



**HSE**  
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Laboratory for Climate  
Change Economics

# Green transition in turbulent times

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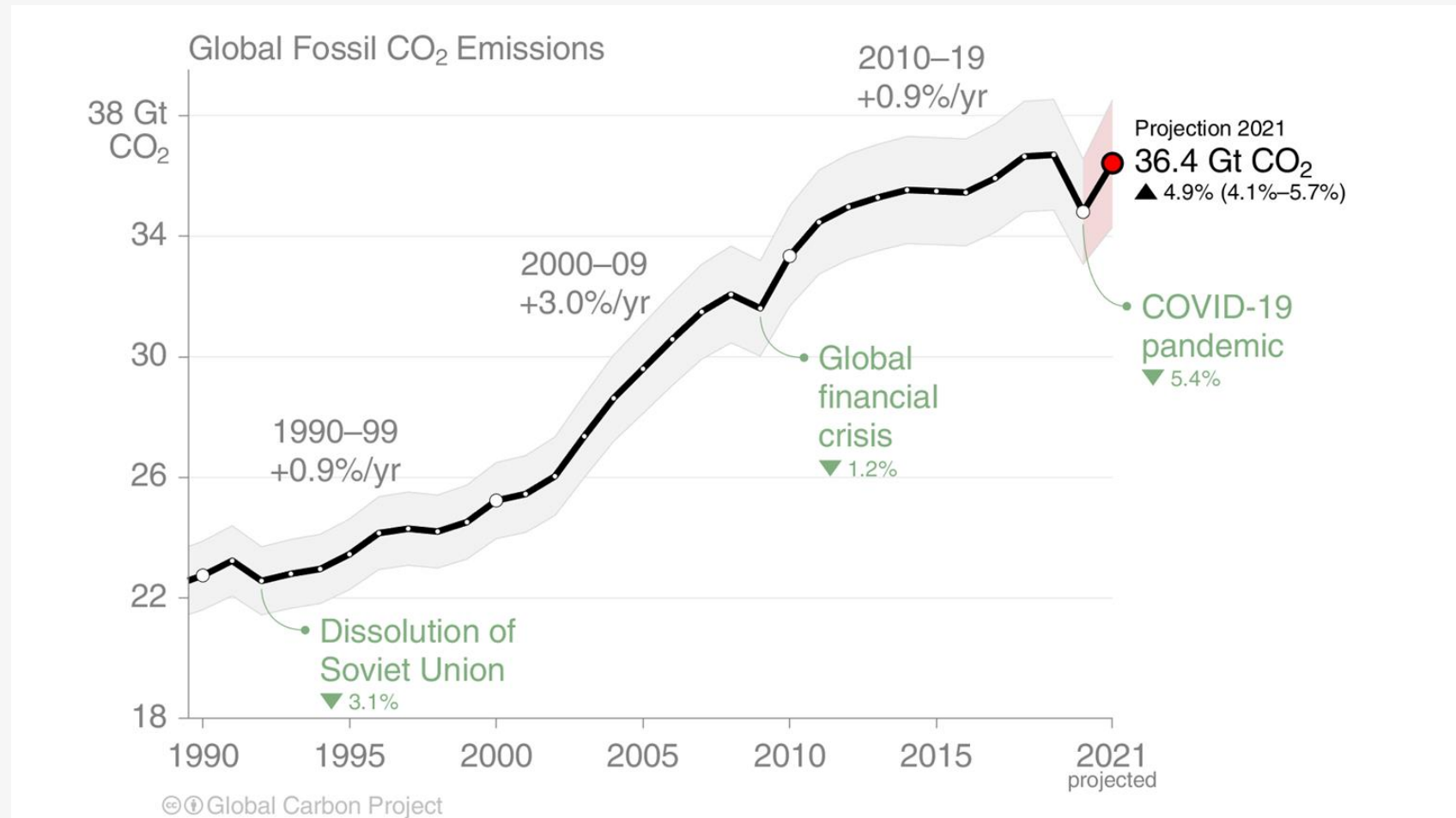
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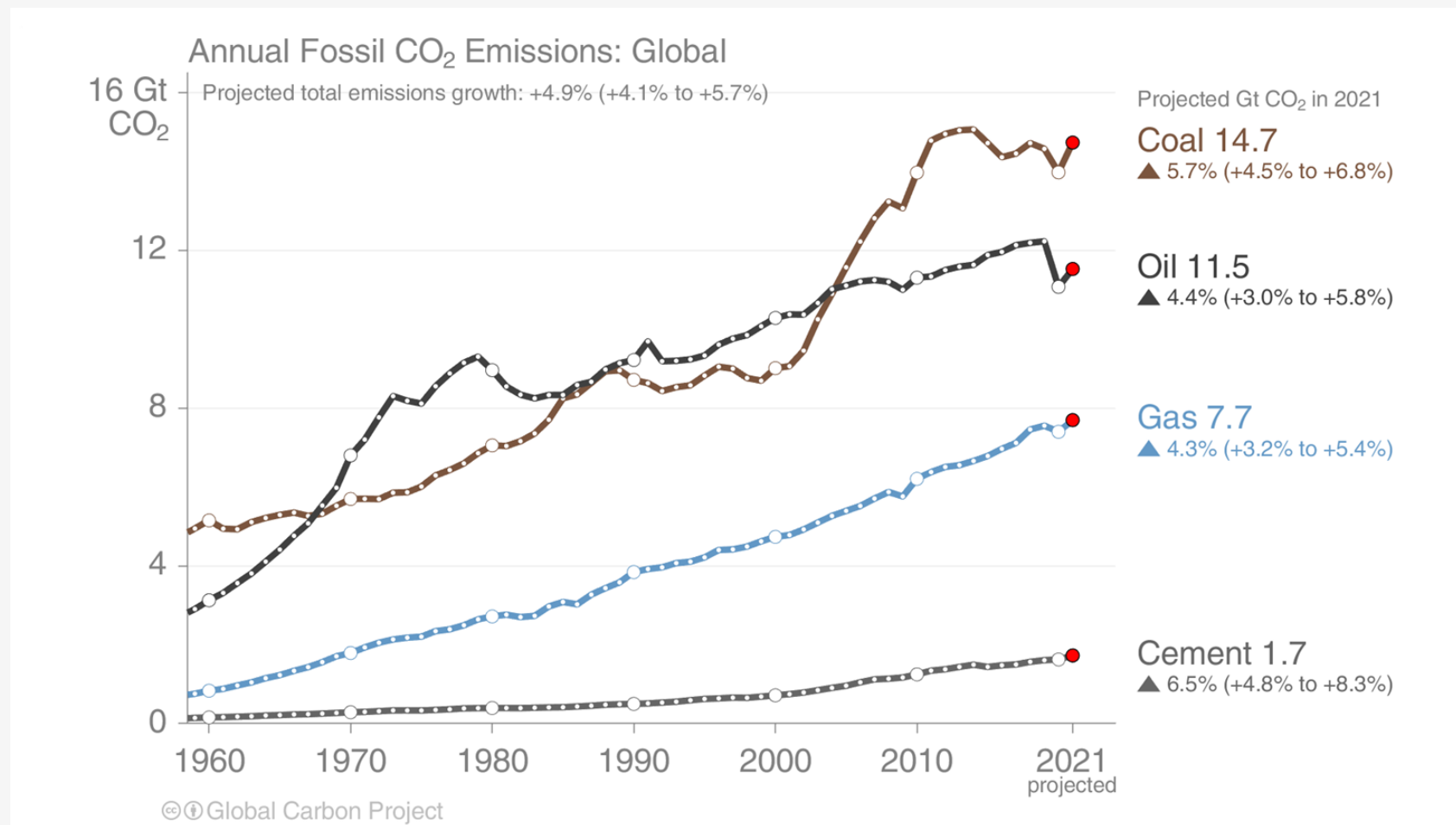


# Global emissions nearly restored to pre-COVID level by 2021



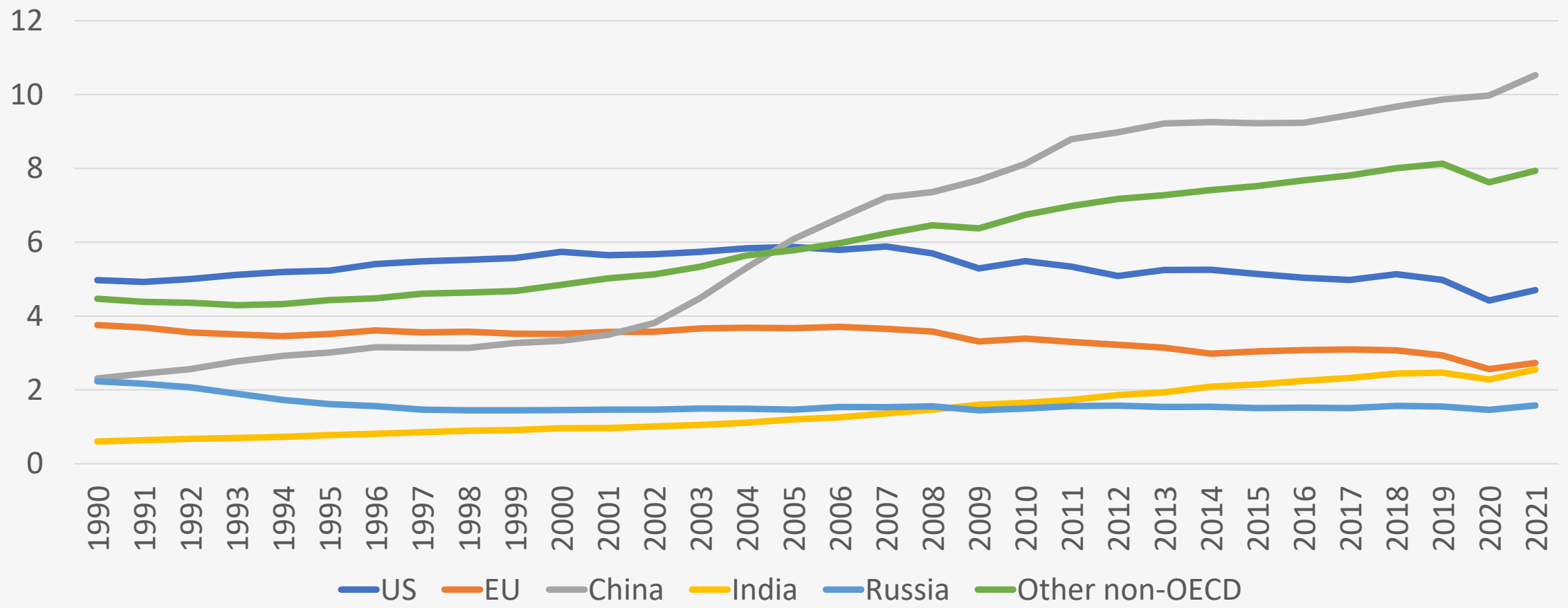
Source: [Friedlingstein et al 2021](#); [Global Carbon Project 2021](#)

# Coal and gas production in 2021 was higher than before COVID-19



Source: [Friedlingstein et al 2021](#); [Global Carbon Project 2021](#)

# Global emissions from fossil fuels combustion in 1990-2021



Source: BP

# Finance gap

- ✓ 2.4 trillion dollars are required for climate projects in developing countries. How to mobilize them?

## Private finance:

- ✓ Through global carbon markets, convergence of taxonomy of green projects, technology transfer

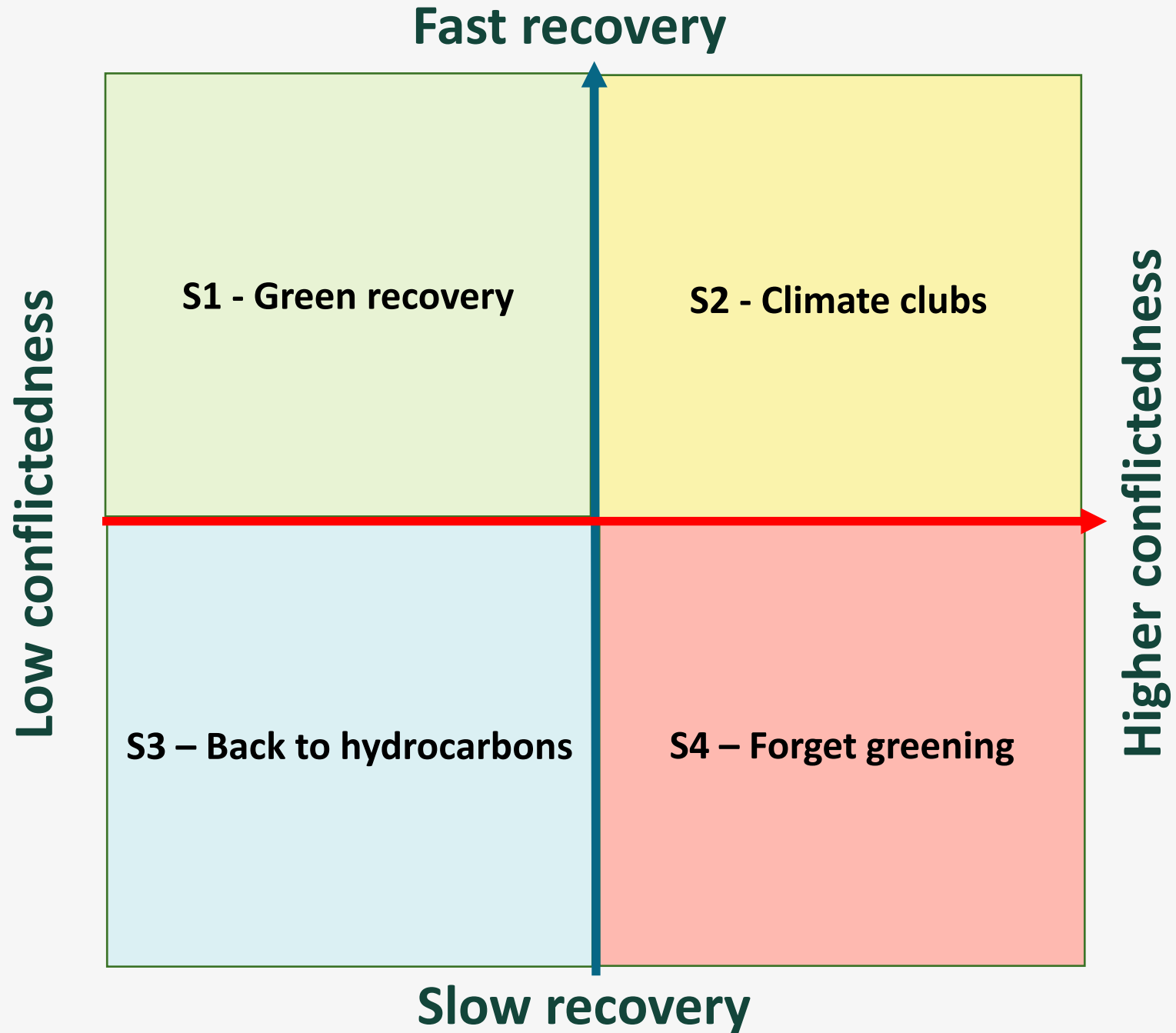
## Public capital:

- ✓ Through bilateral deals (South Africa, Indonesia etc.)
- ✓ Through creation of new funds
- ✓ Through reforms of Bretton-Woods institutions
- ✓ Through conditional restructuring of debts of developing countries

# Climate implications of Ukraine crisis

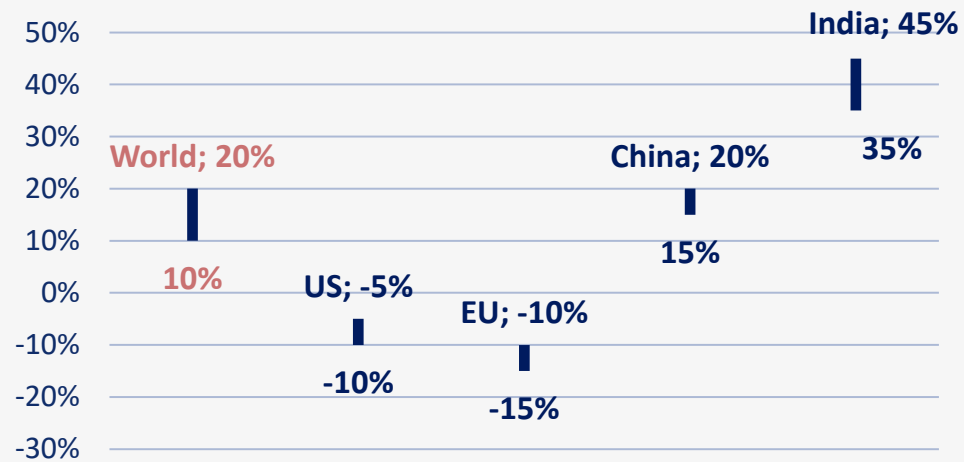
- ✓ Time horizons matter:
  - ✓ Limiting Russian exports will lead to the rise of emissions in Europe in short term but may lead to their decrease in the long-term
  - ✓ Does Europe have time for long-term hopes?
- ✓ There is no single trajectory of global (and even Western) green transition anymore
  - ✓ Europe: just 8% of global emissions
  - ✓ In China and India which really matter green transition may slow down
  - ✓ US and European trends differ dramatically
  - ✓ International cooperation is weakening

Scenarios of greening in new conditions

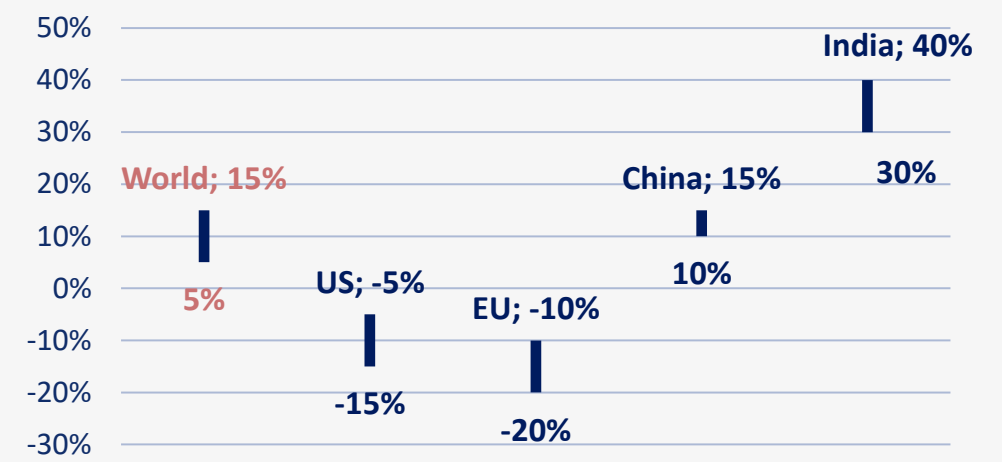


# Energy consumption by 2030 compared to 2019

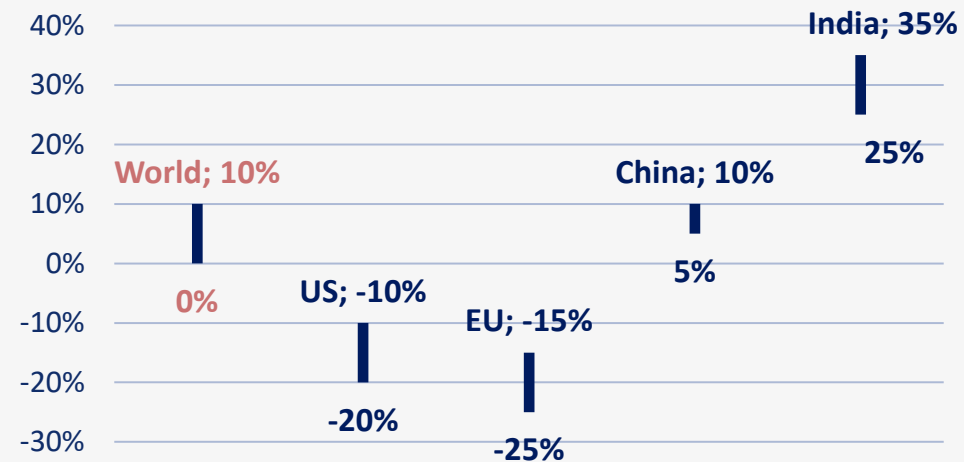
## S1 – Green recovery



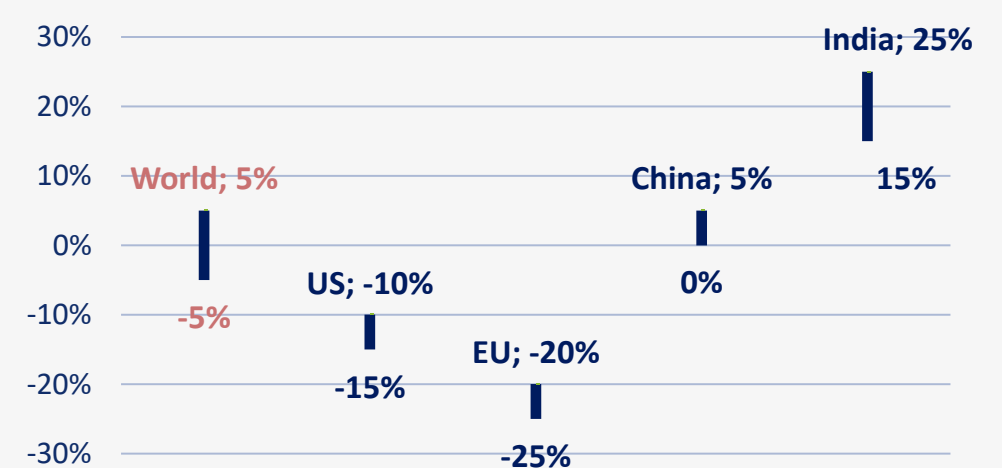
## S2 – Climate club



## S3: Back to hydrocarbons



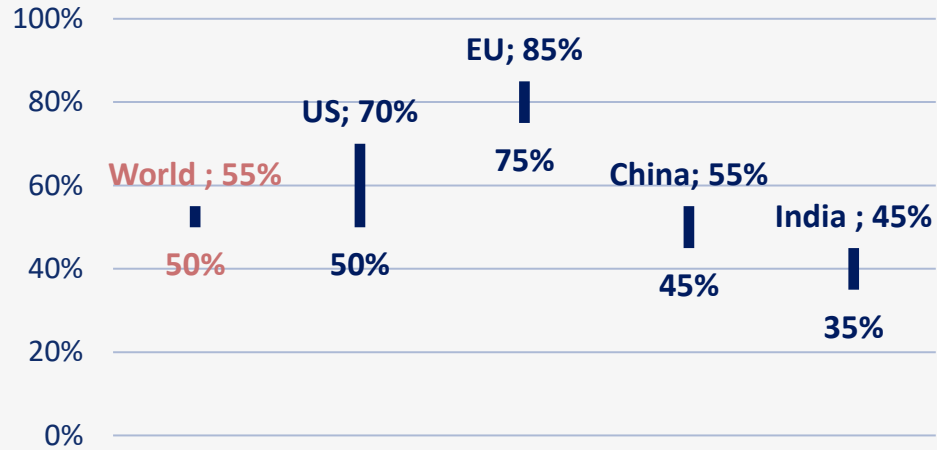
## S4 – Forget greening



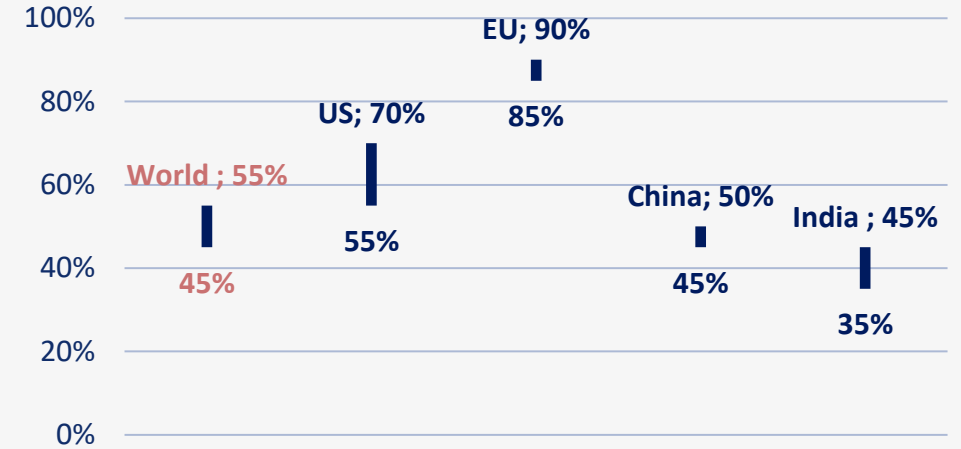


# Share of renewables and nuclear energy in power generation by 2030

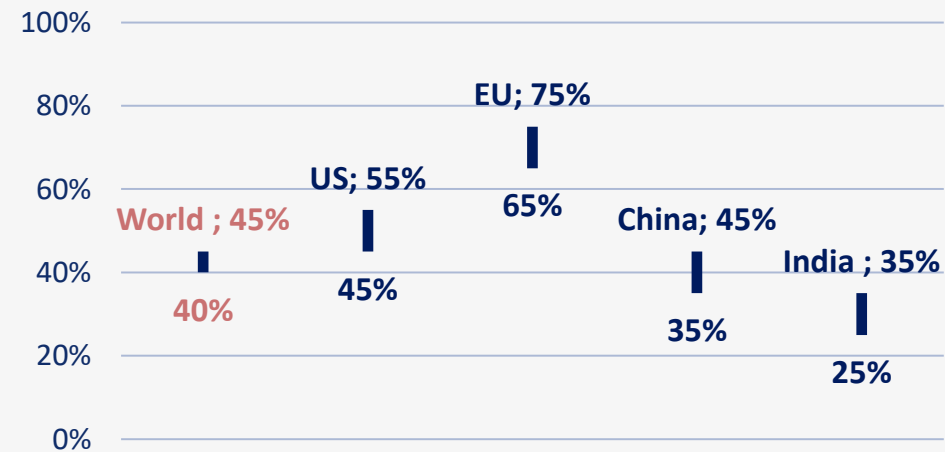
## S1 – Green recovery



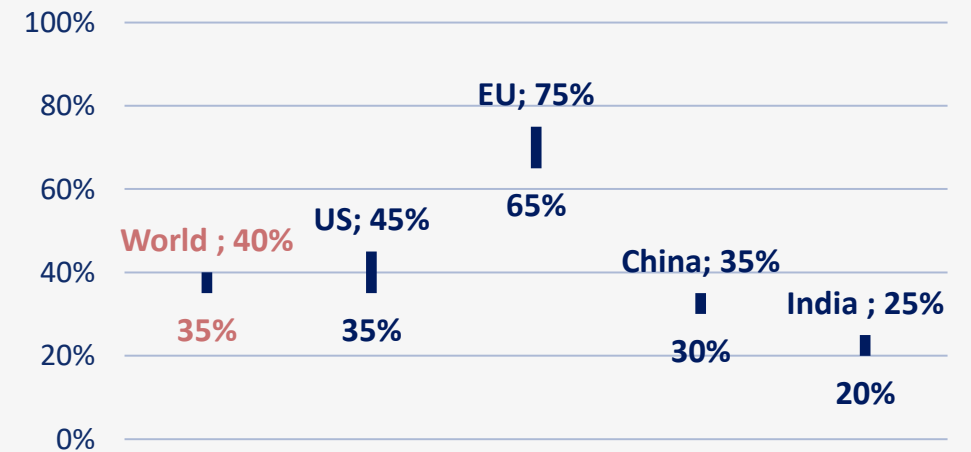
## S2 – Climate club



## S3: Back to hydrocarbons



## S4 – Forget greening



# NDC in leading countries

## Current NDCs:

- US: reduce emissions by 50% by 2030 compared to 2005
- EU: reduce emissions by 55% by 2030 compared to 1990
- China: reduce carbon intensity of GDP by 65% by 2030 compared to 2005 and pass a peak of emissions
- India: reduce carbon intensity of GDP by 45% by 2030 compared to 2005

### S1 – Green recovery

- US: ✓
- EU: ✓
- China: ✓
- India: ✓

### S3: Back to hydrocarbons

- US: ✗
- EU: ✗
- China: ✓
- India: ✓

### S2 – Climate club

- US: ✓
- EU: ✓
- China: ✓
- India: ✓

### S4 – Forget greening

- US: ✗
- EU: ✗
- China: ✗
- India: ✗

# Carbon border adjustment

## S1 – Green recovery

- US: may introduce
- EU: introduce in 2026 in relatively soft form
- China: ✘
- India: ✘

## S3: Back to hydrocarbons

- US: ✘
- EU: introduce in 2026 in relatively soft form
- China: ✘
- India: ✘

## S2 – Climate club

- US: may introduce
- EU: introduce in 2026 in relatively strict form
- China may introduce
- India: ✘

## S4 – Forget greening

- US: ✘
- EU: introduce in 2026 in relatively strict form
- China: ✘
- India: ✘

# Climate cooperation

## S1 – Green recovery

- **The largest possible opportunities** for cooperation between developed and developing countries in technology transfer and climate finance

## S3: Back to hydrocarbons

- **Moderate opportunities** for cooperation between developed and developing countries in technology transfer and climate finance

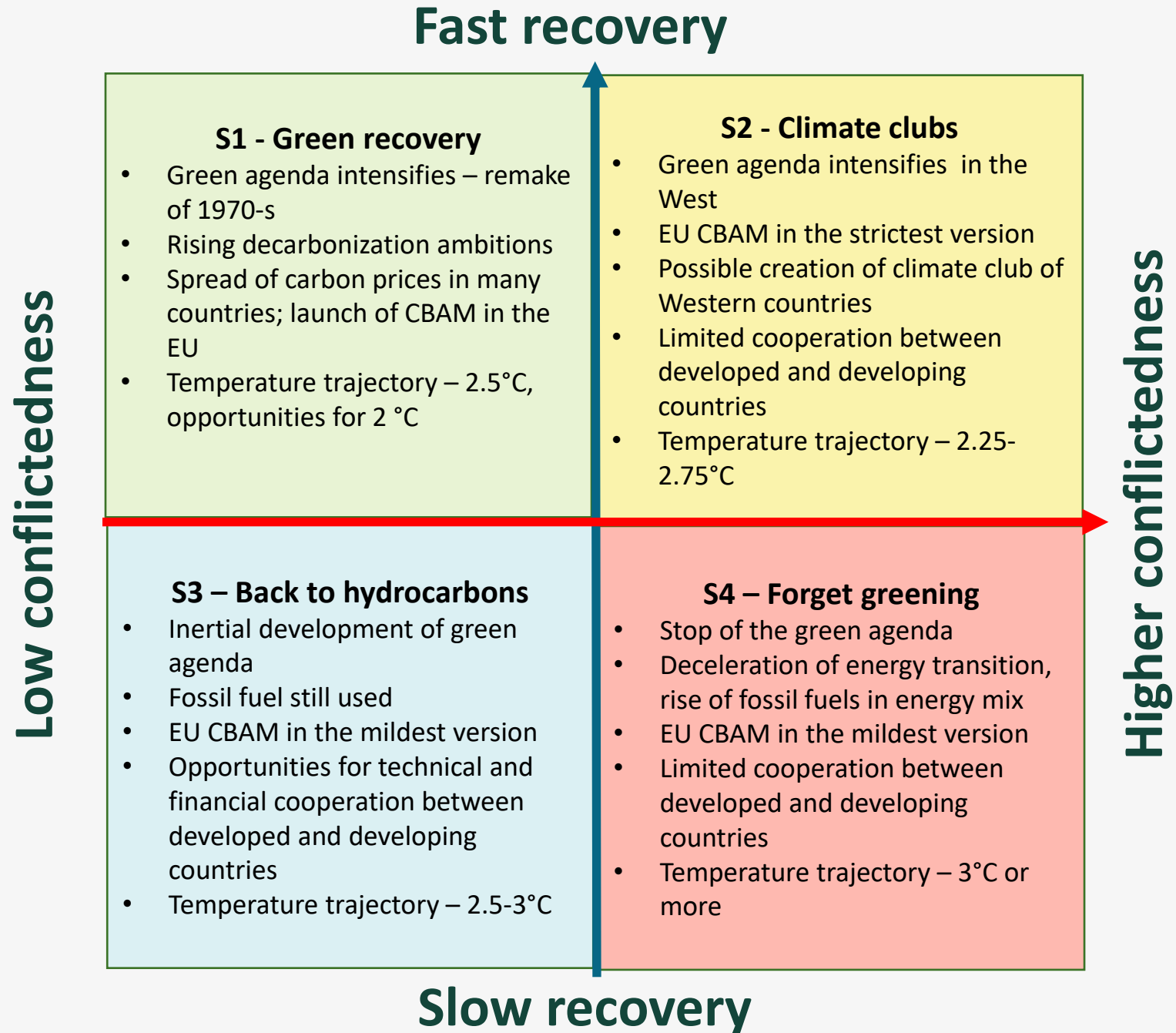
## S2 – Climate club

- **Opportunities** for financial and technological cooperation in climate area between developed and developing countries **are limited**

## S4 – Forget greening

- **Freezing the cooperation** between developed and developing countries in technology transfer and climate finance

# Scenarios of greening in new conditions



# Our scenarios vs IEA



IEA scenarios – from IEA 2021



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**Thanks for your attention!**

**My digital business card**

