SRREN: Mitigation Potential and Costs

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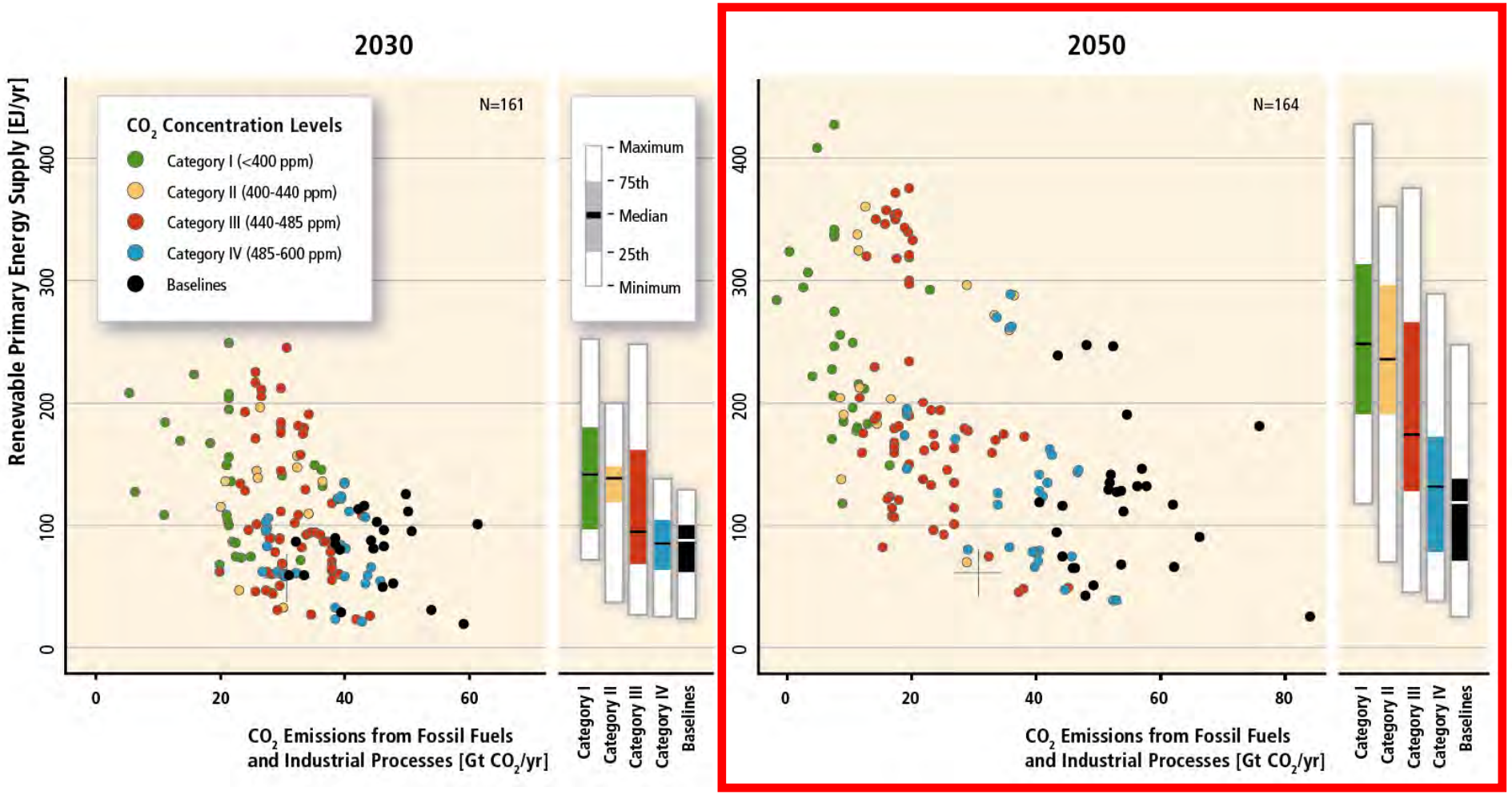
Global RE primary energy supply from 164 long-term scenarios versus fossil and industrial CO_2 emissions.



Source: SRREN SPM, Figure SPM.9

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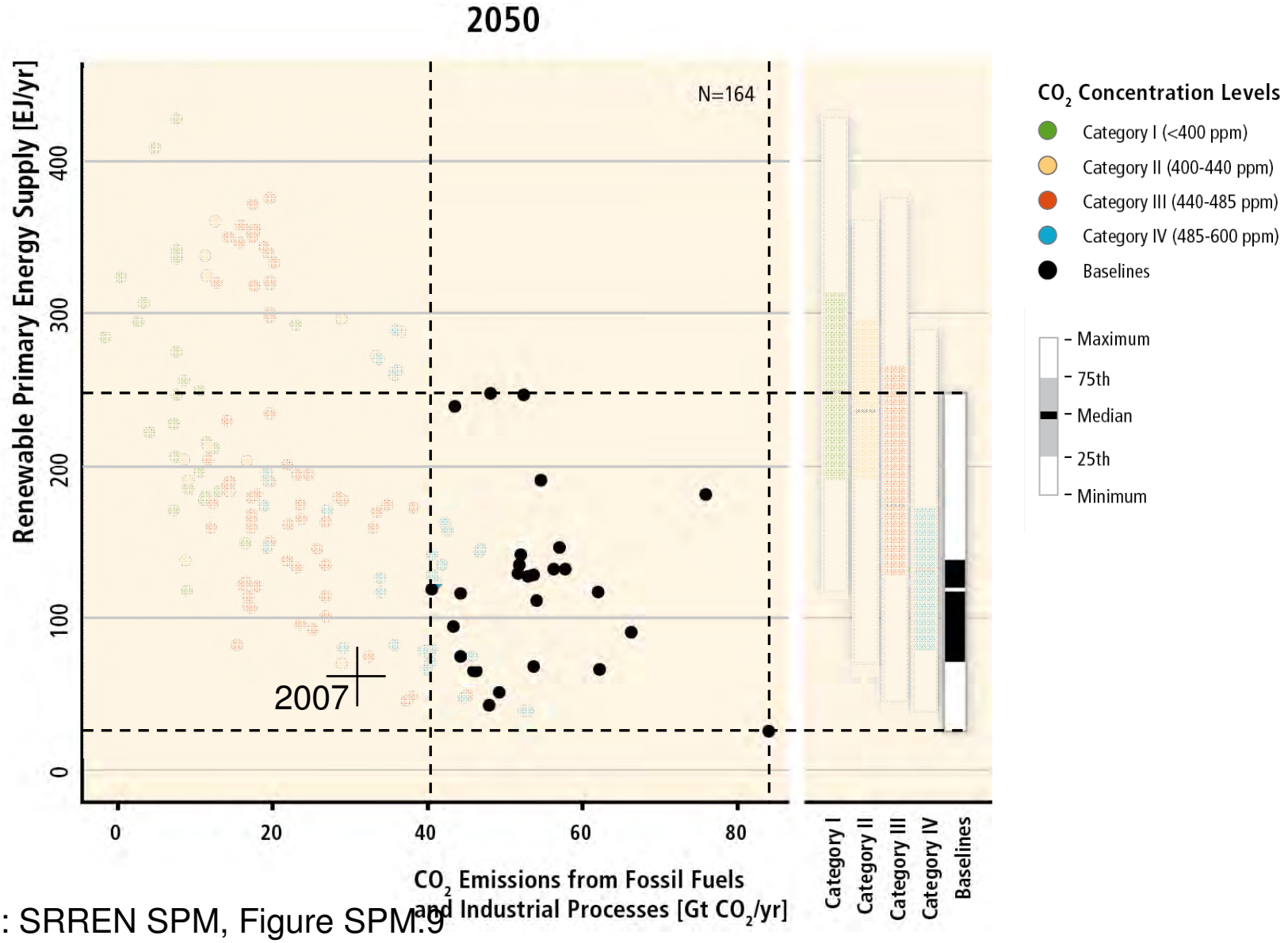

Source: SRREN SPM, Figure SPM.9

Why do we see such a wide RE Deployment Range in Business-As-Usual Scenarios without additional Climate Policies?

RE deployment depends on a number of factors:

- How will the demand for energy services, i.e. the scale of the energy system develop?
- What about fossil fuel prices? – fossil energy resources and extraction technology
- Will the costs of RE come down further without climate policies?
- To which other objectives such as secure energy supply, energy access, air pollution control, etc. can RE contribute?

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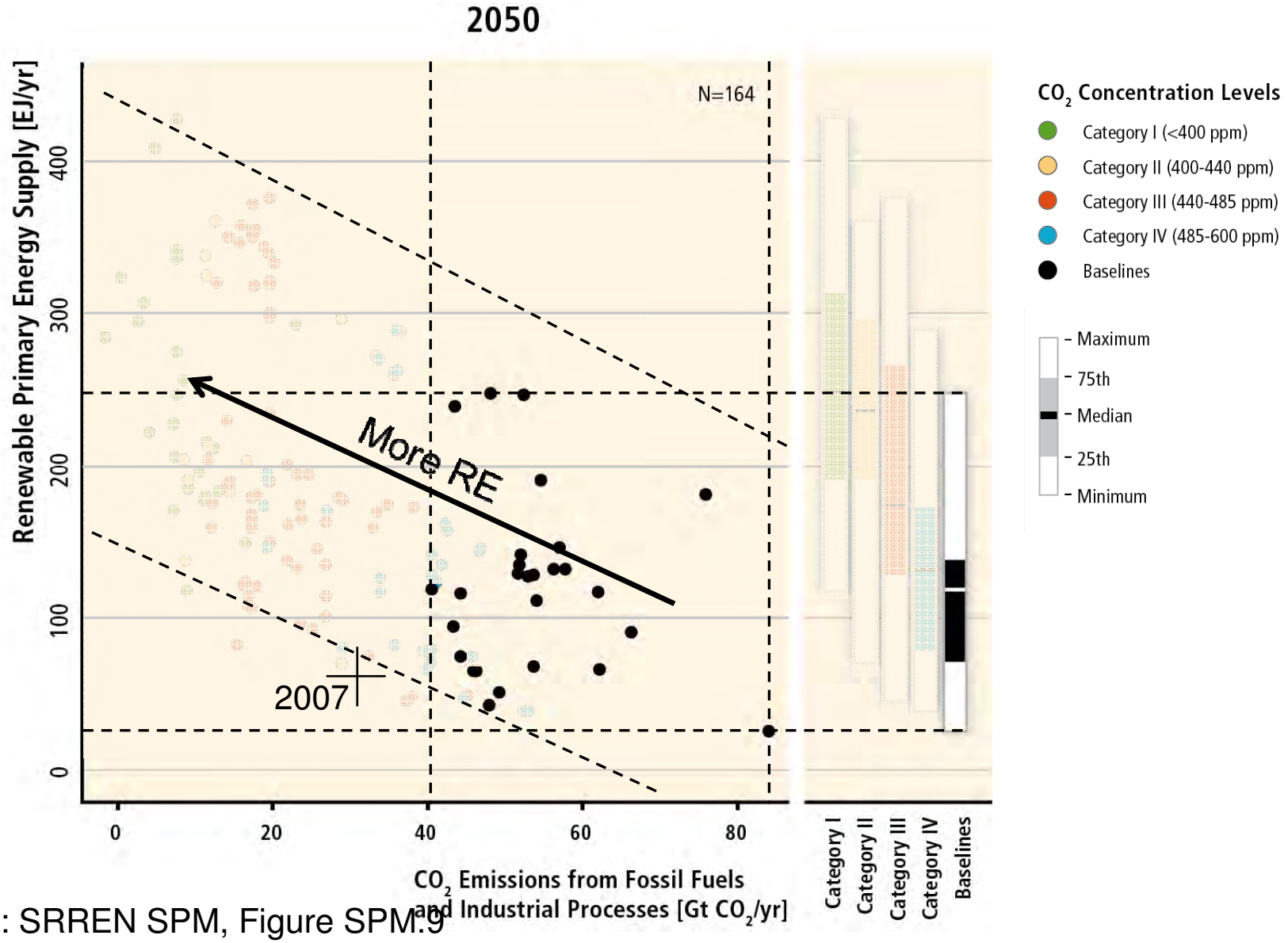

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And what is driving the RE Deployment in Scenarios with Climate Policies?

RE deployment in Climate Stabilization Scenarios in addition depends on:

- How much mitigation will come from the non-energy sectors?
- How much can *energy efficiency* do?
- What will be the role of the non-RE low-carbon supply options?
  - Nuclear Energy
  - Carbon Capture and Storage
- Can adverse impacts of RE deployment be avoided?

RE will have to play a larger role in mitigating GHG emissions if other options are not available.

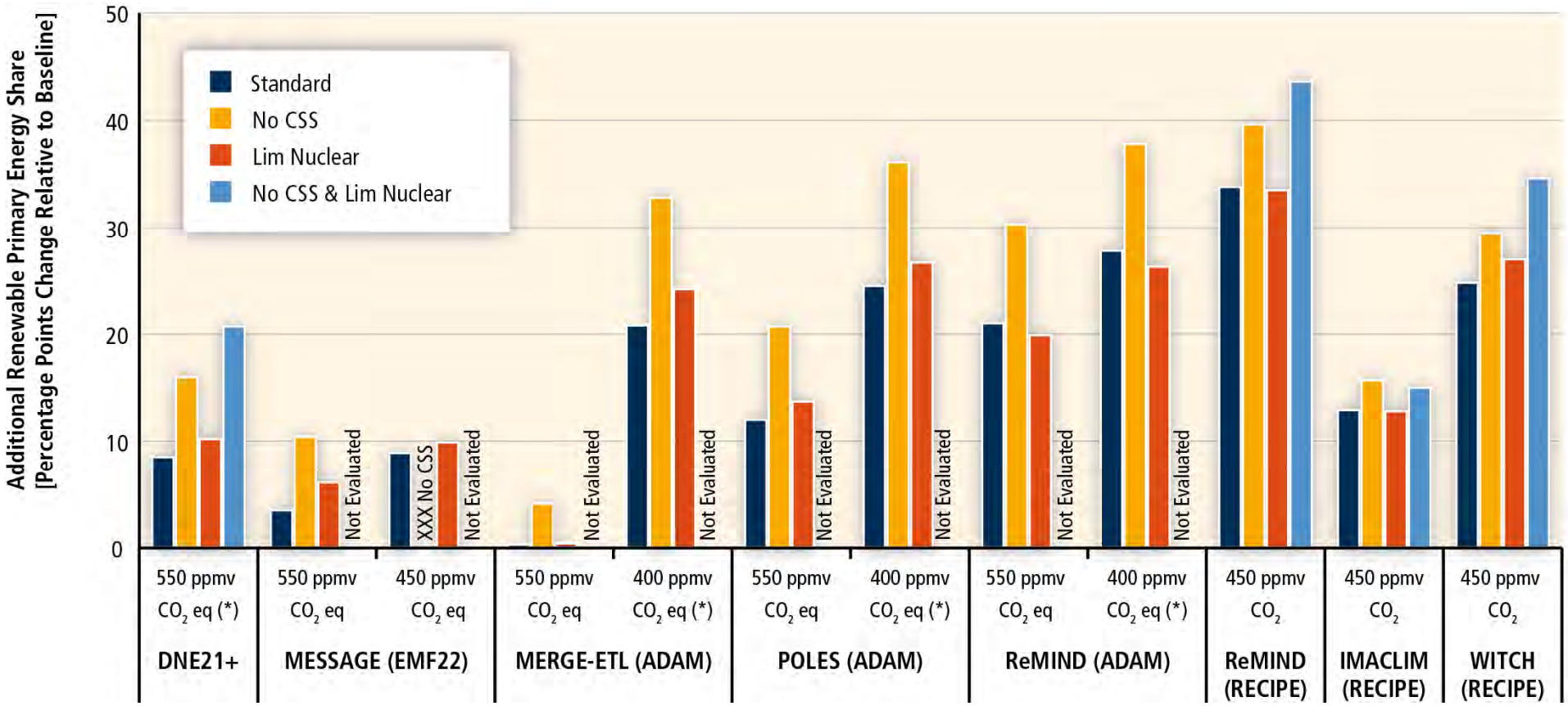
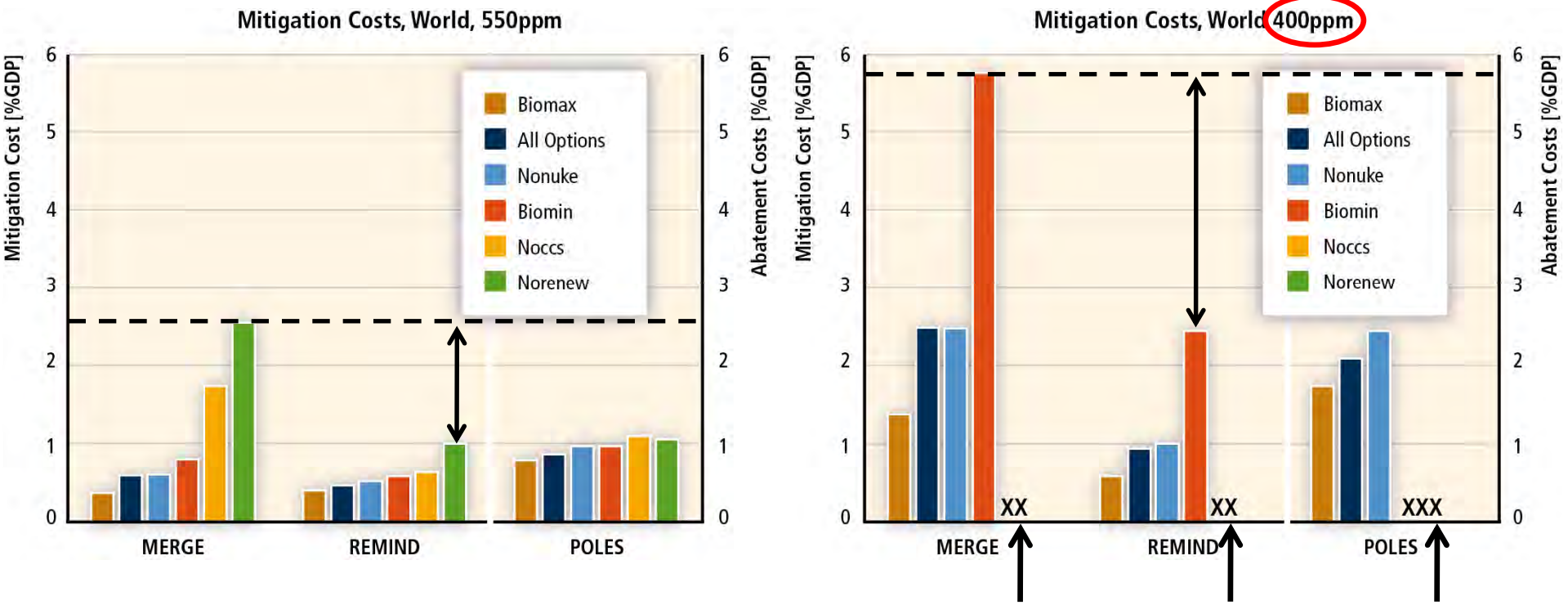


Figure 10.6 Increase in global renewable primary energy share (direct equivalent) in 2050 in selected constrained technology scenarios compared to the respective baseline scenarios.

So how much does it cost?

Large uncertainties
in “option value” of RE



Without additional RE deployment the 2ºC target may not be achievable.

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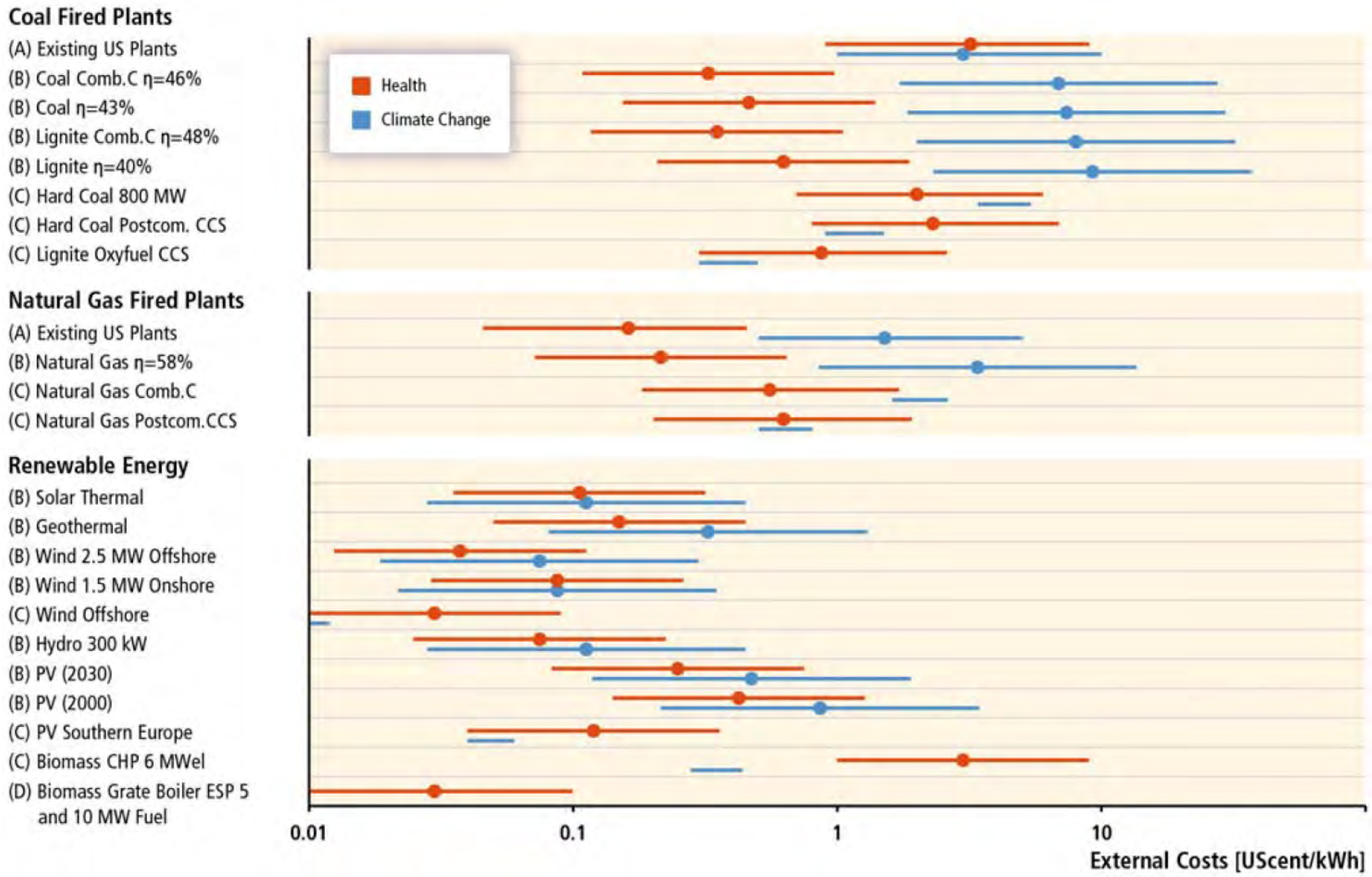
Illustration of external costs due to life-cycles of electricity generation technologies – renewable energy tend to have lower external costs



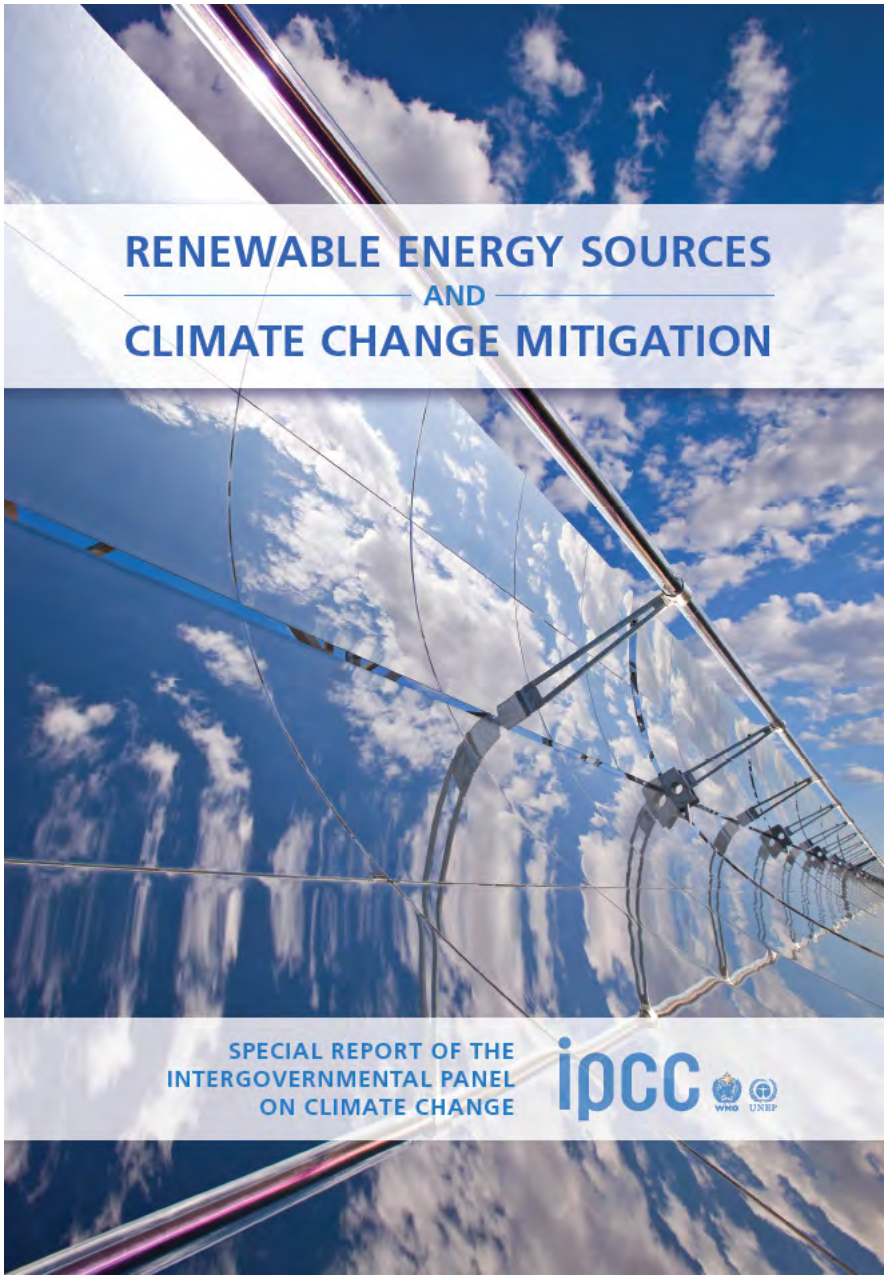
Source: SRREN Figure 10.36

What can we expect for AR5?

- Improvements in identifying the most salient factors that determine future RE deployment
- Several multi-model studies are currently on their way.

But…

- Future cost and performance improvements of RE and other mitigation options will remain unknown.



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Thank you for your attention!

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