



Joint Activity Scenarios & Modelling

The JASM team

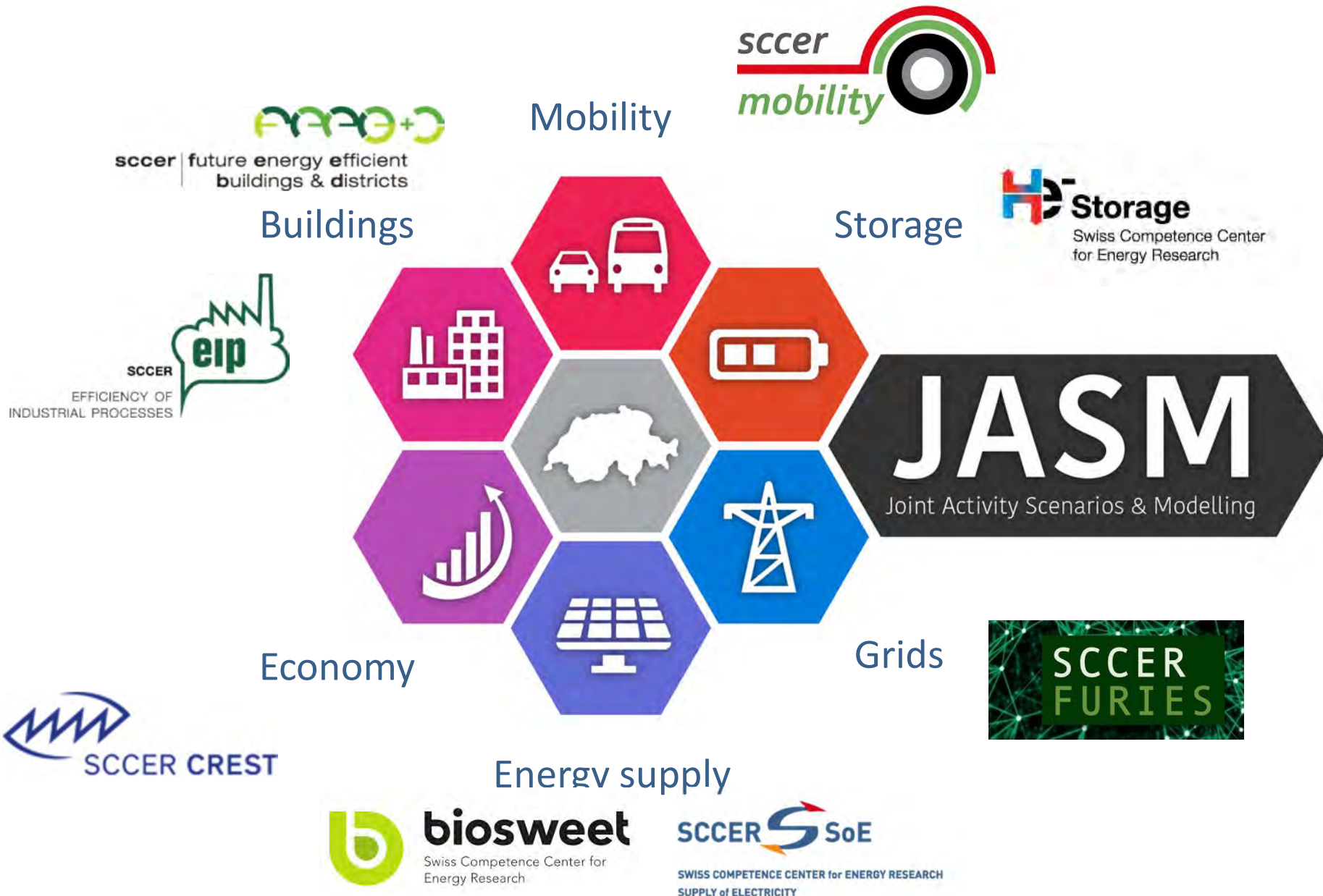


Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Innosuisse – Swiss Innovation Agency

Scenarios for the 2050 Swiss energy system at **10 MT_{CO2}/a** based on the knowledge of all SCCER



Why we need JASM



FakePower statt Energiev x Gianfranco

https://www.dzig.de/FakePower-statt-Energiewende_Ideologie-gegen-Fakten

Apps Suggested Sites Useful stuff GE SCCER Movie Wanderungen

DZiG.de | Deutsche ZivilGesellschaft

Ein freies Medium über gesellschaftliche und wirtschaftliche Entwicklungen

Suche starten

Neues Aktualisiertes Autoren Impressum Daten Essen Medizinbücher NAEB Über DZiG.de

Energiewirtschaft Rundfunkbeitrag Zuwanderer 9/11 Reloaded Steuern Wirtschaft Filme

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Startseite » Blogs » Blog von Prof. Dr.-Ing. Hans-Günter Appel » FakePower statt Energiewende: Ideologie gegen Fakten

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Tweets von @ZivilGes

ZivilGesellschaft

2016 | JENSEITS DER TÄUSCHUNG [60-seitige pdf-Datei]
Was die Wissenschaft über die Zerstörung der Gebäude 1, 2 und 7 des World Trade Centers zu sagen hat
© 2016 Architects & Engineers for 9/11 Truth, Inc. / AE911Truth.CHdzig.de/9-11-Reloadedyoutube.com/watch?v=aLRA_J...


Mit dem [BlaBlaMeter](#) können Sie testen, ob sich heiße Luft in den Artikel eingeschlichen hat.

FakePower statt Energiewende: Ideologie gegen Fakten


9. September 2018 - 0:00 - Prof. Dr.-Ing. ...

Irreführung der Stromkunden

Deutscher Strom aus Voltaik, Wind und Biogas stört das europäische Verbundnetz und ist um ein Mehrfaches teurer, ohne den geringsten Vorteil für Umwelt und Natur zu bieten.



Die Energiewende beruht auf Ideologien, mit denen das Klima und damit die Welt gerettet werden soll. Wie bei allen Ideologien zur Rettung der Menschheit oder zu einem optimalen Zusammenleben sind es einseitige Bewertungen unter idealen Zuständen.




Werbung

Buchempfehlungen zu Deutschland vom Amadeus-Verlag im Shop der Unbestechlichen

Medizin skandal Migräne

Möchten Sie die Leseprobe aus dem Codex Humanus haben? 67 Seiten pdf



ENG 09:11
SG 12-Sep-18

Check and update all inputs

Overview



Major driver	
Population	●
GDP	●
Sectoral GVA	
Energy ref. area	
Climate change	
Energy intensity	

Yearly aggregate	Residential Commercial Industrial Transport			
	Residential	Commercial	Industrial	Transport
Electricity	●			
Space heating	●			
Warm water				
Process heat				
Person-kilometer				
Ton-kilometer				

Hourly time series	Residential Commercial Industrial Transport			
	Residential	Commercial	Industrial	Transport
Electricity				
Space heating				
Warm water				
Process heat				
Person-kilometer				
Ton-kilometer				

Generation technologies	Potential Time series	
	Potential	Time series
Solar PV	●	
Solar thermal		
Hydro river		
Hydro storage	●	
Wind		
Geothermal		

Technology characteristics	Invest. costs O&M costs Efficiency CO2 intensity			
	Invest. costs	O&M costs	Efficiency	CO2 intensity
Thermal power				
Renewable power				
Heat generation			●	
Efficiency measures				
Storage				
Fuels				

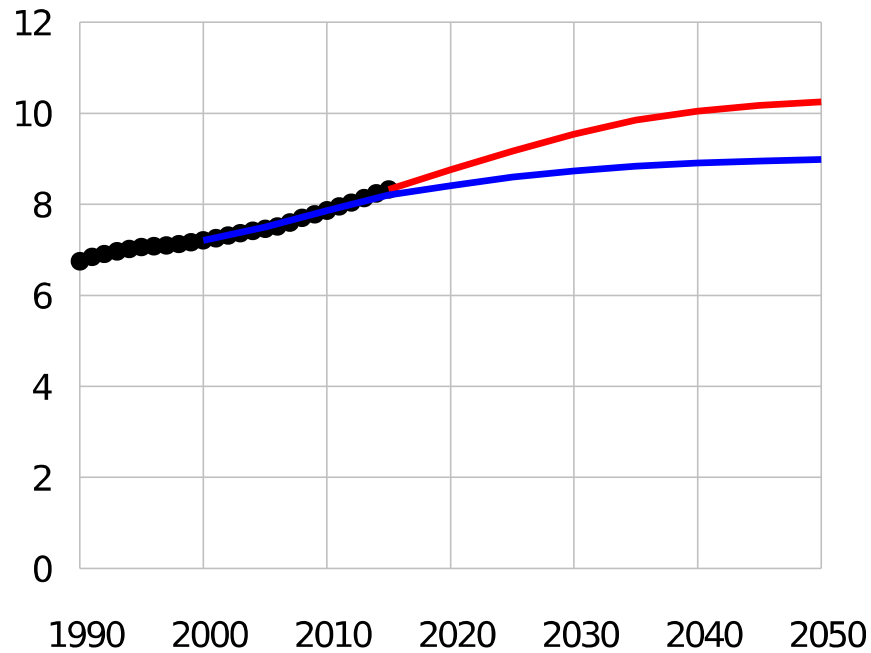
Today (2015) and in the future (2050)

Check and update all inputs

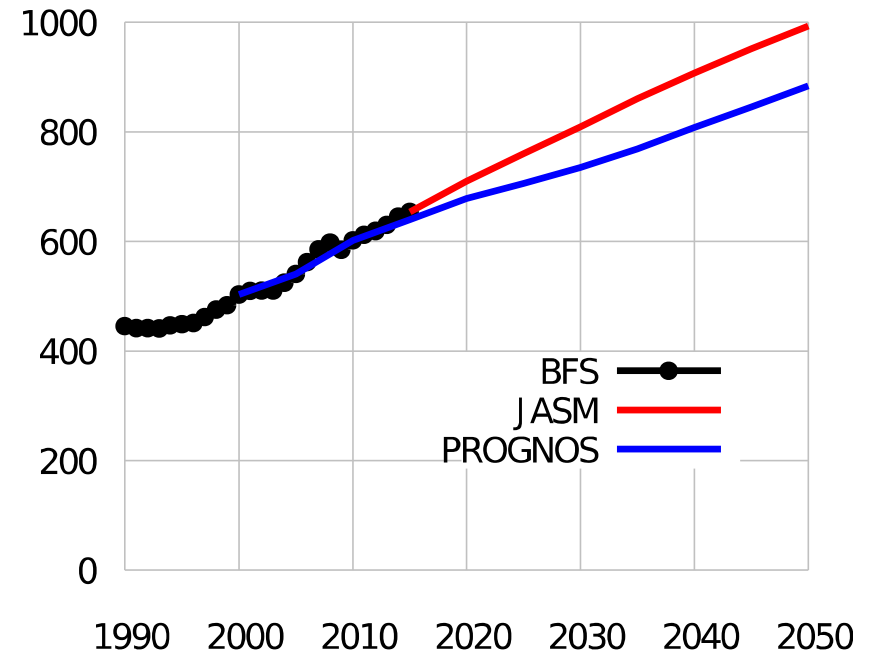
Major scenario drivers



Population (10^6 p)



Gross domestic product (bCHF)

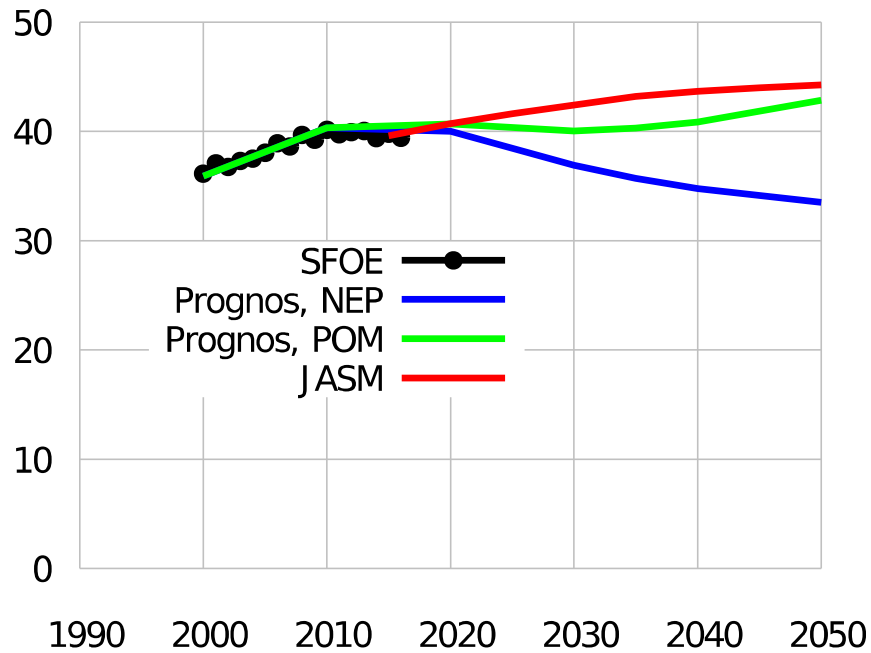


Check and update all inputs

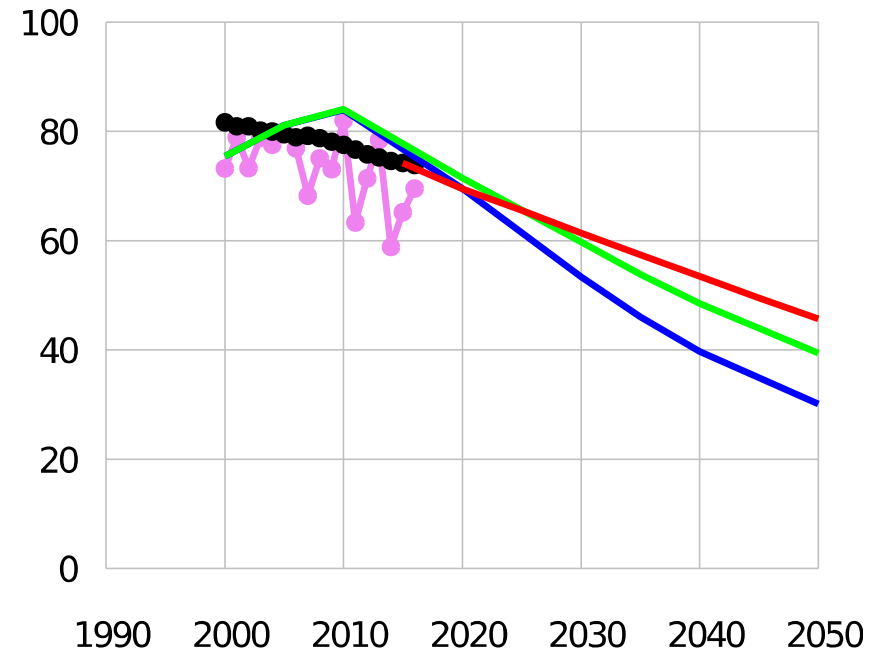
Future energy demand



Yearly electricity demand* (TWh)



Yearly space heat demand (TWh)



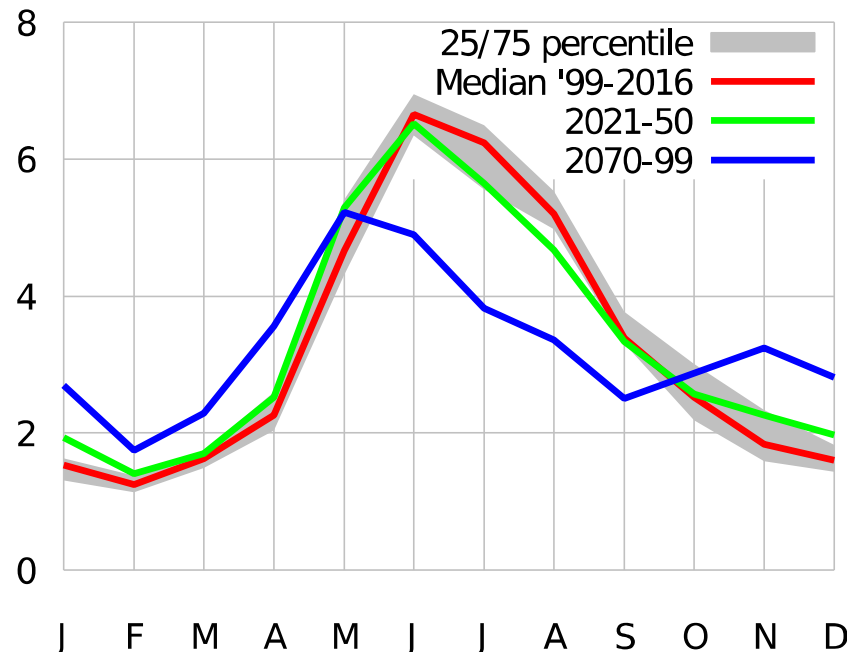
*excluding uses for heat and mobility services

Check and update all inputs

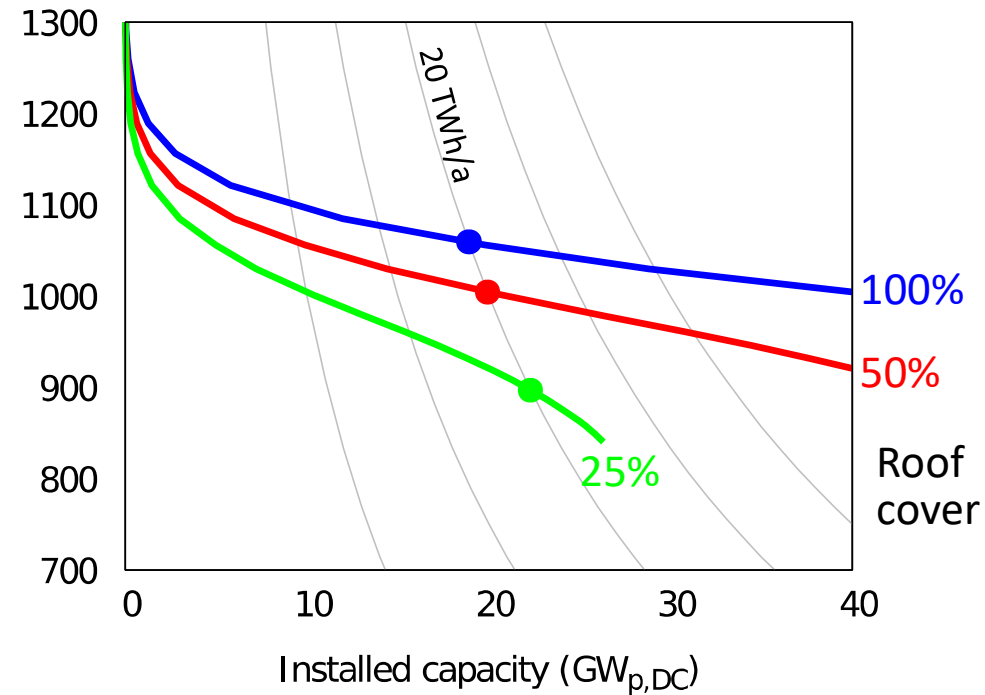
Future potential of renewable generation technologies



Monthly inflow to hydro plants (TWh)



PV full load hours ($\text{kWh}_{AC} / \text{kW}_{p,DC}$)



Climate impact
on hydrology



Universität
Basel

Hydro generation
(Swissmod)

ETH zürich

Institute of Cartography
and Geoinformation

Work in progress

Check and update all inputs

Technology characteristics



Technology

Variable

- Capacity factor
- Captured CO2
- Dismantling cost
- Electric efficiency
- FOM
- Investment cost
- Lifetime
- Thermal efficiency
- VOM

Study/Model

Years

Currency

SPV: Investment cost [\$/kW] in CHF2015

Show 10 entries

Search:

Type	Model	Size	Current	2020	2035	2050
Commercial	IEA (2015)	0.3	1501.4 [690.5,1875.1]			
Fixed	EIA (2018)	150	1857.2			
General	EIA (2015)	150	3110.0			
General	EIA (2016)	150	2387.2			
General	EIA (2017)	150	2237.3			
General	IEA (2016)	large	1270.6	1001.1		
General	IEA (2016)	small	1540.2	1232.1		
Large	IEA (2015)	21	1481.5 [888.7,2430.9]			
Residential	IEA (2015)	0.007	2248.8 [1770.8,3192.5]			
Roof-top	PSI (2017)	0.006	2583.2	[1791.1 -2194.1]	[1052.1 -1746.1]	[908.1 -1545.1]

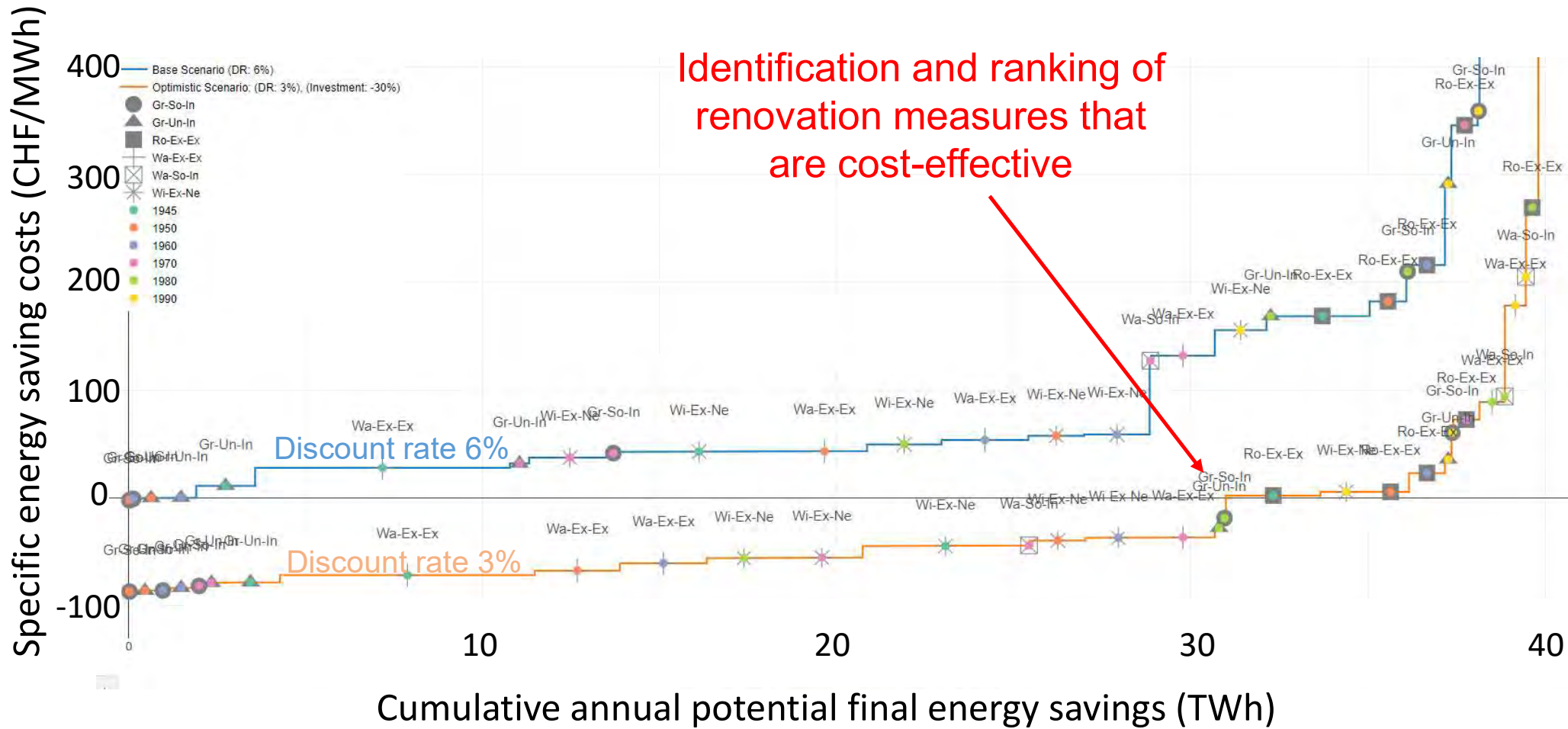
Showing 1 to 10 of 20 entries

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Improve sectoral models

Buildings heating demand

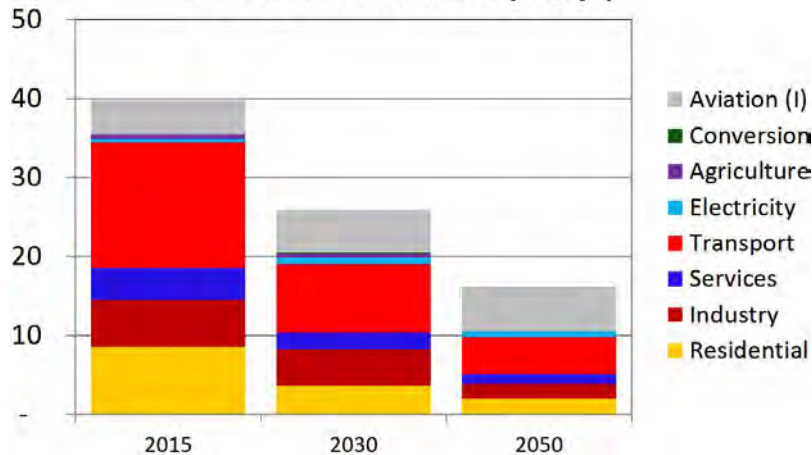


Improve and run energy system models

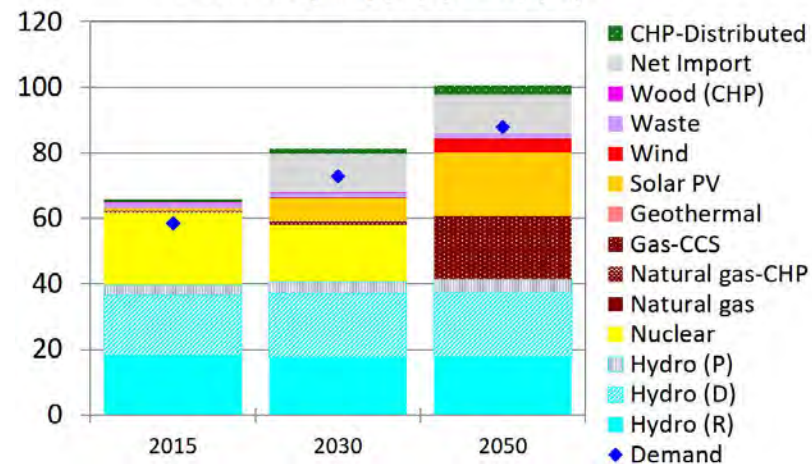
Swiss TIMES Energy System Model (STEM)



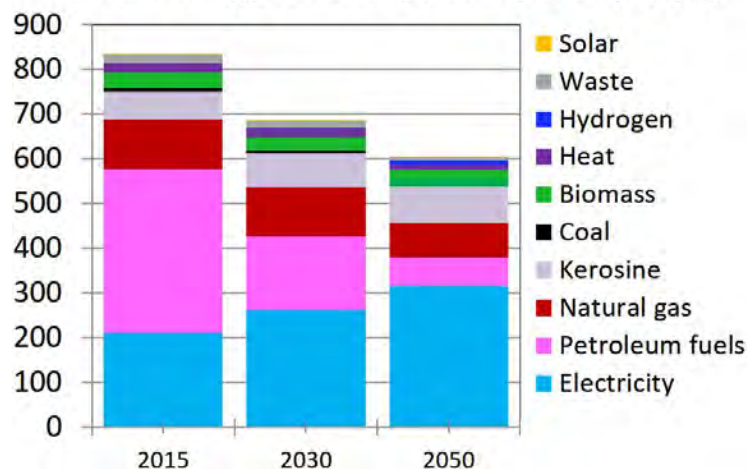
Direct CO2 emissions (Mt/yr)



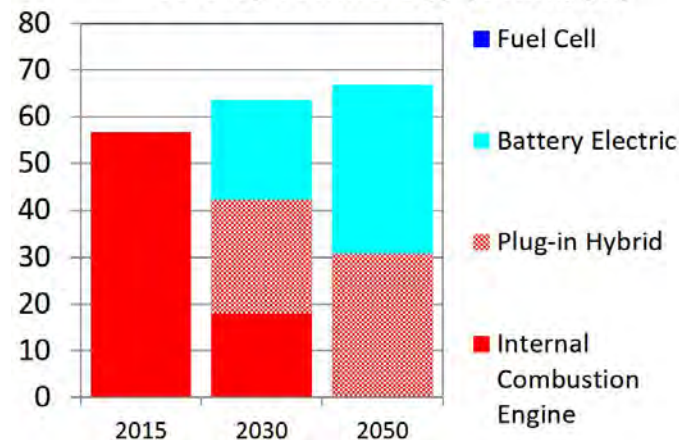
Electricity supply (TWh/yr.)



Final energy consumption by fuel (PJ/yr.)



Cars by technology (Bvkm/yr.)



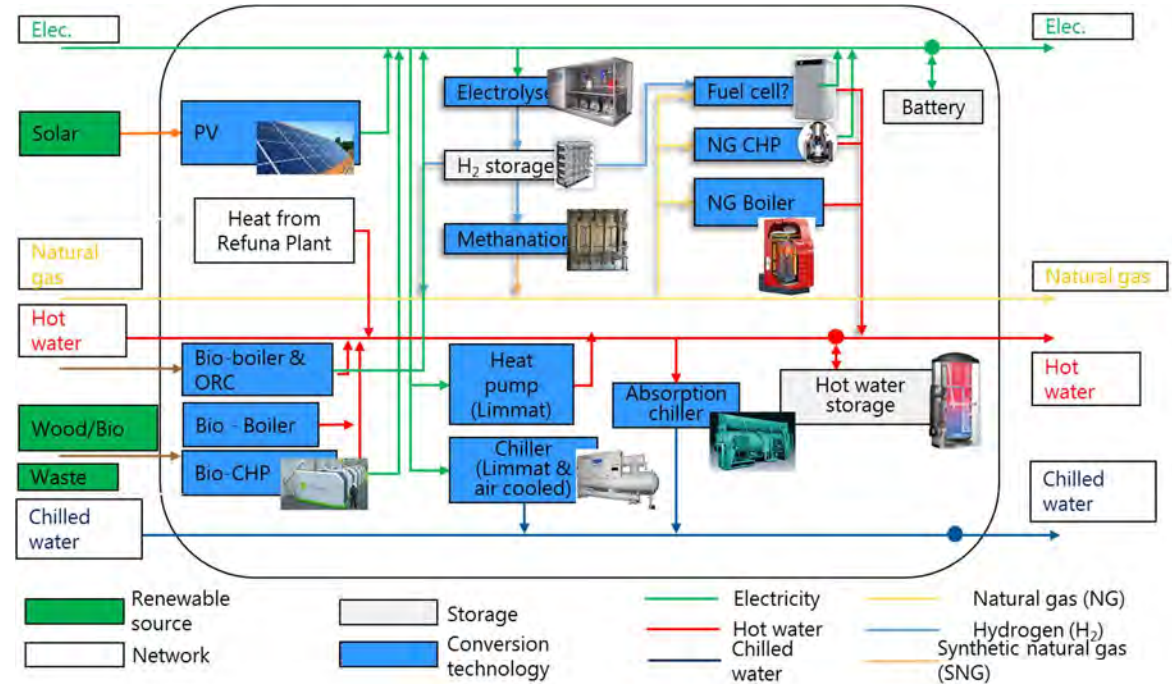
Preliminary results obtained with STEM to test the quantification of the “Reference Climate Scenario” and the interfaces between STEM and the rest of the modelling frameworks employed in JASM

Think global act local!

Energy Hub Optimization Tool



My office before joining ETH



Collaboration between EMPA and Regionalwerke Baden will result in scenarios for the future heat supply to Baden Nord



Next steps



- Finalize harmonization of inputs
- Re-run scenarios
- Present and discuss results at 1st national scenario benchmarking workshop on 17 Jan 2019
- Go back to work, learn, improve, and present final results by the end of 2020

- Communicate and share our assumptions, inputs and results with the community along the way
- Let's be factfull and open!



Thank you for your attention!

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