

CERINA-Plan

(CO₂-Emissions and Renewable Investment Action Plan)

Background

According to an analysis from the IWR, a German renewable energy industry institute, global carbon dioxide emissions in 2008 rose to 31.5 billion metric tons, 40 percent above those in 1990. Kyoto-Protocol is a limitation model, where each countries CO₂ emissions level is restricted. The rising CO₂-emissions curve shows that Kyoto is not working out. The IWR-Institute for renewable energy has developed an alternative investment model, the CERINA-Plan (CO₂-Emissions and Renewable Investment Action Plan). This recommendation to stabilize the emissions is to link measured emissions to the renewable energy investments of different countries.

CERINA-Plan: the principle of the model

The principle is: the higher the CO₂-emissions, the higher the following renewable investments in each country should be. Every country is emitting CO₂, so every country has to contribute and take responsibility. Knowing the global emissions growth (in billion metric tons), it is possible to calculate backwards the necessary investments in renewable plants (electricity, heat, fuels), which are necessary to compensate and slow down the global emissions increase. The level of direct investment in renewable energy plants worldwide was € 120 billion in 2008 and according to IWR calculation it needs to at least quadruple to approximately € 500 billion each year.

Calculation and contribution of the countries to the global investment plan

The crucial step of the CERINA-Plan is the allocation to the various countries, which is determined through the amount of CO₂ emissions in each country. With a total of 31.5 billion tons of global CO₂ emissions and the necessity of 500 billion euro per year for renewable energy, there is a theoretical CO₂ price of € 16 per metric ton. For each country the specific investments, which each country has to fulfill according to its CO₂ emissions, can be determined. IWR has calculated the needed renewable investments for 65 countries according to their CO₂ emissions level.

Examples: needed investments within the CERINA-Plan

According to the CERINA-Plan China, with actual the highest CO₂ emissions worldwide of about 6.8 billion metric tons (2008), has to invest € 109 billion in renewable energy plants,

such as wind, solar, biomass or water, via political framework. India – with 1.4 billion metric tons of CO₂ emitted – has to invest € 22.5 billion, in Germany with 860 million metric tons € 13.7 billion are needed. But also smaller countries with lower emissions are considered in the CERINA-Plan. Hungary has emitted 60 million metric tons in 2008 and would have to invest 1 billion Euro each year, New Zealand 600 million.

Outlook

It looks like there won't be a climate treaty after Copenhagen and the acting as if the issue of CO₂ is a bazaar is going on. CERINA is an opportunity to establish a transparent and clear system to lower the emissions. The advantage of CERINA is that each country has now two options: to curb the emissions or to enhance their investments in renewable energy technologies. Countries with a lower emission level don't need to make the amount of investments that is required of countries with higher emissions. Every country has the opportunity to choose the most feasible solution. In the long run, the increasing share of renewable energy or the decrease of CO₂ emissions via prevention respectively enhanced efficiency standards lead to a global reduction of CO₂ emissions.

More Information at:

www.cerina.org

CERINA-Plan (CO₂-Emissions and Renewable Investment Action Plan)								
	Country	1990 CO ₂ (Mill. t)	2008 CO ₂ (Mill. t)	real Changes 1990-2008 (%)	Kyoto-target bis 2012 (%)	RE-Investment-Plan (Bn. Euro per year)		
						[10 €/t]	[16 €/t]	[20 €/t]
	World	22.682	31.511,2	+ 39	- 5,2	315,1	504,2	630,2
1.	China	2.452	6.809,7	+178	-	68,1	109,0	136,2
2.	USA	5.461	6.369,8	+ 17	-7*	63,7	101,9	127,4
3.	Russia	2.369	1.687,6	- 29	0	16,9	27,0	33,8
4.	India	626	1.408,5	+125	-	14,1	22,5	28,2
5.	Japan	1.179	1.391,5	+ 18	- 6	13,9	22,3	27,8
6.	Germany	1.029	857,3	- 17	- 21	8,6	13,7	17,2
7.	South Korea	257	663,5	+ 158	-	6,6	10,6	13,3
8.	Canada	485	658,3	+ 44	- 6	6,6	10,5	13,2
9.	Great Britain	625	581,8	- 7	- 12,5	5,8	9,3	11,6
10.	Iran	199	513,5	+ 158	-	5,1	8,2	10,3
11.	Saudi-Arabia	242	490,7	+ 103	-	4,9	7,9	9,8
12.	Italy	440	482,8	+ 10	- 6,5	4,8	7,7	9,7
13.	South Africa	329	481,8	+ 46	-	4,8	7,7	9,6
14.	Mexiko	283	458,1	+ 62	-	4,6	7,3	9,2
15.	Brazil	246	439,5	+ 79	-	4,4	7,0	8,8
16.	France	416	428,0	+ 3	0	4,3	6,8	8,6
17.	Australia	279	381,6	+ 37	+ 8	3,8	6,1	7,6
18.	Spain	238	380,0	+ 60	+ 15	3,8	6,1	7,6
19.	Indonesia	151	376,7	+ 149	-	3,8	6,0	7,5
20.	Taiwan	136	340,0	+ 150	-	3,4	5,4	6,8
21.	Poland	382	337,9	- 12	- 6	3,4	5,4	6,8
22.	Ukraine	757	327,2	- 57	0	3,3	5,2	6,5
23.	Turkey	142	295,1	+ 108	-	3,0	4,7	5,9
24.	Nethetrlands	219	262,6	+ 20	- 6	2,6	4,2	5,3
25.	Thailand	88	253,5	+ 188	-	2,5	4,1	5,1
26.	Kazakhstan	250	207,8	- 17	-	2,1	3,3	4,2
27.	UAE	76	194,2	+ 156	-	1,9	3,1	3,9
28.	Egypt	92	192,0	+ 109	-	1,9	3,1	3,8
29.	Belgium & Luxembourg	140	182,8	+ 31	- 7,5; -28	1,8	2,9	3,7
30.	Singapore	73	175,6	+ 141	-	1,8	2,8	3,5
31.	Argentina	104	171,0	+ 64	-	1,7	2,7	3,4
32.	Venezuela	105	170,0	+ 62	-	1,7	2,7	3,4
33.	Pakistan	65	165,3	+ 154	-	1,7	2,6	3,3

34.	Malaysia	67	152,4	+ 127	-	1,5	2,4	3,0
35.	Uzbekistan	133	125,5	- 6	-	1,3	2,0	2,5
36.	Czech Republic	168	123,4	- 27	- 8	1,2	2,0	2,5
37.	Greece	81	109,3	+ 35	+ 25	1,1	1,7	2,2
38.	Algeria	74	100,2	+ 35	-	1,1	1,6	2,0
39.	Rumania	169	93,8	- 44	- 8	0,9	1,5	1,9
40.	Hong Kong (to China)	41	77,9	+ 90	-	0,8	1,2	1,6
41.	Kuwait	26	74,8	+ 188	-	0,7	1,2	1,5
42.	Austria	61	74,2	+ 22	- 13	0,7	1,2	1,5
43.	Philippines	40	73,5	+ 84	-	0,7	1,2	1,5
44.	Chile	34	70,5	+ 107	-	0,7	1,1	1,4
45.	Portugal	46	64,9	+ 41	+27	0,6	1,0	1,3
46.	Belarus	111	64,7	- 42	-	0,6	1,0	1,3
47.	Hungary	71	60,4	- 15	- 6	0,6	1,0	1,2
48.	Colombia	52	59,6	+ 15	-	0,6	1,0	1,2
49.	Turkmenistan	36	57,3	+ 59	-	0,6	0,9	1,1
50.	Katar	17	56,3	+ 231	-	0,6	0,9	1,1
51.	Sweden	61	55,1	- 10	+ 4	0,6	0,9	1,1
52.	Finland	52	54,4	+ 5	0	0,5	0,9	1,1
53.	Denmark	56	53,6	- 4	- 21	0,5	0,9	1,1
54.	Bulgaria	75	52,8	- 30	- 8	0,5	0,8	1,1
55.	Bangladesh	17	52,3	+ 208	-	0,5	0,8	1,0
56.	Switzerland	45	44,8	- 0,4	- 8	0,5	0,7	0,9
57.	Ireland	27	44,2	+ 64	+ 13	0,4	0,7	0,9
58.	Norway	35	41,5	+ 19	+ 1	0,4	0,7	0,8
59.	Slovakia	55	40,8	- 26	- 8	0,4	0,7	0,8
60.	New Zealand	29	39,0	+34	0	0,4	0,6	0,8
61.	Peru	20	33,8	+ 69	-	0,3	0,5	0,7
62.	Ecuador	13	30,2	+ 132	-	0,3	0,5	0,6
63.	Azerbaidzhan	60	30,1	- 50	-	0,3	0,5	0,6
64.	Lithuania	37	17,3	- 53	- 8	0,2	0,3	0,3
65.	Iceland	2	3,4	+ 70	+ 10	0,03	0,1	0,07
-	Rest Middle East	182	356,9	+ 96	-	3,6	5,7	7,1
-	Rest Africa	188	277,4	+ 48	-	2,8	4,4	5,5
-	Rest South-/Cent. America	157	262,8	+ 67	-	2,6	4,2	5,3
-	Rest Asia & Pacific	176	256,6	+ 46	-	2,6	4,1	5,1
-	Rest Europe & Eurasia	301	189,9	- 37	-	1,9	3,0	3,8

*The U.S. took part in the Kyoto negotiations but did not ratify the treaty.

Source: IWR Research 2009, Data: BP Statistical Review, EU, UNFCCC; IWR, BMWi