



Centro Clima
CENTER FOR INTEGRATED STUDIES ON
CLIMATE CHANGE AND THE ENVIRONMENT

Assessing New Low Carbon Scenarios for Brazil

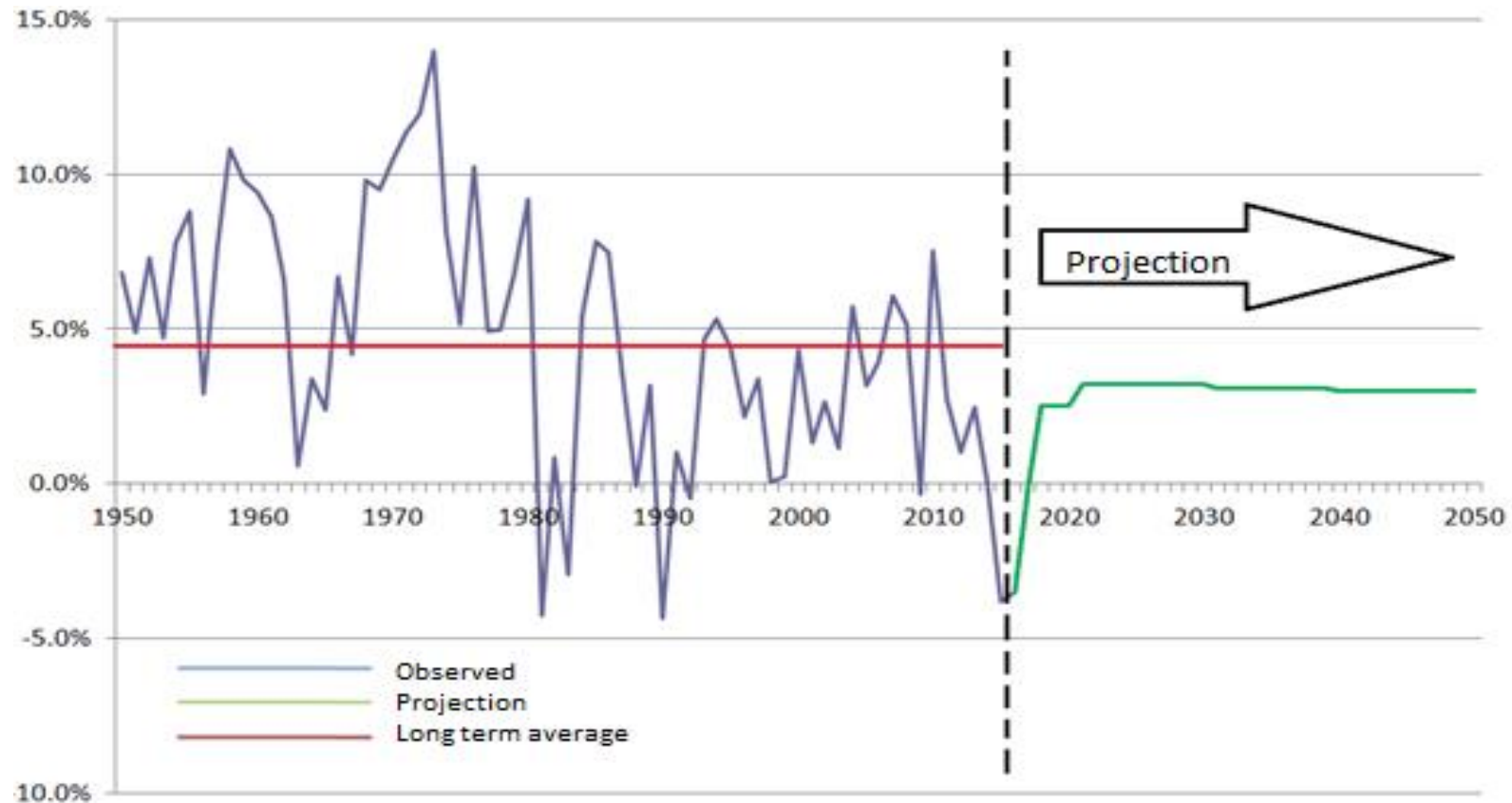
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CentroClima/COPPE/UFRJ

MILES meeting
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GDP Growth: Historical record and projection

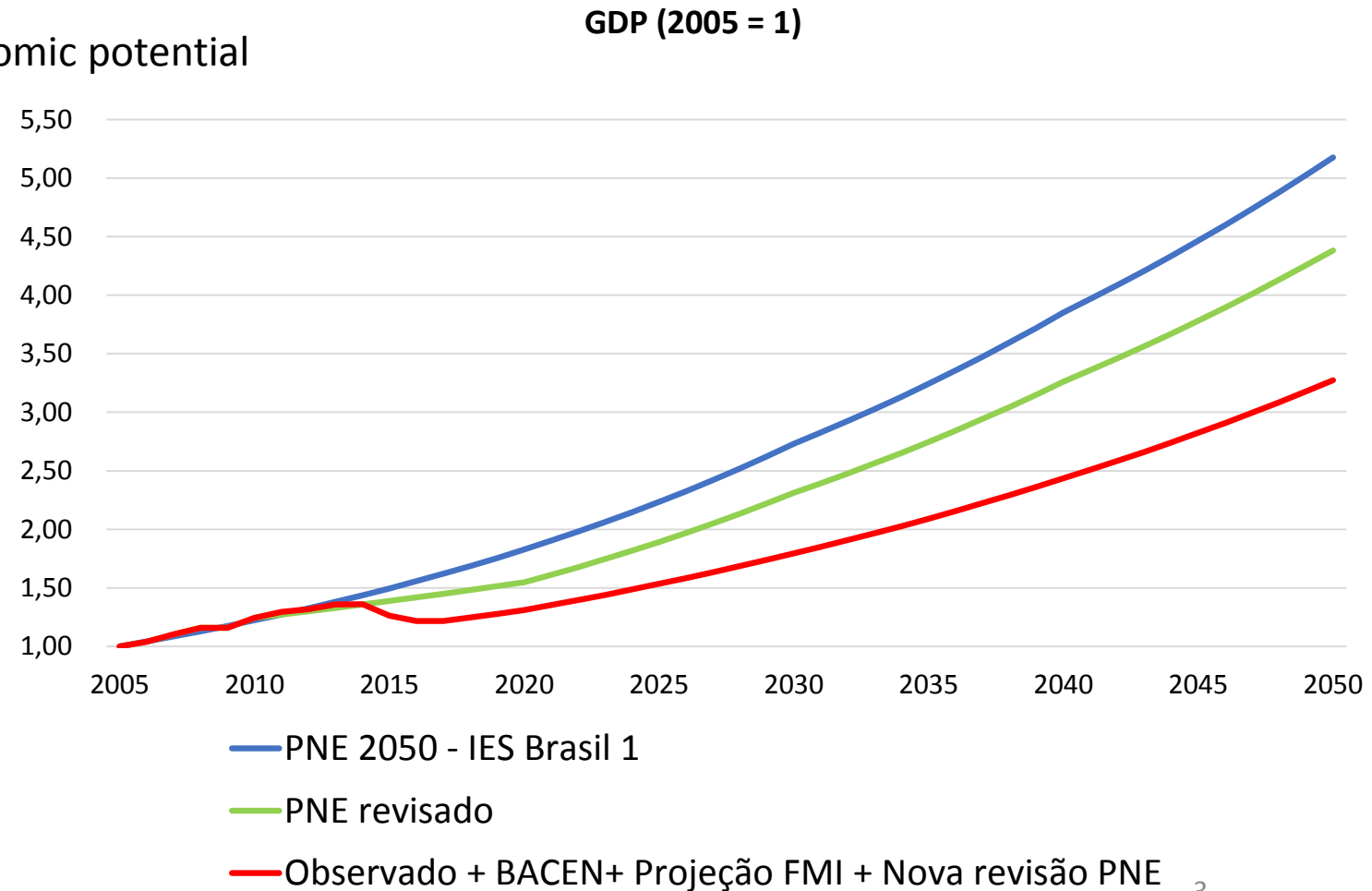
- GDP growth rate per year: Record, 65-year average and projection



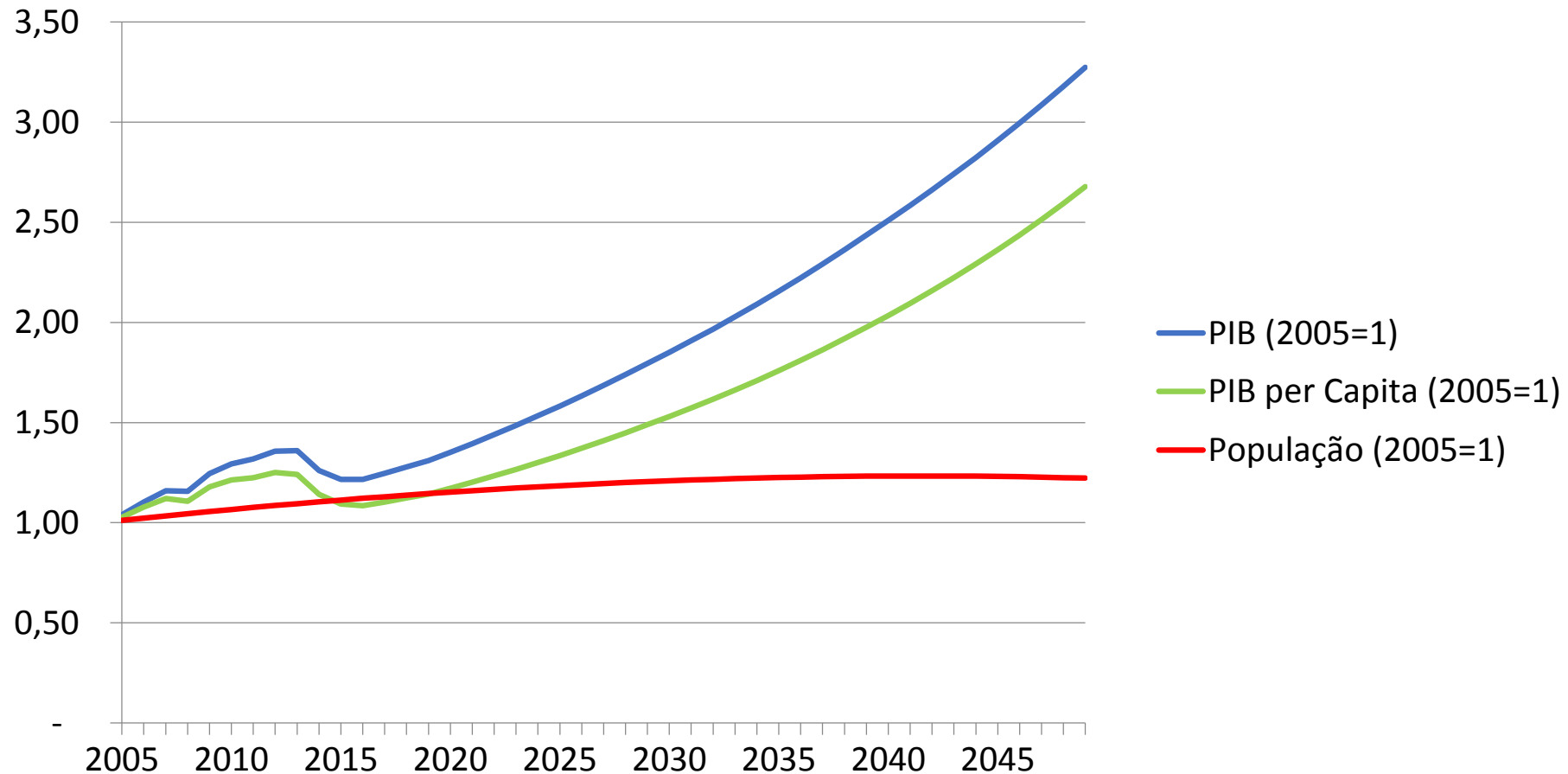
New Governmental Plan Scenario

- GDP Growth:
 - Short term: Recovery from major economic crisis
 - Long term: update of long term economic potential

Period	GDP growth per year(%)
2010-2014	2.2%
2015	-3.8%
2016	-3.5%
2017	0%
2018-2020	2.5%
2021-2030	3.2%
2031-2040	3.1%
2041-2050	3.0%



- GDP, GDP per capita and population (2005 = 1)



- Macroeconomic Results – Government Plan Scenario

	2005	2015	2030	2050
Population (million)	185	204	223	226
GDP (trillion 2015 BRL)	4.52	5.60	8.66	14.87
GDP growth (average % per year, from 2005)	-	2.14%	2,95%	2.73%
GDP per capita (thousand 2015 BRL)	24.4	27.4	38.8	65.8
Full time jobs (million)	91.2	99.8	112.3	111.5
Unemployment rate (%)	9.9%	8.5%	8.3%	7.3%
Total investment (trillion 2015 BRL)	0.70	0.92	1.32	2.35
Investment rate (% of GDP)	15.5%	16.4%	15.2%	15.8%
Trade balance surplus (billion 2015 BRL)	166	242	226	461
Trade balance surplus (% of GDP)	3.7%	4.3%	2.6%	3.1%
Exposition to foreign trade (X+M)/GDP (%)	27.2%	28.5%	25.7%	30.6%
Total annual GHG emissions (Gt CO₂e)	2.08	1.66	1.14	1.48
GHG emissions per capita (tCO₂e / capita)	11.2	8.5	5.1	6.5
GHG emissions per GDP (kgCO₂e / 2015 BRL)	0.47	0.27	0.13	0.10

- Number of full time jobs by economic sector (thousands)

Sector	2005	2015	2030	2050
Agriculture	19,000	20,966	14,083	10,574
Industry	9,783	10,592	11,427	10,333
Energy sector	2,755	2,682	5,275	4,991
Transport and services	59,674	65,519	81,516	85,592
Total	91,212	99,759	112,301	111,490

- Definition of Household Income Classes

Income Class	% of households in income class
Class 1	Poorest 10%
Class 2	Next 20%
Class 3	Next 20%
Class 4	Next 20%
Class 5	Next 20%
Class 6	Richest 10%

Income per capita in household classes (2015 BRL)

Income Class	2005	2015	2030	2050	2050/2005
Class 1	2.0	3.3	6.2	13.1	6.4
Class 2	5.0	6.2	9.7	16.7	3.36
Class 3	8.3	10.0	14.7	25.5	3.07
Class 4	11.6	14.5	20.8	34.0	2.94
Class 5	26.0	29.4	41.3	69.8	2.69
Class 6	106.5	117.3	165.2	280.3	2.63
Average income per capita	21.03	24.08	34.44	58.54	2.78
Gini coefficient	0.57	0.54	0.41	0.36	-

- Consumption per capita - Electricity (2015 BRL)

Income class	2005	2015	2030	2050
Class 1	82	96	141	316
Class 2	132	144	224	348
Class 3	223	245	460	662
Class 4	315	340	573	819
Class 5	455	454	796	1,227
Class 6	735	847	1,517	2,689
Average electricity consumption per capita	307	331	576	912

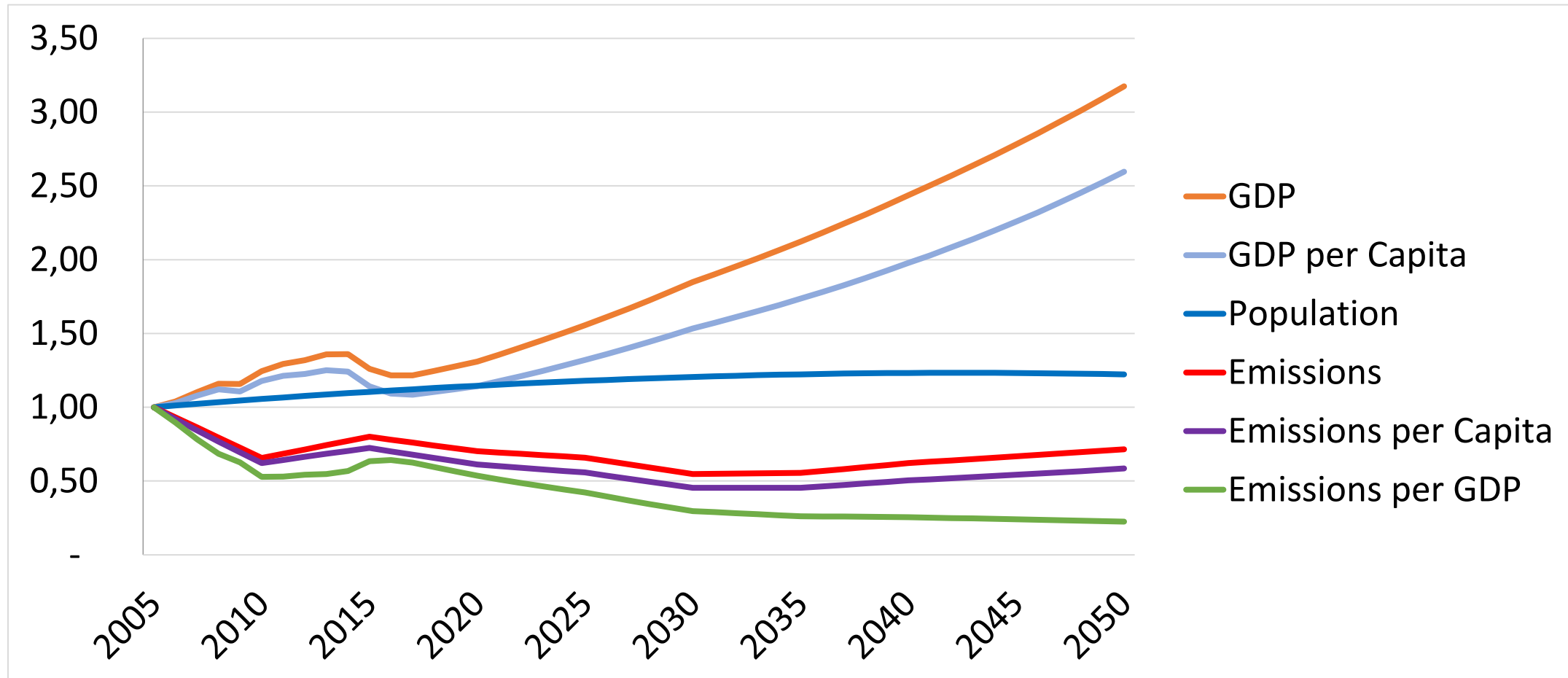
- Consumption per capita - Food at home (2015 BRL)

Income class	2005	2015	2030	2050
Class 1	1,576	1,856	2,721	4,882
Class 2	1,978	2,149	2,968	5,665
Class 3	2,390	3,054	4,374	6,367
Class 4	3,021	3,805	4,872	7,056
Class 5	3,521	4,247	5,451	8,505
Class 6	5,466	7,334	9,994	15,074
Average consumption of food at home per capita	2,886	3,570	4,805	7,514

- Consumption per capita – Services (2015 BRL)

Income class	2005	2015	2030	2050
Class 1	1,873	2,205	4,135	13,935
Class 2	2,967	3,136	6,720	14,803
Class 3	4,970	6,091	12,034	20,922
Class 4	7,398	9,188	16,932	29,116
Class 5	3,166	14,865	28,836	53,643
Class 6	32,758	42,670	98,916	210,723
Average consumption of services per capita	9,163	11,144	23,210	46,163

- Evolution of GDP, GHG Emissions and Population (2005=1)



Next Steps:

- Design new additional mitigation scenarios (pathways compatible with 2°C, and 1.5°C)
 - Technology assessment
 - Mitigation potential
 - Investment requirements
 - Microeconomic costs
- Embark new information from additional mitigation scenarios into IMACLIM-R BR
- Run IMACLIM-R BR and make comparative analysis of results