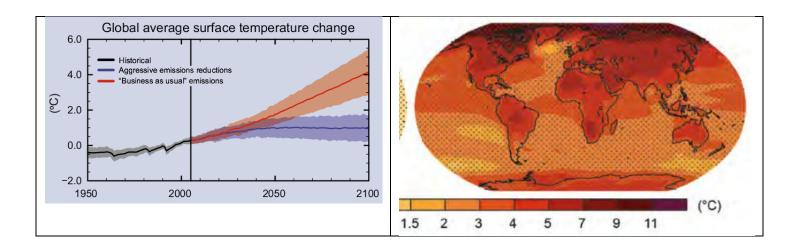
The RCP8.5 combines assumption about high population and relatively slow income growth with modest rates of technological change and energy intensity improvements, leading in the long term to high energy demand and GHG emissions in absence of climate change policies. Compared to the total set of Representative Concentration Pathway (RCPs), RCP8.5 thus corresponds to the pathway with the highest greenhouse gas emissions.

http://www.iiasa.ac.at/publication/more_XJ-11-141.php



The scenario's storyline describes a heterogeneous world with continuously increasing global population, resulting in a global population of 12 billion by 2100. Per capita income growth is slow and both internationally as well as regionally there is only little convergence between high and low income countries. Global GDP reaches around 250 trillion US2005\$ in 2100. The slow economic development also implies little progress in terms of efficiency. Combined with the high population growth, this leads to high energy demands. Still, international trade in energy and technology is limited and overall rates of technological progress is modest. The inherent emphasis on greater self-sufficiency of individual countries and regions assumed in the scenario implies a reliance on domestically available resources. Resource availability is not necessarily a constraint but easily accessible conventional oil and gas become relatively scarce in comparison to more difficult to harvest unconventional fuels like tar sands or oil shale. Given the overall slow rate of technological improvements in low-carbon technologies, the future energy system moves toward coal-intensive technology choices with high GHG emissions. Environmental concerns in the A2 world are locally strong, especially in high and medium income regions. Food security is also a major concern, especially in low-income regions and agricultural productivity increases to feed a steadily increasing population.⁸

Compared to the broader integrated assessment literature, the RCP8.5 represents thus a scenario with high global population and intermediate development in terms of total GDP (Fig. <u>4</u>). Per capita income, however, stays at comparatively low levels of about 20,000 US\$2005 in the long term (2100), which is considerably below the median of the scenario literature. Another important characteristic of the RCP8.5 scenario is its relatively slow improvement in primary energy intensity of 0.5% per year over the course of the century. This trend reflects the storyline assumption of slow technological change. Energy intensity improvement rates are thus well below historical average (about 1% per year between 1940 and 2000). Compared to the scenario literature RCP8.5 depicts thus a relatively conservative business as usual case with low income, high population and high energy demand due to only modest improvements in energy intensity (Fig. <u>4</u>).

http://link.springer.com/article/10.1007%2Fs10584-011-0149-y/fulltext.html#Sec9

						Emissions		C02		Methane				
RCP8.5		(PgC/year)				(PgC/year)				(PPM)	(PPM)			(PPB)
Year	FF+I	nd	AFL	То	otal	Land		Ocean	A	tmosphere	ej a	Atmospher	e	Atmosphere
200	0	6.82	1.	21	8.03	-1.14 ±	0.87	-2.14 ± 0.3	32	368.	9 Min	???	Max	175
201	0	8.90	1.	.08	9.98	-1.30 ±	1.64	-2.53 ± 0.4	13	389.	3 366	394	413	177
202	0	11.38		.91	12.29	-1.43 ±		-3.02 ± 0.5		415.8	386	425	449	19
203	0	13.79	0.	.74	14.53	-1.76 ±	2.22	-3.47±0.5	54	448.	3 412	461	496	213
204	0	16.69	0.	.65	17.34	-2.15 ±2.13		-3.96 ± 0.67		489.4	443	504	555	239
205	0	20.03	0.	0.58 20.61		-2.35 ±2.45		-4.47±0.7	76	540.	5 482	559	627	274
206	0	23.32 0.50		.50	23.82	-2.71 ±	2.38	-4.92 ± 0.8	34	603.	5 530	625	713	307
207	0	25.75 0.42		.42	26.17	-2.57±	2.42	-5.24 ± 0.9	97	677.	1 588	703	810	332
208	0	27.28	0.	0.31 27.59		-1.96 ±2.64		-5.40 ± 1.14		758.	2 651	. 790	914	349
209	0	28.24	0.20		28.44	-1.63 ±2.70		-5.45 ± 1.18		844.	3 722	885	1026	363
210	0	28.68	0.	.09	28.77	-1.27±	2.90	-5.44 ± 1.2	22	935.	9 794	985±97	1142	375
AFL - Agr Emission RCP8.5	ricultu is - Va Effe (\	re,For Ilues fo ective Watts/	estry,La or for de Radiativ /square	and Us ecada ve For mete	l mean va rcing er)	alues; 20 Globa Abov	l Mear re Prei	erage 200 Surface T ndustrial	Tempe (Dege	erture es C)				
AFL - Agr Emission RCP8.5 Year (icultu is - Va Effe (\ CO2	re,For Ilues fo ective Watts/ Metha	estry,La or for de Radiativ /square ane Ot	and Us ecada ve For mete her	se I mean va rcing er) Total	alues; 20 Globa	l Mear	n Surface ndustrial 50%	Tempe	rture				
AFL - Agr Emission RCP8.5 Year (2000	Effe CO2 1.51	re,For lues fo ective Watts/ Metha	estry,La or for de Radiativ /square ane Ot 0.47	ecada ve For mete her -0.53	se I mean va rcing er) Total 1.45	alues; 20 Globa Abov 5%	l Mear e Prei 17%	n Surface ⁻ ndustrial 50% 0	Tempe (Dege 83%	erture es C) 95%				
AFL - Agr Emission RCP8.5 Year (2000 2010	Ficultur Is - Va Effe (1 CO2 1.51 1.80	re,For lues fo ective Watts/ Metha	estry,La or for de Radiativ /square ane Oti 0.47 0.48	ecada ve For mete her -0.53 -0.44	se vir de la mean va reing er) Total 1.45 1.84	alues; 20 Globa Abov 5% 0.83	l Mear re Prei 17% 0.89	n Surface ndustrial 50% 0 0.97	Tempe (Dege 83% 1.07	es C) 95% 1.22				
AFL - Agr Emission RCP8.5 Year (2000 2010 2020	ricultur ns - Va Effe (1 CO2 1.51 1.80 2.15	re,For Ilues fo ective Watts, Metha ((estry,La or for de Radiativ /square ane Ot 0.47 0.48 0.54	ecada ve For mete her -0.53 -0.44 -0.37	rcing er) Total 1.45 1.84 2.32	alues; 20 Globa Abov 5% 0.83 0.97	l Mear e Prei 17% 0.89 1.11	Surface ndustrial 50% 0 0.97 1.26	Tempe (Dege 83% 1.07 1.44	erture es C) 95% 1.22 1.59				
AFL - Agr Emission Year (2000 2010 2020 2030	CO2 1.51 2.15 2.56	re,For Ilues fo ective Watts/ Metha	estry,La or for de Radiativ /square ane Ot 0.47 0.48 0.54 0.54	and Us ecada we For mete her -0.53 -0.44 -0.37 -0.26	rcing Total 1.45 1.84 2.32 2.91	alues; 20 Globa Abov 5% 0.83 0.97 1.25	I Mear e Prei 17% 0.89 1.11 1.31	Surface 1 ndustrial 50% 0 9 0.97 1 1.26 7 1.54	Tempe (Dege 83% 1.07 1.44 1.89	erture es C) 95% 1.22 1.59 1.99				
AFL - Agr Emission Year (2000) 2010 2020 2030 2030 2040	Effe (1 CO2 1.51 1.80 2.15 2.56 3.03	re,For Ilues fo ective Watts/ Metha	estry,La or for de Radiativ /square ane Otl 0.47 0.48 0.54 0.61 0.70	ecada ve For mete her -0.53 -0.44 -0.37 -0.26 -0.12	se I mean va rcing er) Total 1.45 1.84 2.32 2.91 3.61	alues; 20 Globa Abov 5% 0.83 0.97 1.25 1.53	l Mear re Prei 17% 0.89 1.12 1.33 1.73	Surface ndustrial 50% 0 0 0 0 0 1.26 7 1.54 3	Tempe (Dege 83% 1.07 1.44 1.89 2.28	1.22 1.59 2.37				
AFL - Agr Emission Year (2000 2010 2020 2030 2030 2040 2050	icultur s - Va Effe (v CO2 1.51 1.80 2.15 2.56 3.03 3.56	re,For ilues for ective Watts, Metha (((((((((((((((((((estry,La or for de Radiativ /square ane Otl 0.47 0.48 0.54 0.61 0.70 0.80	and Us ecada we For mete her -0.53 -0.44 -0.37 -0.26 -0.12 0.01	se I mean var cring ar) Total 1.45 1.84 2.32 2.91 3.61 4.37	alues; 20 Globa Abov 5% 0.83 0.97 1.25 1.53 1.8	I Mean re Prei 17% 0.89 1.11 1.37 1.73 2.08	Surface 1 ndustrial 50% 0 9 0.97 1.26 7 1.54 3 2.3	Tempe (Deger 83% 1.07 1.44 1.89 2.28 2.79	erture es C) 95% 1.22 1.59 1.99 2.37 2.97				
AFL - Agr Emission Year (2000) 2010 2020 2030 2030 2040 2050 2060	Effe (1) 202 1.51 1.80 2.15 2.56 3.03 3.56 4.15	re,For lues for watts/ Metha (((((((((((((((((((estry,La or for de Radiativ /square ane Oti 0.47 0.48 0.54 0.61 0.70 0.80 0.90	and Us ecada we For -0.53 -0.44 -0.37 -0.26 -0.12 0.01 0.08	rcing rcing r) Total 1.45 1.84 2.32 2.91 3.61 4.37 5.13	alues; 20 Globa Abov 5% 0.83 0.97 1.25 1.53 1.8 2.15	l Mear re Prei 17% 0.89 1.11 1.31 1.33 2.08 2.48	Surface ndustrial 50% 0 9 0.97 1 1.26 7 1.54 3 2.3 3	(Deger 83% 1.07 1.44 1.89 2.28 2.79 3.34	es C) 95% 1.22 1.59 1.99 2.37 2.97 3.59				
AFL - Agr Emission Year (2000) 2010) 2020) 2030) 2040) 2050) 2060) 2060)	icultur is - Va Effe (v CO2 1.51 1.80 2.15 2.56 3.03 3.56 4.15 4.76	re,For lues for ective Watts/ Metha 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	estry,La or for de Radiativ /square ane Otl 0.47 0.48 0.54 0.61 0.70 0.80 0.90 0.90	and Us ecada we For mete her -0.53 -0.44 -0.37 -0.26 -0.12 0.01 0.08 0.16	se I mean variante de la m	alues; 20 Globa Abov 5% 0.83 0.97 1.25 1.53 1.8 2.15 2.56	I Mear re Prei 17% 0.89 1.11 1.37 1.37 2.08 2.48	Surface ndustrial 50% 0 9 0.97 1.26 7 1.54 3 2.3 2.76 5 3.2.76	Tempe (Dege 83% 1.07 1.44 1.89 2.28 2.79 3.34 3.91	erture es C) 95% 1.22 1.59 1.99 2.37 2.97 3.59 4.21				
AFL - Agr Emission Year (2000) 2010 2020 2030 2030 2040 2050 2060	Effe (1) 202 1.51 1.80 2.15 2.56 3.03 3.56 4.15	re,For lues for ective Watts, Metha (((((((((((((((((((estry,La or for de Radiativ /square ane Oti 0.47 0.48 0.54 0.61 0.70 0.80 0.90	and Us ecada we For -0.53 -0.44 -0.37 -0.26 -0.12 0.01 0.08	rcing rcing r) Total 1.45 1.84 2.32 2.91 3.61 4.37 5.13	alues; 20 Globa Abov 5% 0.83 0.97 1.25 1.53 1.8 2.15	l Mear re Prei 17% 0.89 1.11 1.31 1.33 2.08 2.48	Surface ndustrial 50% 0 0.97 1.26 7 1.54 3 2.33 2.76 5 3.25	(Deger 83% 1.07 1.44 1.89 2.28 2.79 3.34	es C) 95% 1.22 1.59 1.99 2.37 2.97 3.59 4.21 4.82				

		RCP8.5	Annual % Change	GTC/ Decade	Cuumulative GTC	Looking at the fossil fuel reserves (see Carbon Budget), there are ample known reserves and potential resources
	2010	8.90		89.00	89.00	for this scenario - the cumulative CO2 emissions would be
	2020	11.38	2.79	113.80	202.80	less than 3/5 of that which would be emitted by known reserves and potential resources (
	2030	13.79	2.12	137.90	340.70	
	2040	16.69	2.10	166.90	507.60	
	2050	20.03	2.00	200.30	707.90	
	2060	23.32	1.64	233.20	941.10	
	2070	25.75	1.04	257.50	1198.60	
	2080	27.28	0.59	272.80	1471.40	
	2090	28.24	0.35	282.40	1753.80	
	2100	28.68	0.16	286.80	2040.60	
CO)2 Emiss	ions Fossi	fuels and	other indu	strial sources	