

Short Description of the Regensburg Model Scenario Types RM 1 – 6

The RM Scenario Types are used to derive plausible emission paths that meet a certain budget.

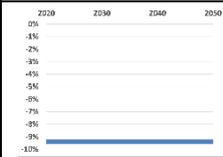
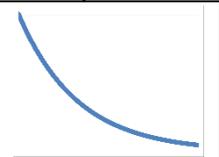
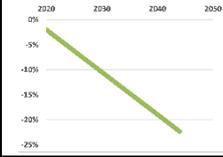
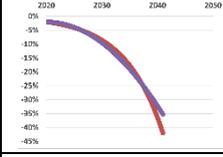
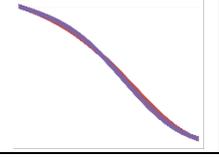
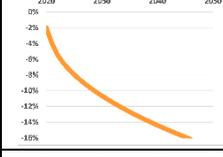
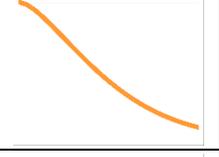
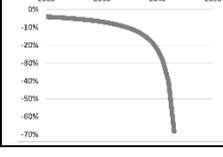
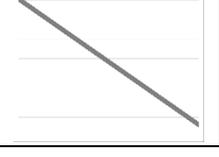
The emission paths are essentially determined indirectly by an assumption about the property of the annual emission changes. This is the innovative core of the RM Scenario Types.

The scenario types RM 1 - 5 represent monotonous pathways for annual reduction rates. RM-6 assumes a constant annual reduction amount.

The **focus** is on the following three basic types for the **development** of the **reduction rates**:

- (1) Initial less than proportional increase (RM-2-exp, RM-4-quadr and RM-6-abs) ► concave
- (2) Initial over-proportional increase (RM-5-rad) ► convex
- (3) Linear increase (RM-3-lin) ► linear

The scenario types offered cover the range of plausible possibilities well. Which scenario type makes the most sense must be decided on the basis of an overall climate policy assessment.

Scenario type	Properties of the annual reduction rates (RM 1 - 5) or the annual reduction amount (RM-6)	Mathematical basic type annual reduction rates	Development of the annual reduction rates ►	Development of the emission paths
RM-1-const	Constant annual reduction rate ► constant	-		
RM-3-lin	Reduction rates lie on a straight line ► linear	$y = ax + b$		
RM-2-exp (red) RM-4-quadr (purple)	Initially above RM-3-lin (initially less ambitious than RM-3-lin) ► concave On a tight budget, RM-2 and RM-4 produce almost equal results.	RM-2: $y = e^x$ RM-4: $y = ax^2 + b$		
RM-5-rad	Initially below RM-3-lin (initially more ambitious than RM-3-lin) ► convex	$y = a\sqrt{x} + b$		
RM-6-abs	Constant annual reduction amount (emission path is a straight line) ► concave	-		

The differences between the scenario types can also be easily understood with this web app: <http://paths.climate-calculator.info>.

A comprehensive mathematical description of the RM Scenario Types can be found here:

Wolfsteiner, A. & Wittmann, G., 2023. *Mathematical Description of the Regensburg Model Scenario Types RM 1 – 6*. [Online]

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