



POTSDAM INSTITUTE FOR
CLIMATE IMPACT RESEARCH

FORest MAnagement Scenarios for Adaptation and Mitigation (FORMASAM)

C. Reyer, Zvolen, 18-09-2019

EFI THEMES ADDRESSED: BIOECONOMY AND RESILIENCE

Member of

Leibniz
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Association



PIK

What has happened since Grenoble?

- Scenario matrix further developed
- TG2, TG3 simulations for some models ongoing
- TG4 first test runs
- Planning of Final Event

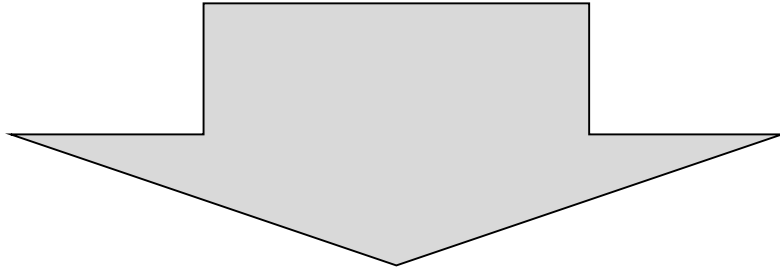
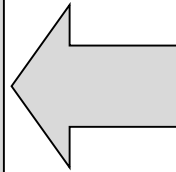
Aim of FORMASAM

- to develop future forest management scenarios for adaptation and mitigation of climate change that
 - are consistent from stand → landscape → continental level,
 - allow to explore options for climate change mitigation and adaptation at the backdrop of a European bio-economy and changing climatic conditions.

FORMASAM Structure

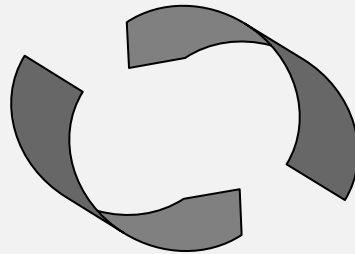
TG1: Future Forest Management Scenarios
(Lead MJ Schelhaas)

**UNECE,
ToS**



Forest management models at:

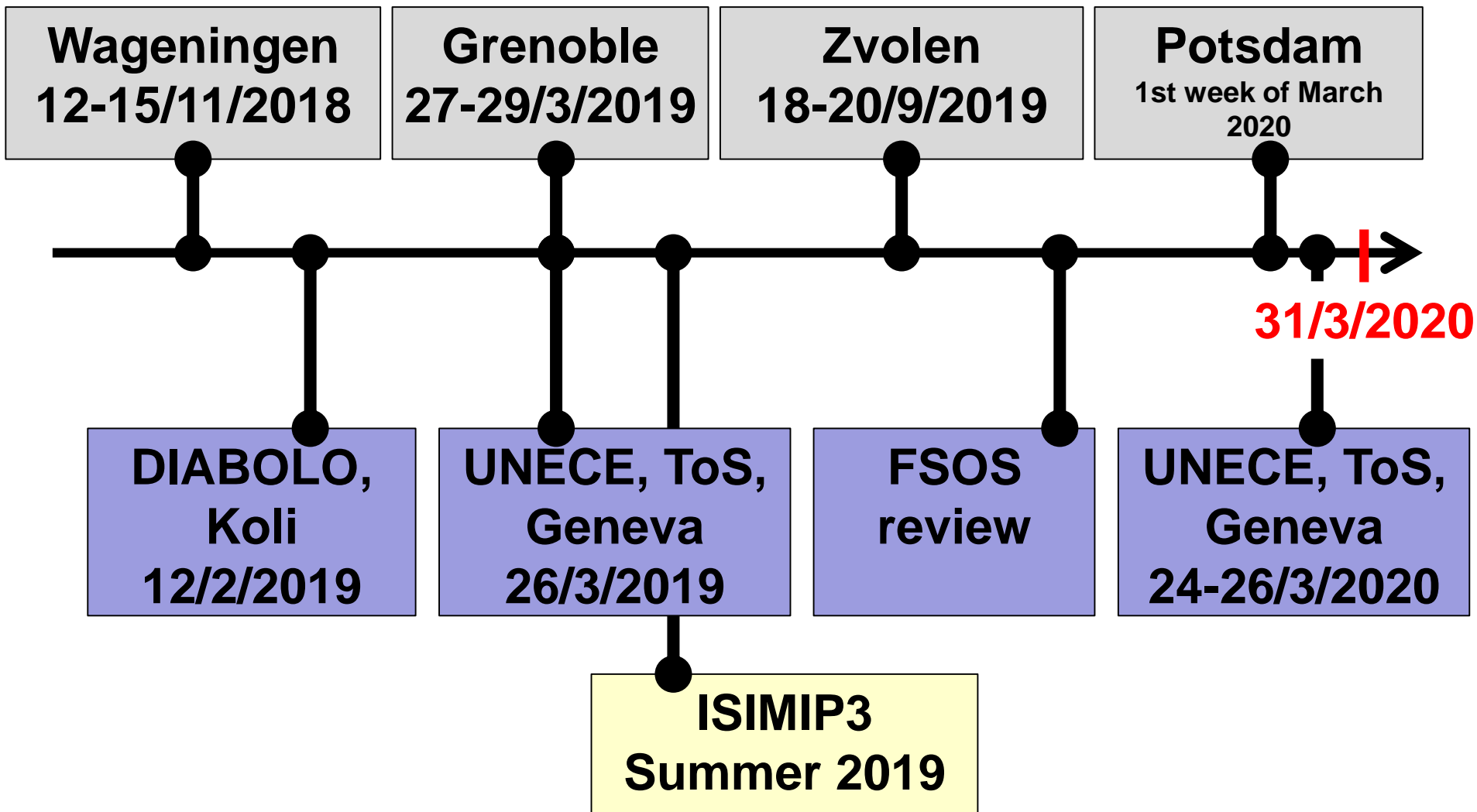
TG2: stand scale
(Lead A Mäkelä)



TG4: European scale
(Lead A Rammig)

TG3: landscape scale
(Lead R Seidl)

Timeline FORMASAM and related activities



Goal of this meeting

- **Present first results from simulation runs**
- **Consolidate and finalise management scenarios as well as modelling protocol to simulate future forest development**
- **Storylines for management scenarios?
Adaptation/disturbances management scenarios?**
- **Plan final event**

FORMASAM reporting

Deliverables

- **Deliverable (D1):** Discussion notes from meetings (→ **break-out group notes!**)
- **Deliverable (D2, D3):** management scenarios (→ **Contribute!**)
- **Deliverable (D4, D6, D8):** An analysis of strengths and weaknesses of current forest stand, landscape and EU models for simulating management in Europe's forests (→ **Done!**)
- **Deliverable (D5, D7, D9):** Model protocol including future forest management scenarios (→ **this meeting!**) → paper plans!

Feedback from first report

- Kindly note, that person-related costs (=personnel costs) are not eligible for EFi grant, and therefore they cannot be covered from the EFi grant. However, they can be used for covering the 20% of own cost share.
- The project is overall progressing well with a very good collaboration between all project partners.
- There are only minor shortcomings in the current project development:
 - TG1: faster progress is recommended in defining the final management scenarios as the progress of other TGs is depending on them, and TG2 and 3 have already elaborated scenarios in further details.
 - EFSOS and FORMASAM collaboration is not as tight as initially planned due to development of EFSOS (out of control by FORMASAM partners).
 - TG4. Suggestion to intensify interaction to avoid delays in the 2nd period of the project.
 - It is not entirely clear how the project aims to link the preparation of INDCs (Intended Nationally Determined Contributions) of the EU and its member states for the Paris Agreement.

Budget changes

all numbers refer to the 80% covered by EFI:

- The partners who have not attended all the meetings should give some money back to the project (typically between 1200 and 1900€, a total of 9040€)
- Most of those funds should be redirected to PIK to cover additional costs for the final event, which is planned to be much larger than planned in the proposal (5140€).
- Some funds are being used to invite additional guests and key note speakers to FORMASAM meetings in Zvolen as it is too complicated to reimburse the speakers through the local partner TUZ (2000€).
- A part of the budget is added to the WEnR budget (1900€) as the first meeting was overspending slightly and because they join all FORMASAM meetings with two instead of one person.
- Still need to discuss the budget changes for Travel Grants

13:00	Official Opening & Introduction to the meeting / State of FORMASAM (feedback from interim report)	K. Merganicova, TG Leaders
13:20	Keynote: GenTree Management for European forests	S. Oddou- Muratorio
13:55	Keynote: ALTERFOR: Alternative models and robust decision-making for future forest management. Information about the Project as well as Slovak results	Jan Tucek, Robert Sedmak
14:30	Coffee break	
15:00	TG 2: presentation in plenary (some 4C results and underlying ideas behind simulations) + feedback/discussion from plenary (Please take notes here)	Mats Mahnken
15:30	TG 3: presentation in plenary (some results and underlying ideas behind simulations) + feedback/discussion from plenary (Please take notes here)	Rupert Seidl/Julius Sebald
16:00	TG 4: presentation in plenary (some results and underlying ideas behind simulations) + feedback/discussion from plenary (Please take notes here)	Anja Rammig
16:30	Coffee break	
17:00	Keynote: The World of 2050	Lia Fain
17:30	TG 1: presentation in plenary of FSOS climate change adaptation chapter + feedback/discussion (Please take notes here)	L. König, MJ Schelhaas
18:00	End of the first day	



Thursday 19-09-2019

09:00	Opening of the second day	
9:05	Keynote: Forest restitution in Eastern Europe	Zuzana Sarvasova, Zuzana Dobsinska
9:30	Time for break-out groups to discuss technical details etc.	TG1-4
10:30	Coffee Break	
11:00	Time for break-out groups to discuss technical details etc.	TG1-4
12:30	Lunch + Visit of the “Virtual cave”: showroom for forest management tools	Peter Valent, Marek Fabrika
14:00	Field trip: excursion to two different sites of predominantly broadleaved forests and discussion with local forest managers and researchers	Igor Stefancik, Jan Merganic
19:00	Joint networking dinner	

- TG3 has room with VC
- TG2 Stand modellers → Annikki is sick, Francesco/Mats/Martin will help
- Scenario group: write up storylines? Graphical visualisation of framework? Paper?

Friday 20-09-2019

9:00	Keynote: Forest management planning based on diameter classes - as one possibility for forest management adaptation to climate change	Ladislav Kulla
9:30	Keynote: policy and adaptation from EU Liaison office	Matej Schwarz
10:00	Time for break-out groups to discuss technical details etc. +Coffee Break (while break-out groups are ongoing)	
11:30	Plenary: Short Wrap-up, next steps from each TG	TG Leaders
12:00	End of meeting + Lunch	
13:00	ISIMIP stand modellers side meeting	

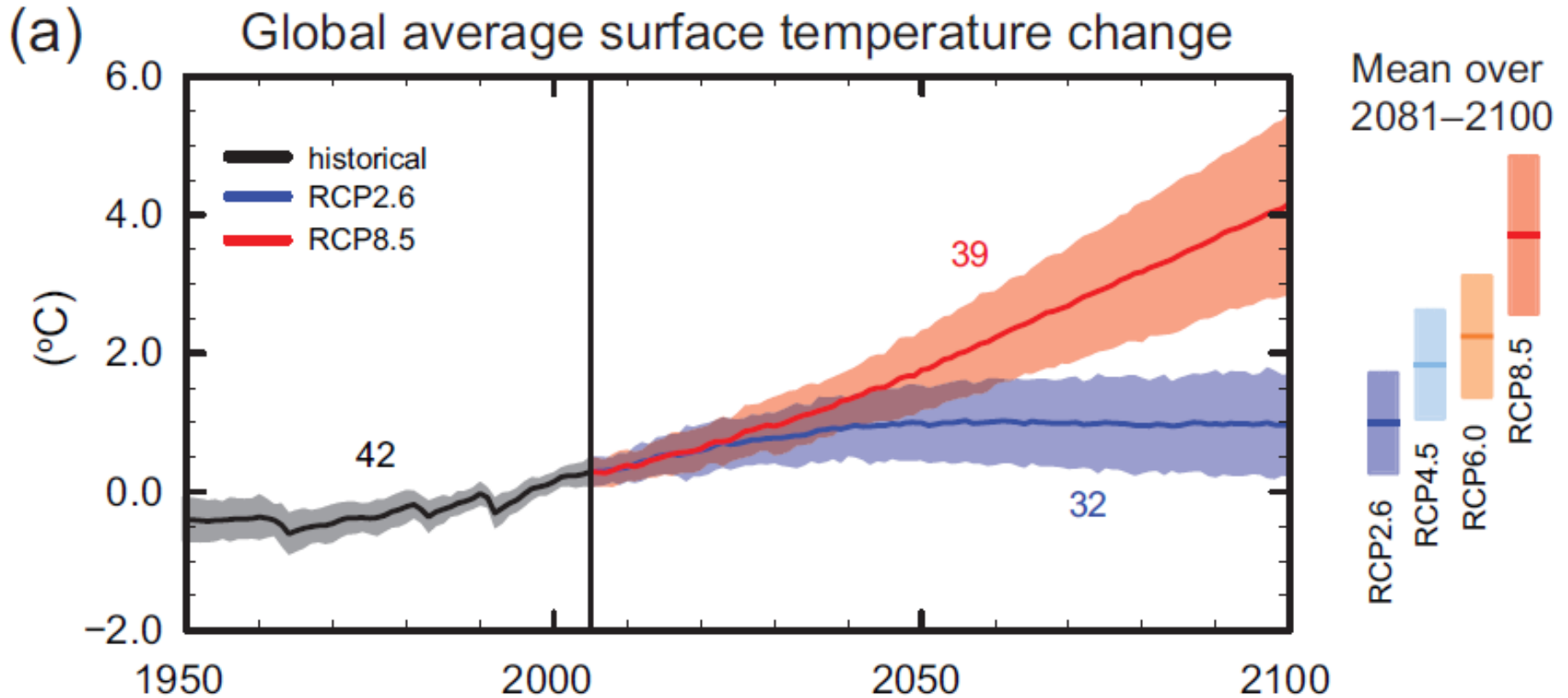
- ISIMIP has room with VC, who needs it in morning?
- Extra group to plan final conference on Friday

Organisations of group work

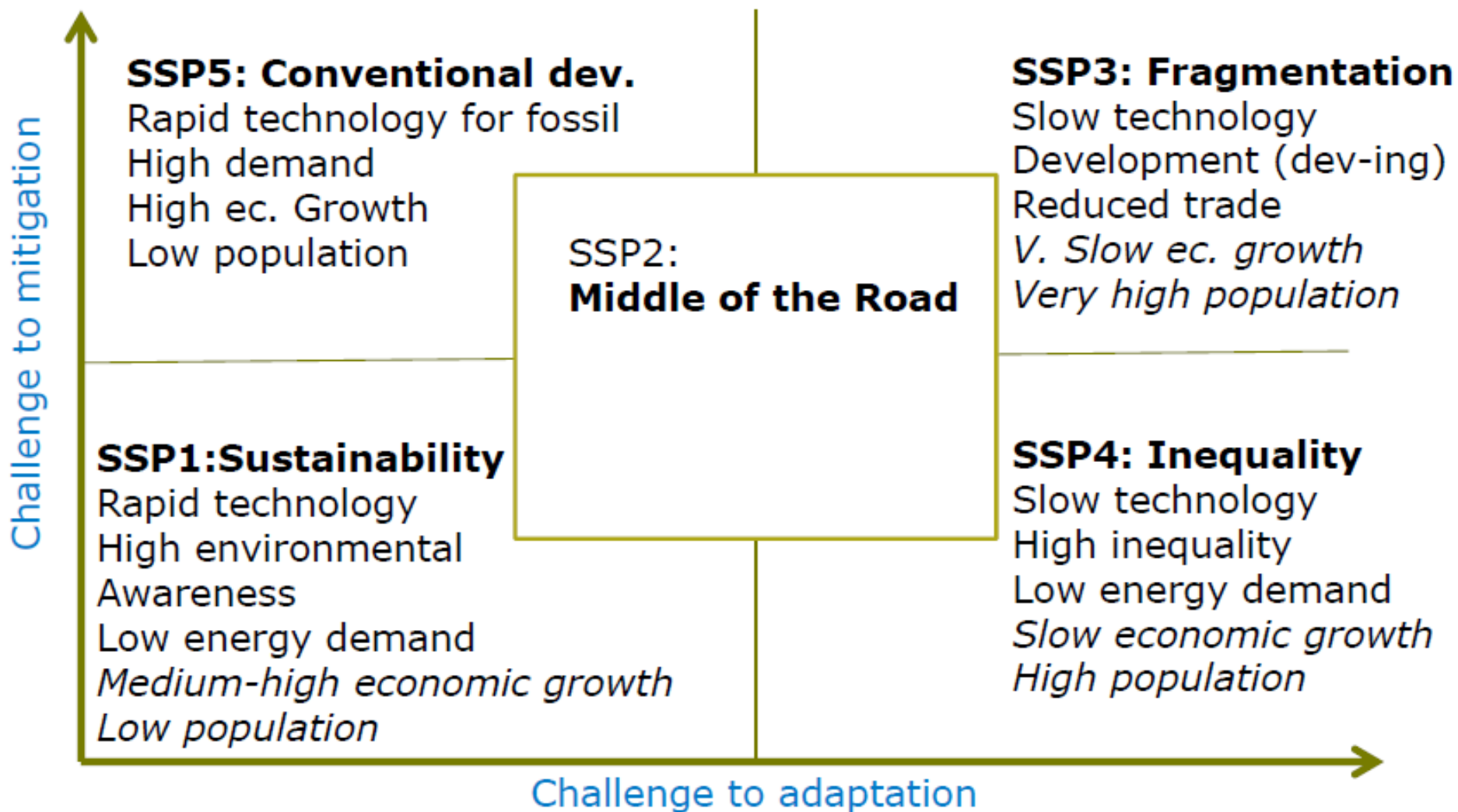
- Report in google docs (see links in agenda)

Scenario framework

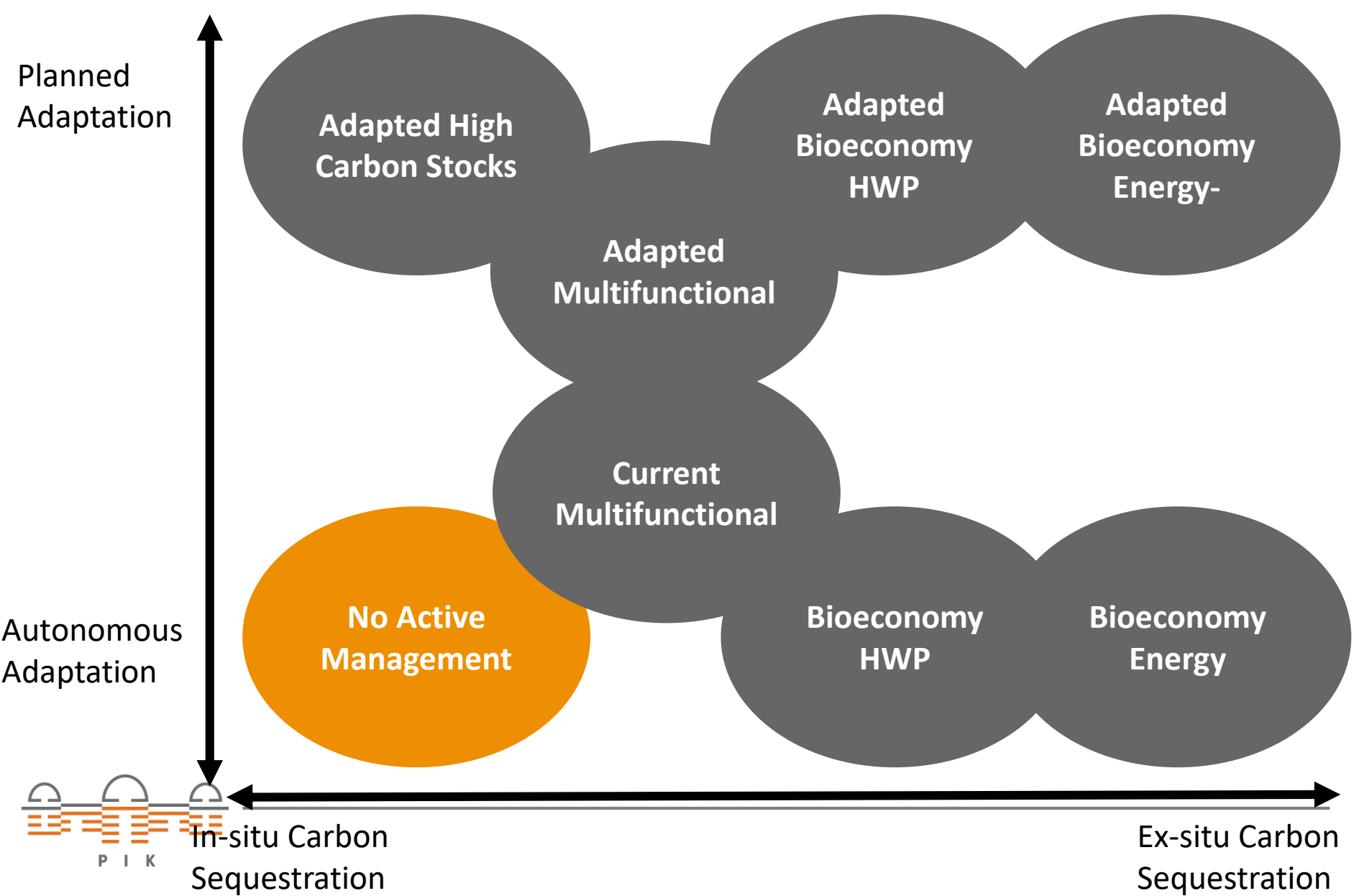
Representative Concentration Pathways (RCPs)



Shared Socioeconomic Pathways (SSPs)



	SSP1	SSP2	SSP3	SSP4	SSP5
RCP2.6					
RCP4.5					
RCP6.0					
RCP8.5					



Example Hyytiälä



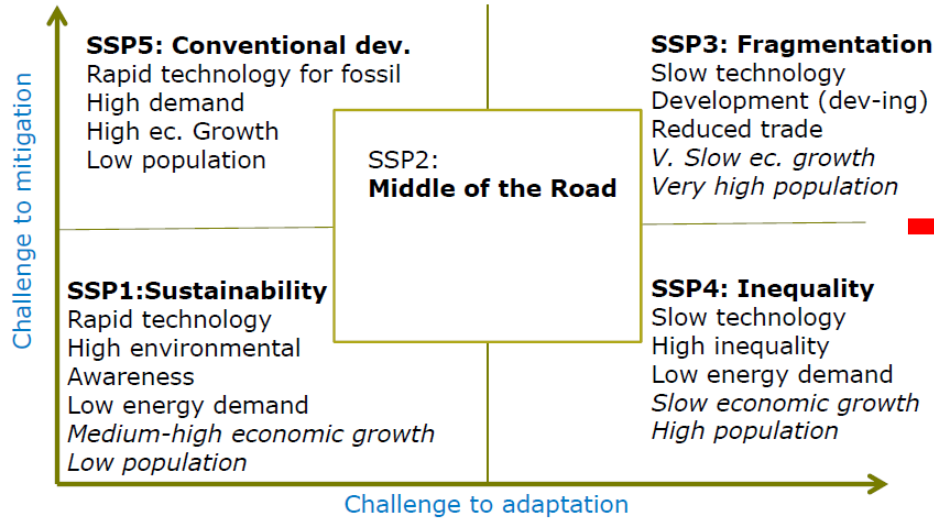
Example Hyytiälä

Scenario story/rationale		Scenario name	Silviculture system	Species	Harvest type (stem / branches)	Thinning type	Intensity	Rotation length [years]	Thinning frequency
No management at all (process-protection)	1	No active management	na	Pinus sylvestris	na	na	na	na	na
Current site-specific Management guidelines, current management objectives (more or less multifunctional)	1	Current Multifunctional: (BAU)	Even-aged clearcut	Pinus sylvestris	stem	Below Below Above	20 % BA removed	90	20-50-70
maximize bioenergy production	2	Bioeconomy-Bioenergy	Even-aged clearcut	Pinus sylvestris	Stem+branches	From below (pulp+ bioenergy)	25 % BA removed	60	20
maximize long-living harvested wood products production	1	Bioeconomy-Harvested Wood Product	Even-aged clearcut	Pinus sylvestris	stem	Below Below Above Above	10 % BA removed	120	20-50-70-110
Try to maintain current forest functions through adaptive measures	2	Multifunctional-Adapted (Adaptation to reduce storm damage)	Even-aged clearcut	Pinus sylvestris	stem	Below Below Above	20 % BA removed	80	20-40-60

Example Hyytiälä

Replanting species	Planting density	Planting age [years]	Planting seedling height [m]	Planting DBH [cm]	age when DBH is reached [years]	Remarks
na	na	na	na	na	na	allow any natural regeneration
Pinus sylvestris	2000	2	0.25 (0.2-0.3)	na	7 (5-7)	Regenerate as pure pine stand
Pinus sylvestris	2500	2	0.25 (0.2-0.3)	na	8 (5-7)	Regenerate as pure pine stand
Pinus sylvestris	2500	2	0.25 (0.2-0.3)	na	9 (5-7)	Regenerate as pure pine stand
Pinus sylvestris	2000 + nat reg	2	0.25 (0.2-0.3)	na	10 (5-7)	Regenerate as pure pine stand

Bringing in the SSPs



- Option 1 (Grenoble): Should RCPs determine which bubble is possible in which RCP-SSP combination?
- Option 2 (post-Grenoble): Should SSPs determine which bubble is possible in which RCP-SSP combination?
- Option 3 (post-Grenoble): Should SSPs determine when bubbles are possible

SSP1

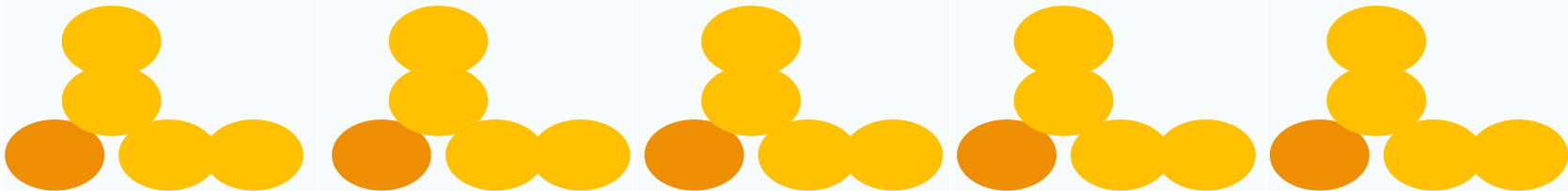
SSP2

SSP3

SSP4

SSP5

RCP2.6



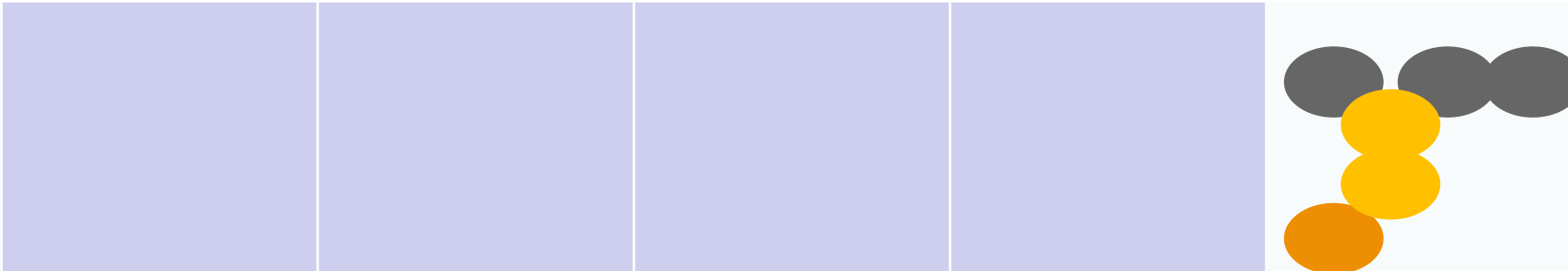
RCP4.5



RCP6.0

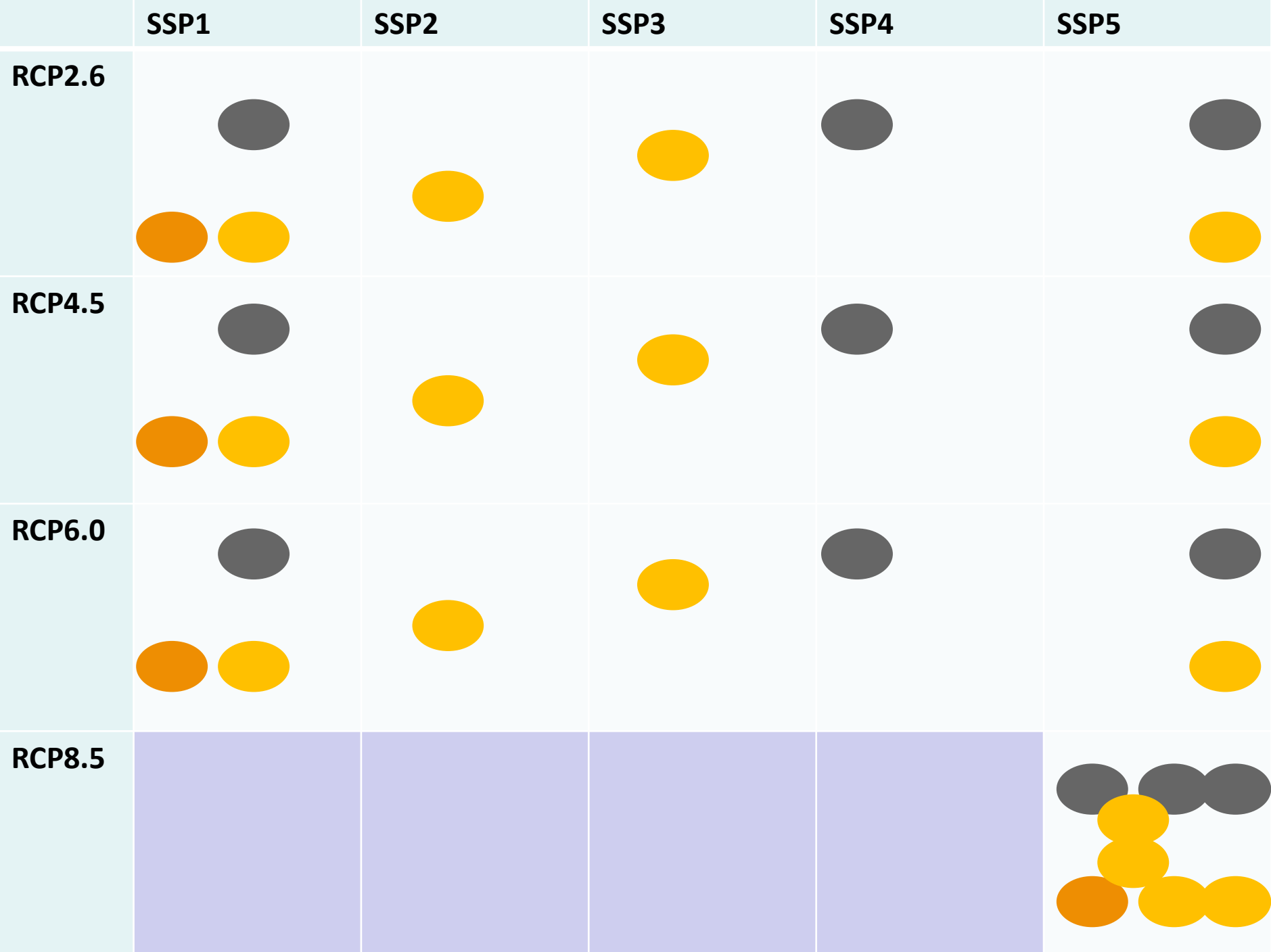


RCP8.5



Option 1

- **Seems limited in applicability**
- **Conceptually not clean**



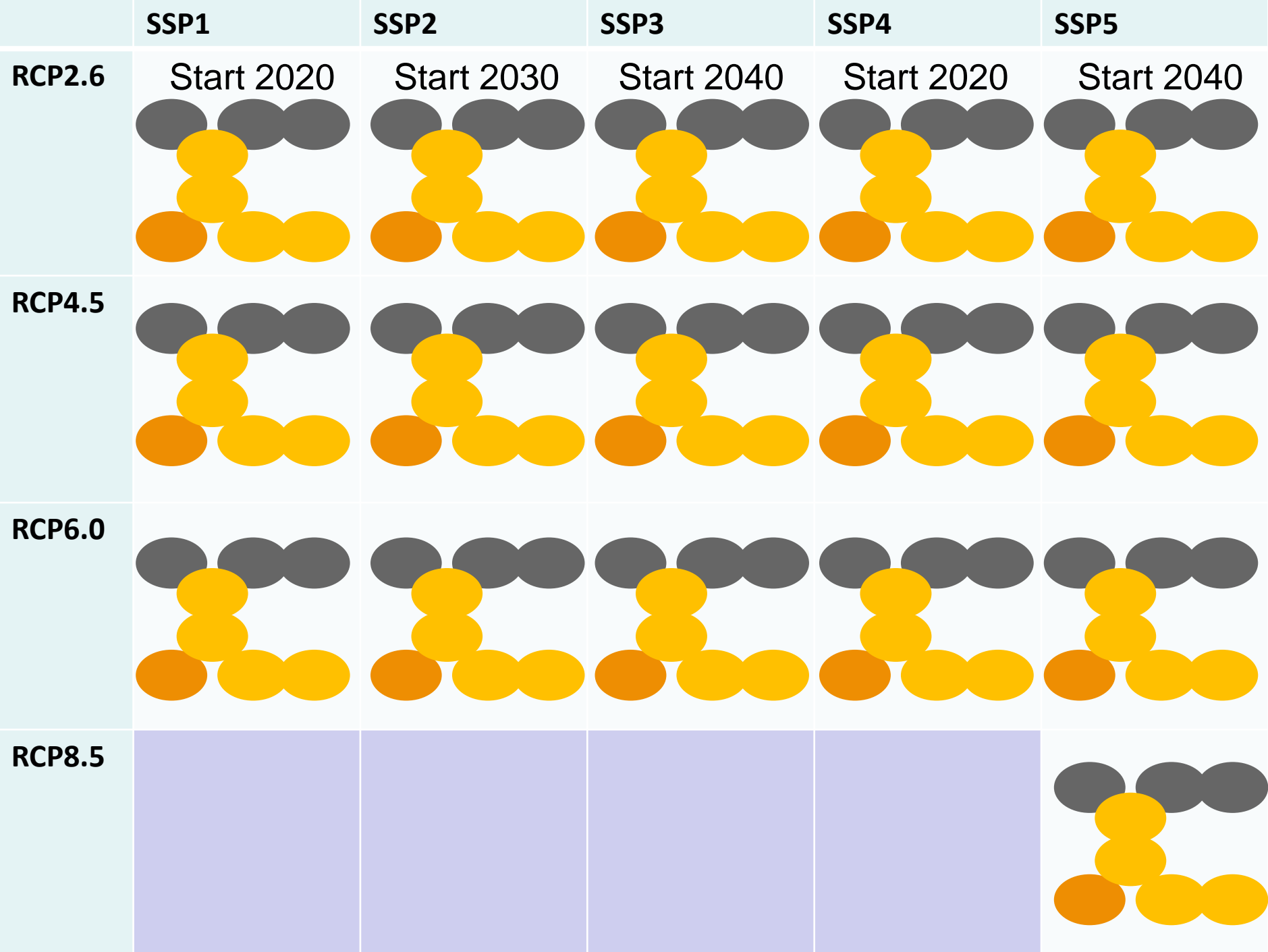
Option 2

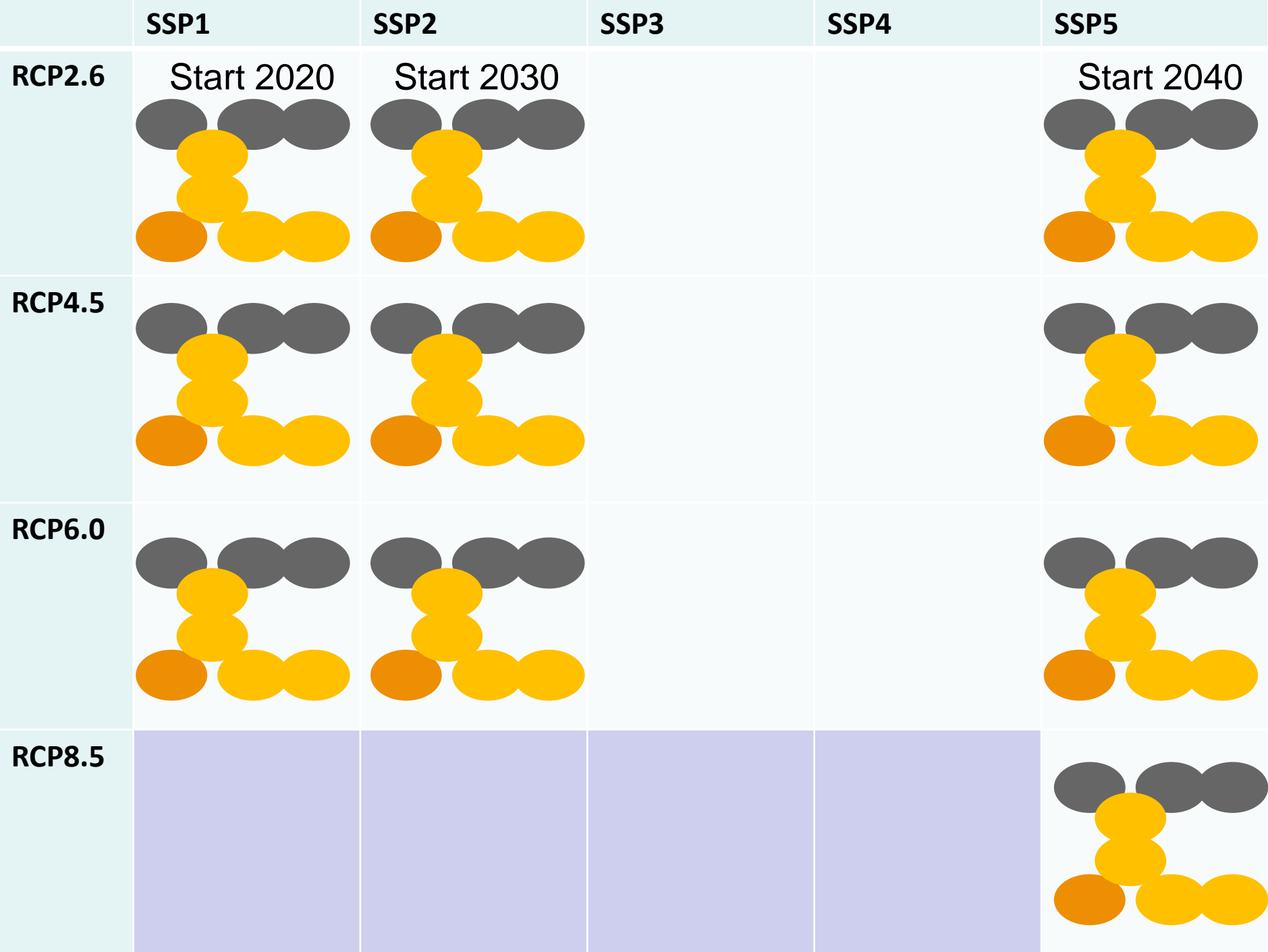
- **Seems limited in applicability: can we really assign each bubble to a SSP?**
- **Conceptually clean**

Bringing in the SSPs

Table 2
Overview of the SSP scenarios with the aspects in land use sector for tweaking model parameters.

	SSP1 (Sustainability)	SSP2 (Middle of the Road)	SSP3 (Regional Rivalry)	SSP4 (Inequality)	SSP5 (Fossil-fueled Development)
Land-use change regulation	Strong	Incomplete	Limited or no	Strong	Incomplete
Participation in land-use sector	Full	Partial	Limited or no	Partial	Full
Cooperation for climate change and mitigation	No delay	Delayed	Limited or no	No Delay	Delayed
Starting year of mitigation t_k	2020	2030	2040	2020	2040
Parameter δ	1	0.5	0	0.5	1
Variance parameter σ^2	Decreased to one forth	Decreased to half	No change	Decreased to one forth	Decreased to half





Option 3

- Easy to apply
- Conceptually rather clean
- Leads to many simulations

- ➔ Option 4: combine 2 and 3 to some extent?
- ➔ exclude the obviously unrealistic bubbles

ISIMIP2b storylines (start)

SSP1: harvest demands according to SSP1. Transition periods from conventional baseline to sustainable/adaptated/mitigation forest management scenarios are short. New management practices are quickly adopted and legislation is flexible (e.g. to allow changing species changes or allowing assisted migration). Forest management recognises the multifunctionality of forests and ecosystem services other than timber production are also highly valued.

SSP2: harvest demands according to SSP2. Transition periods from conventional baseline to sustainable/adaptated/mitigation forest management scenarios are medium. New management practices are adopted with some delay and legislation is not very flexible (e.g. to allow changing species changes or allowing assisted migration). Forest management recognises the multifunctionality of forests and ecosystem services other than timber production are also valued.

SSP5: harvest demands according to SSP5. Transition periods from conventional baseline to adaptated/mitigation forest management scenarios are fast. New management practices are quickly adopted and legislation is flexible (e.g. to allow changing species changes or allowing assisted migration). Forest management is strongly focussed on economic efficiency but large forest areas are strictly protected for nature conservation as „reserves“ from foundations and rich philanthropists.

Discussion

- can we provide more linking points where forest management is affected by SSPs?
- How to apply the framework to country/EU scale? → assign FORMIT managements to each bubble-RCP-SSP
- What about afforestation?

Closing

- **Summary from break-out groups**
- **Send pictures**
- **Final meeting in Potsdam in 1st week of March 2020**
- **Next steps?**