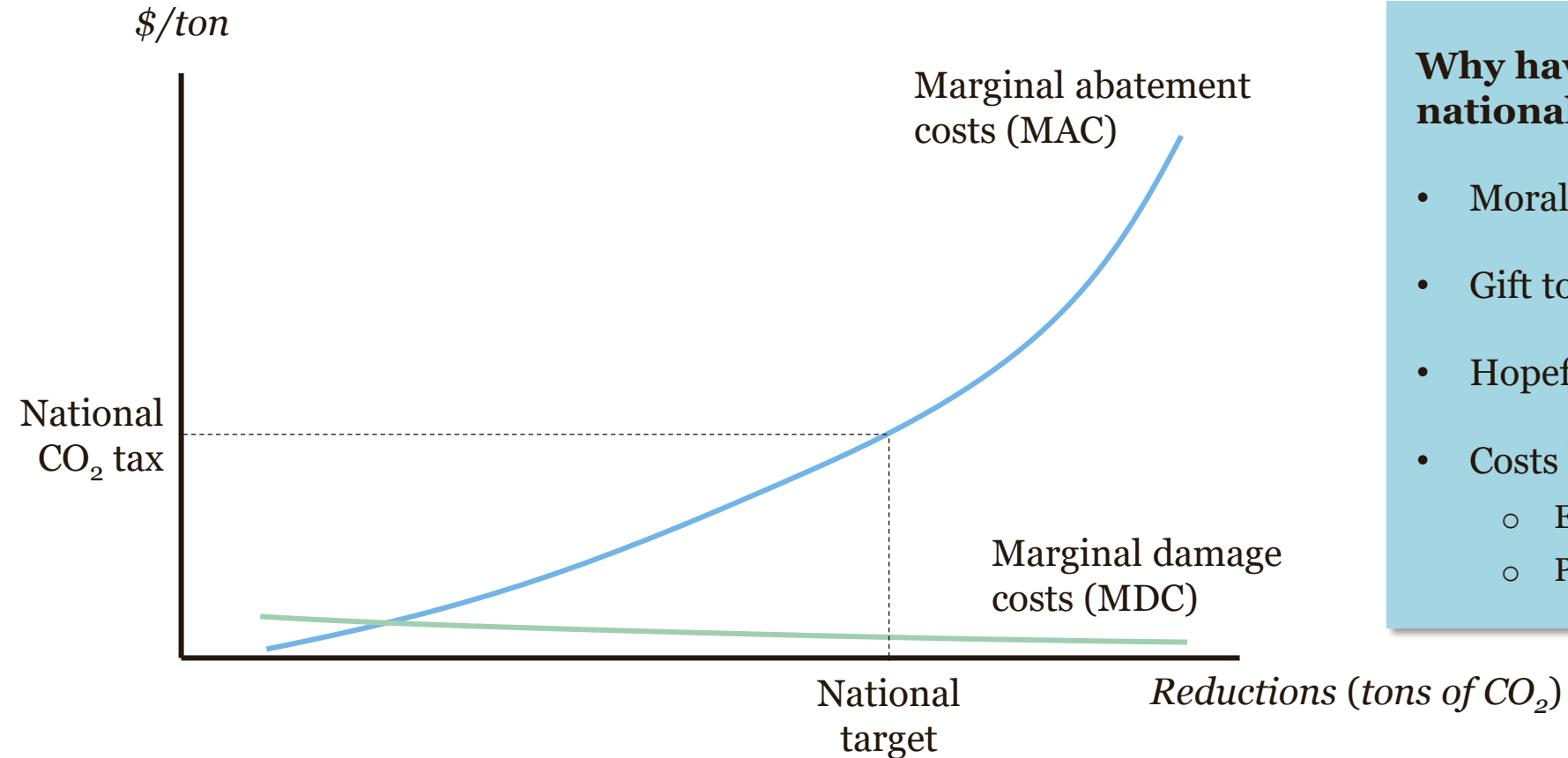
**William  
Nordhaus**



## Policy instruments:

- Tax = cap-and-trade
- Uncertainty -> policy choice depends on the slope of curves
- Tax beats subsidy

# The optimal climate policy in a single-country perspective



## Why have an ambitious national reduction target?

- Moral considerations
- Gift to the world
- Hopefully, the gift is returned
- Costs lower than expected
  - Export adventure
  - Positive side effects

## A formal description of social time preferences

- The famous Ramsey rule of the social discount rate:

$$r = \rho + \eta \cdot g$$

Elasticity of marginal utility

Consumption growth

The pure time preference

	$r$	$\rho$	$\eta$	$g$
Nordhaus	4,25	1,5	1.45	1,9
Stern	2,0	0.1	1	1,9
200 economists*	2,4	0.5	1	1,9

\* Survey by Drupp et al. (2018)

## The attitude towards time is crucial for our climate ambitions

- The optimal mitigation path:

	$r$	$\rho$	$\eta$	$g$	Warming 2100 (°C)	SCC 2050 (USD/ton)
Nordhaus	4.25	1,5	1.45	1.9	3.5	88
Stern	2.0	0.1	1	1.9	2.26	572
200 economists	2.4	0.5	1	1.9	2.51	385
No discounting	0	0	0	1.9	2.12	4,609

Simulations by Bendsen and Thellersen in the DICE2016R model.

[www.klimaaraadet.dk](http://www.klimaaraadet.dk)

[frederik.silbye@klimaaraadet.dk](mailto:frederik.silbye@klimaaraadet.dk)