Enabling Activities for Preparation of the Iran's Second National Communication to UNFCCC

Activities and Outcomes

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Contents

- National Circumstances
- Outcomes:
  - Inventory
  - Mitigation Policies
  - Vulnerability and Adaptation Assessment
  - Cross Cutting Issues (TNA, GCOS, CC Education & Research)
- Challenges
- Lessens learnt, innovation and best practices
- Next steps

National Circumstances

Iran's location in the Middle East

National Circumstances

Summary of Social, Demographic and Economic Indicators

Social and Demographic Indicators	
Area	1,648,195 sq. km
Legal system	Based on the 1979 Constitution which was amended in 1989
Legislature	Majlis-Shura-ye Islami (Islamic Consultative Assembly or Parliament) of 270 members. All Majlis legislation must be approved by the 12-member Council of Guardians, six of whom are appointed by the Leader (the Rahbar) and six by the Majlis. The Expediency Council mediates between the Majlis and the Council of Guardians.
Electoral system	Universal adult suffrage
Head of State	President, elected by universal suffrage for a four- year term.
Population	70.5 million (2006-2007)
Distribution of population	Urban areas 68.5%, Rural areas 31.5% (2006-07)
Annual population growth rate	1.6% (1996-2006)
Population density (people per sq. km)	41 (2005)
Total fertility rate	2.1 (2000-2005)
Life expectancy	Male 68 years; Female 72 years (2004)
Adult literacy rate (% aged 15 and above)	82.4% (2005)
Combined gross enrolment ratio for primary, secondary and tertiary education	72.8% (2005)
Infant mortality rate	28.6 per 1,000 (2004)
Nutrition (per capita daily calorie intake)	3,181 (1990)
Access to safe drinking water	89% of population (1990); 95% of population (2004)
Access to standard sanitation	84% of population (2004)

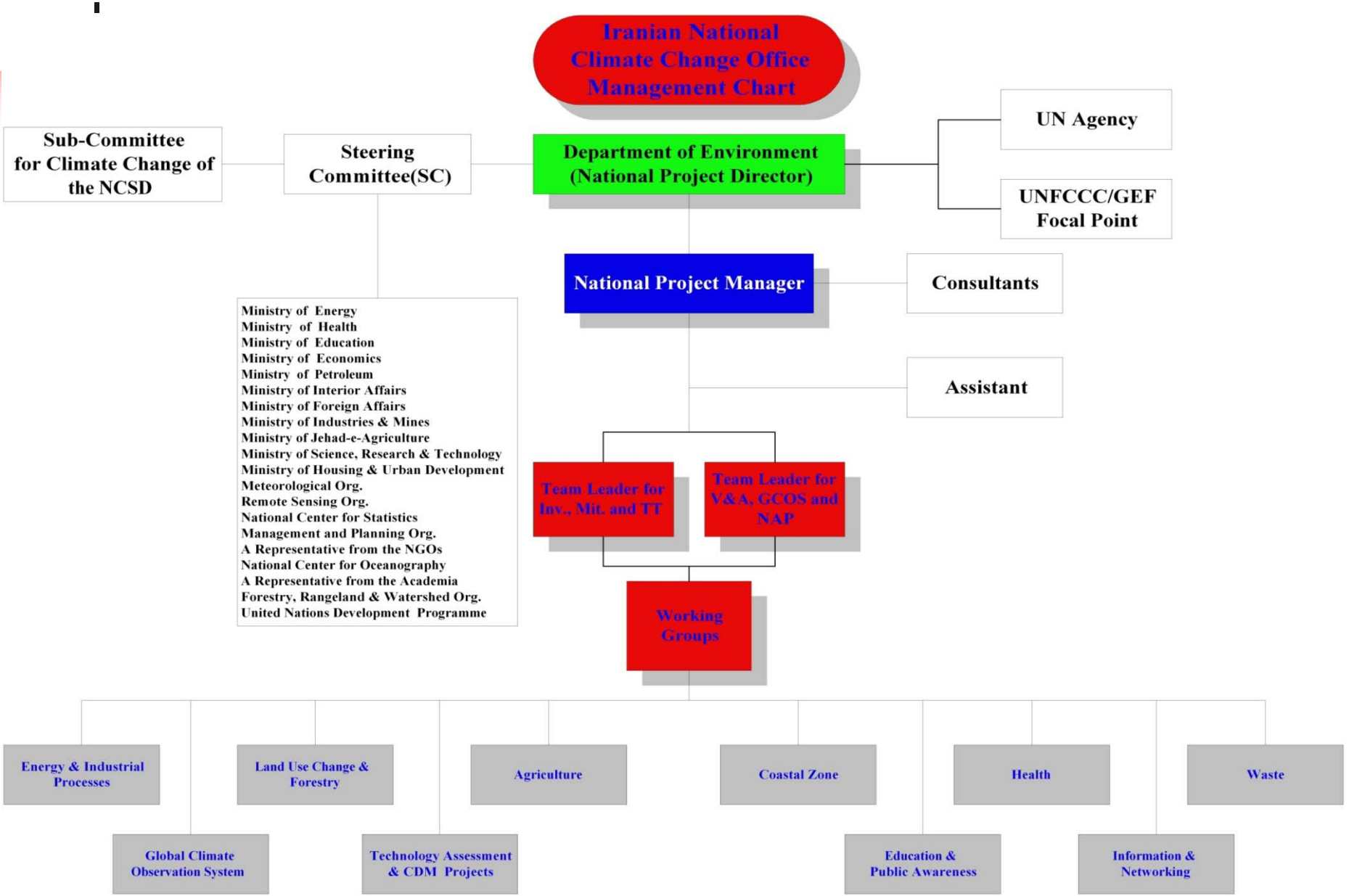
National Circumstances

Summary of Social, Demographic and Economic Indicators (continued)

Economic Indicators				
Distribution of GDP in 2004-05 at 1997-98 prices		Agriculture 13.7%; Oil 11.5%; Manufacturing & Mining 18.8%; Services 51.4%		
	2002-03	2003-04	2004-05	2005-06
GDP (US$ billions)	137.1	163.4	189.8	207.6
GDP (PPP USD billions)	464.1	504.2	543.8	587
GDP growth (%)	6.7	4.8	5.7	6.2
Inflation (%)	15.6	15.2	12.1	13.6
Oil export (thousands barrels per day)	2,678	2,809	2,847	2,699
Oil & gas exports (USD million)	27,355	36,315	53,820	62,458
Non-oil exports (USD million)	6,636	7,537	10,546	13,079
Total exports (USD million)	33,991	43,852	64,366	75,537
Imports (USD million)	29,561	38,199	43,085	49,292
Trade balance (USD million)	4,430	5,653	21,281	26,245
Services (USD million)	-4,535	-5,011	-5,379	-6,272
Current account (USD million)	816	1,442	16,637	20,650

National Circumstances

Organization Chart for SNC



National GHGs Inventory

Summary of GHGs Emission Inventory in 2000 (Gg)

Sources	CO_2	CH_4	N_2O	Total
1. Energy	**337,352**	**1,802**	**8.47**	**377,809**
Fuel Combustion	*304,027*	*79*	*8*	*308,301*
Fugitive Emissions	*33,325*	*1,723*	*0*	*69,508*
2. Industry	**28,556**	**3.0**	**2.4**	**29,357**
3. Agriculture	**0.0**	**908**	**77.2**	**42,993**
4. Forestry	**9,278**	**0.3**	**0.00**	**9,285**
5.Waste	**0.0**	**892.6**	**41.5**	**31,609**
Total GHG's Emissions	**375,186**	**3,605.8**	**129.50**	**491,053**
GWP*	**1**	**21**	**310**	
Total CO_2 Equivalent	***375,186***	***75,722***	***40,146***	***491,053***

**Global Warming Potential*

Source: Iran Second National Communication

National GHGs Inventory (Continued)

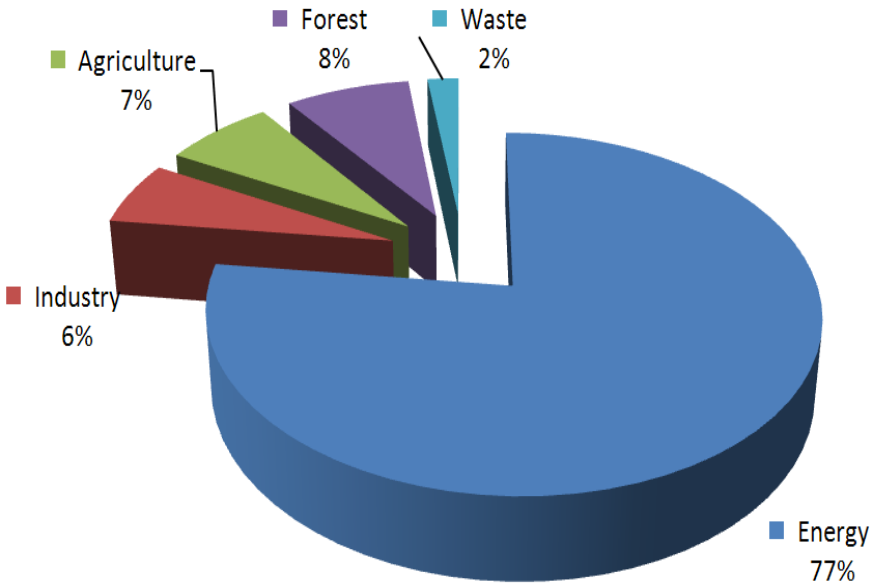
Comparison of GHGs Emission Inventory in 1994 -2000 (Gg)

Sources	1994	2000	Annual growth rate (%)
CO2 Emission: Energy	285,891	337,351	2.5
Fuel Combustion	254,354	304,026	2.7
Fugitive Emissions	31,537	33,325	0.9
CO2 Emission: Overall	342,062	375,186	1.5
GHGs Emission: Overall	**417,000**	**491,000**	**2.5**

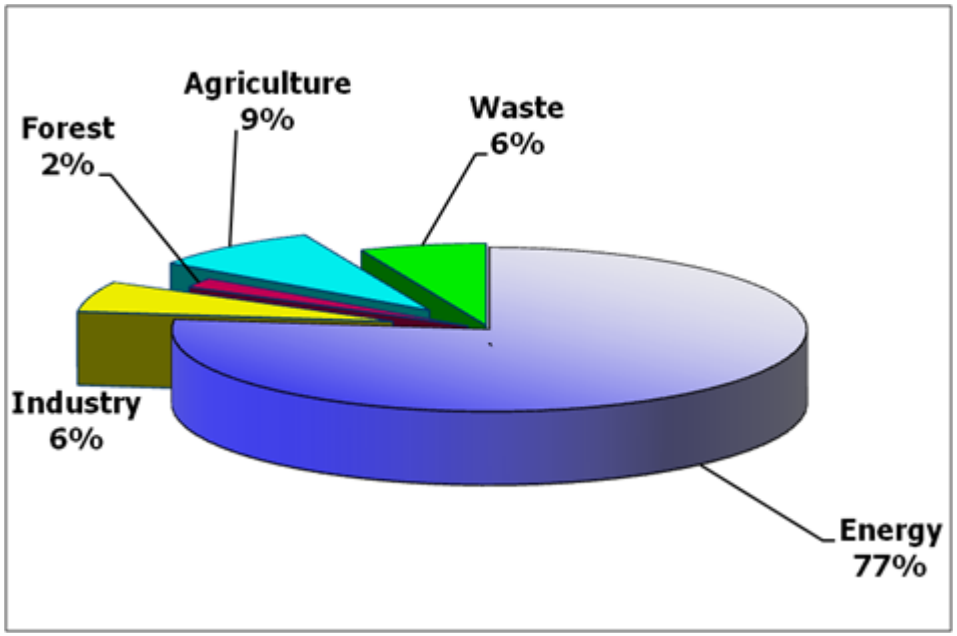
Source: Iran Second National Communications

National GHGs Inventory (Continued)

Contribution of Different Sectors to total GHGs Emission in 1994 and 2000 (%)



1994



2000

Mitigation Policies

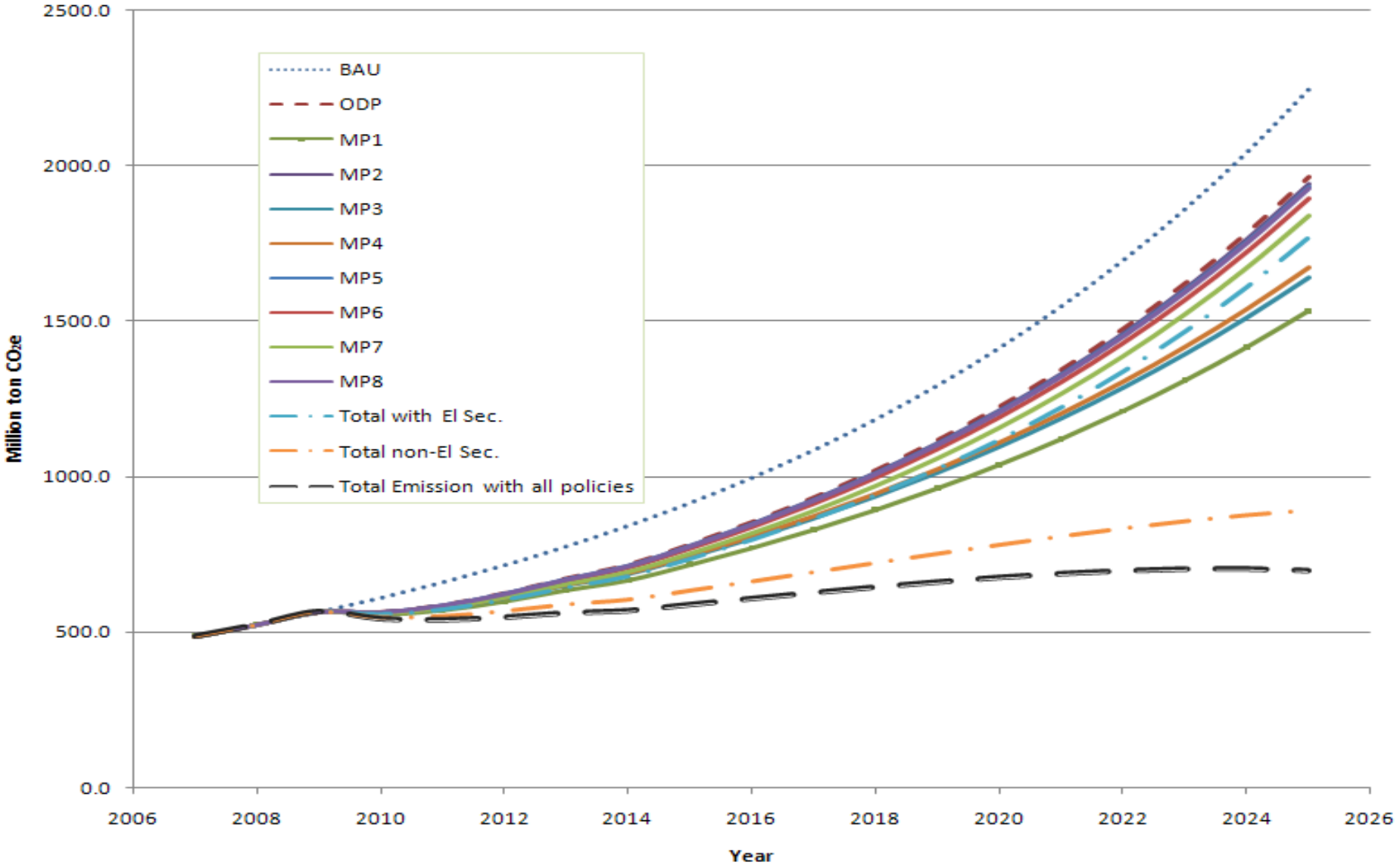
Definition of Scenarios

Business As Usual (BAU) Scenario: In the Business As Usual (BAU) scenario (2000-2025) all of the exogenous variables of energy modeling vary based on 1994-2007 realities and using econometric functions and methods to evaluate the scenario. Then, the emissions of the GHGs are predicted based on those values. Also the same approach was used for non-energy sectors.

- **Official Development Plan (ODP) Scenario:** In the OPD scenario the gap between domestic and global energy prices that imposes considerable missed opportunity costs on the economy, is reduced gradually during the government's 5th FYDP (Five Year Development Plan, between 2010-2015) and the effect on GHGs emission is estimated.
- **Mitigation Scenarios:** Eight different mitigation policies have been considered and different options are defined based on them. The choice of these plans are based on reviewing the government schemes in the past and future, expert judgment on the availability of the related technologies and financial resources, needs for regulations and rules and preparation of infrastructures according to the future objectives and activities of the country over the long-term. In this regard, the mitigation policies are divided into the following two categories:
  - **National Mitigation Plan**, consisting of the mitigation measures which will be funded by Government and is responsible for about 30% emission reduction by 2025 in comparison with BAU Scenario.
  - **Internationally Funded Mitigation Action,** consisting of the mitigation measures which could be implemented *only if* international technical/financial assistance under UNFCCC becomes available. These mitigation options will be responsible for about 34% emission reduction by 2025 in comparison with BAU Scenario. Although these policies are the objectives of the Government in the "2025 Country's Vision for Development", reaching these objectives needs international financial/technical assistance under UNFCCC.

Mitigation Policies

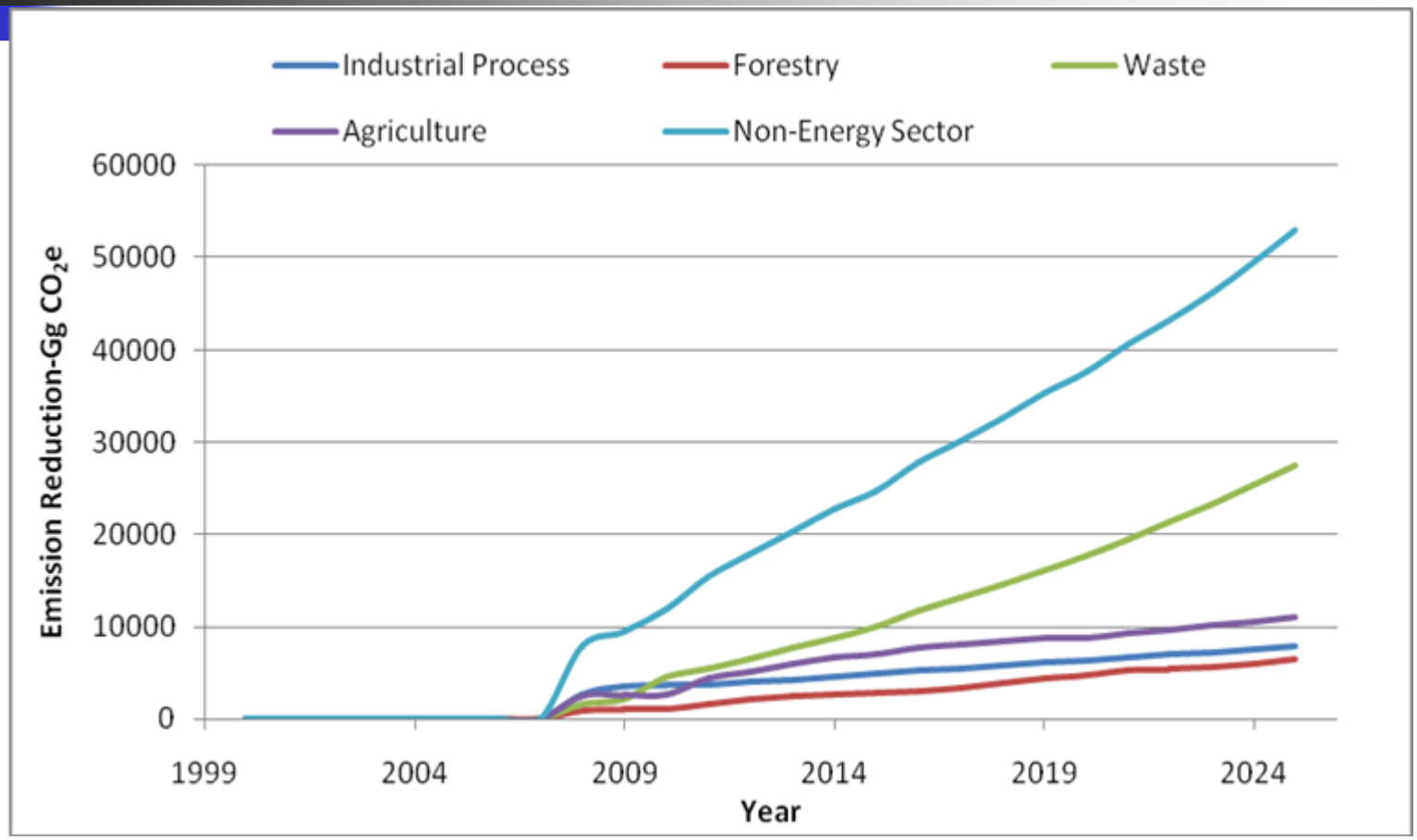
GHGs Emission Trend in Different Scenarios for Energy Sector



- **MP1:** Increase the energy efficiency of end-use sectors (demand side) at the rate of 2% per year until 2025 (energy intensity will be reduced from 2.04 BOE/million rials GDP in 2007 to 1.4765 in 2025). This mitigation policy consists of a basket of measures that will be implemented in the domenstic and commercial sector, industry, agriculture , etc. through the use of efficient appliances and machinery, renovation in industries, process optimization and also installing Small Combined Heat and Power (SCHP) units. Most of this improved efficiency will be implemented through the small SCHP units in large buildings, public institutions and industries.
- **MP2:** Increase of the share of CNG in transport from 2.5% in 2007 to 25% in 2025 at the rate of 1.25% per year.
- **MP3:** Increase of the share of natural gas (NG) in the industry sector from 59.4% in 2007 to 82% in 2025 at the constant rate of 1.8% per year.
- **MP4:** Increase of the share of NG in residential and commercial sectors from 66.5% in 2007 to 88% in 2025 at the constant rate of 1.55% per year.
- **MP5:** Increase of the share of NG in power plants from 73% in 2007 to 100% in 2025 at the constant rate of 1.74% per year.
- **MP6:** Increase of the share of renewable and low-carbon electricity production industries in total electricity generation of the country by increasing the capacity of hydropower from 7,073.8 MW in 2007 to 19,000 MW in 2025, wind from 74 MW in 2007 to 6,000 MW in 2025 and nuclear power plants from zero in 2007 to 20,000 MW in 2025 at a constant growth rate of 1% per year.
- **MP7:** Increase of the power plants efficiency from 34% in 2007 to 52% in 2025 at the rate of 1% per year. The policy will be implemented through different measures like installing combined cycle power plants and distributed electricity generation systems (DG). In the 5th FYDP, about 3000 MW of SCHP generators will be installed.
- **MP8:** Decrease of the loss of the electricity distribution and transmission network from 24% in 2007 to 15% in 2025 at the rate of 0.5% per year.

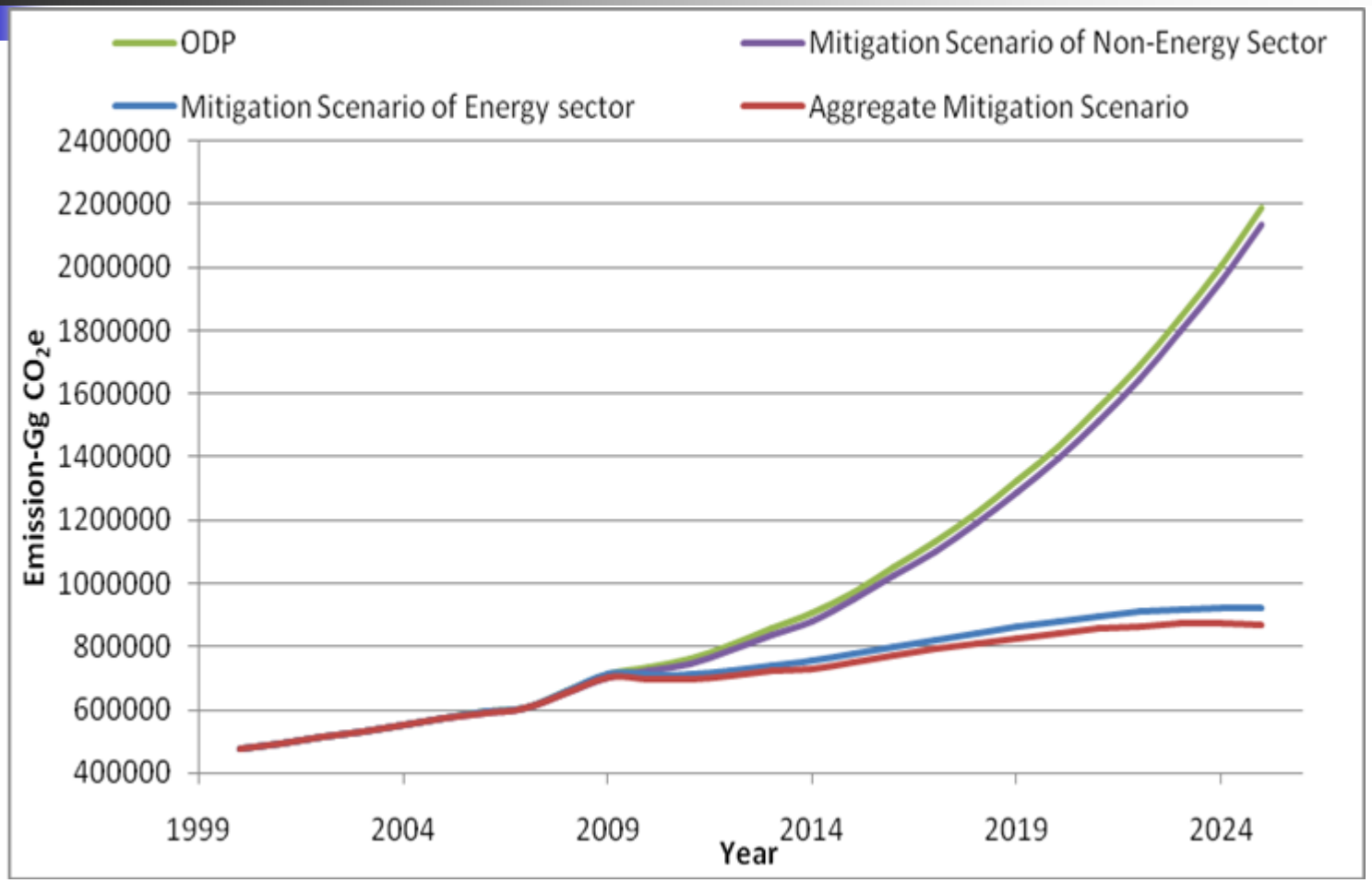
Mitigation Policies

GHGs Mitigation Potential in Different Non-energy Sectors in Comparison to ODP Scenario (Gg CO2-eq.)



Mitigation Policies

GHGs Emission Trend in Different Scenarios for All Sectors



Vulnerability and Adaptation:
Some the results

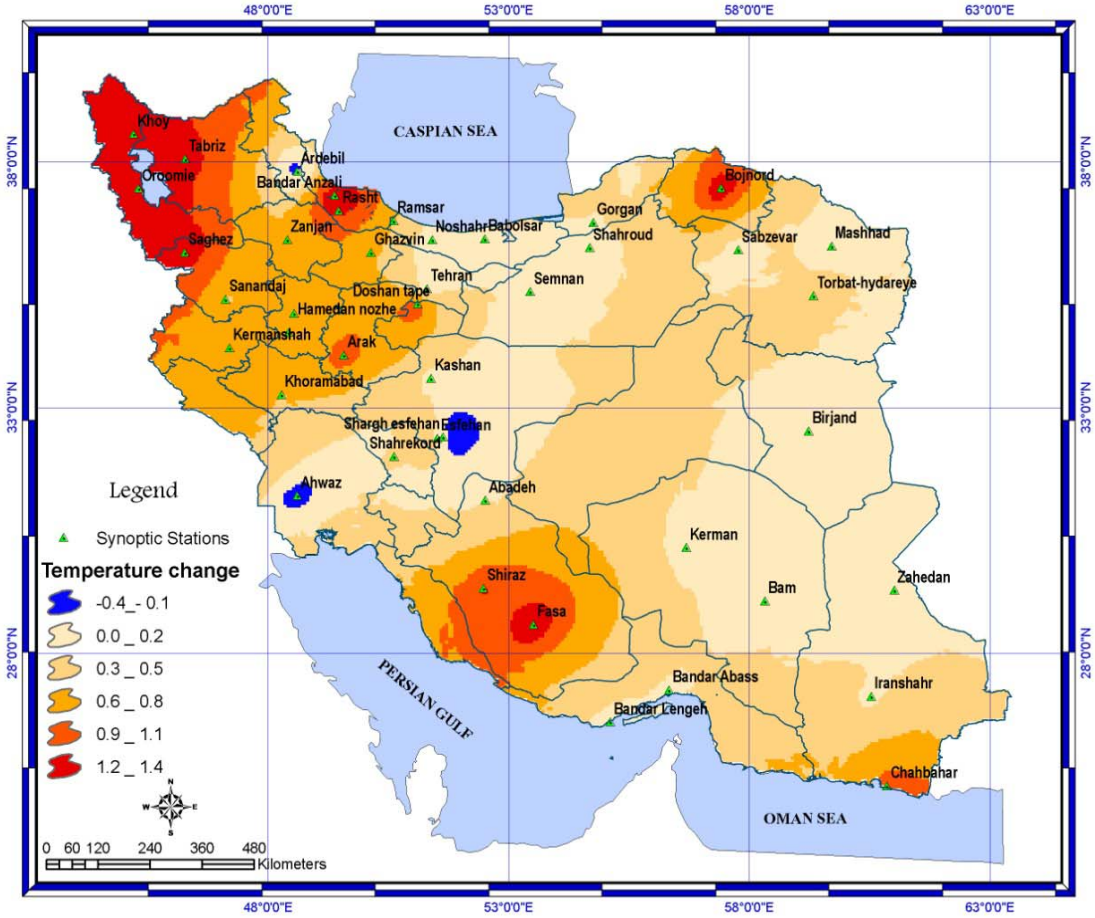
- Climate Variability and Change Study
- Sectoral Vulnerability Assessment and Adaptation
  - Water resources
  - Agriculture
  - Forestry and rangelands
  - Biodiversity
  - Coastal zones
  - Public health
- Impact of response measures on Iran's Economy

Vulnerability and Adaptation:
Climate modeling and change study

- LARS-WG results: 2010-2039
- MGGICC- SCENGEN results: 2000-2100
- PRECIS results: 2070-2100
- This study has been conducted by the Center for Climatology of Iran's Meteorological Organization.

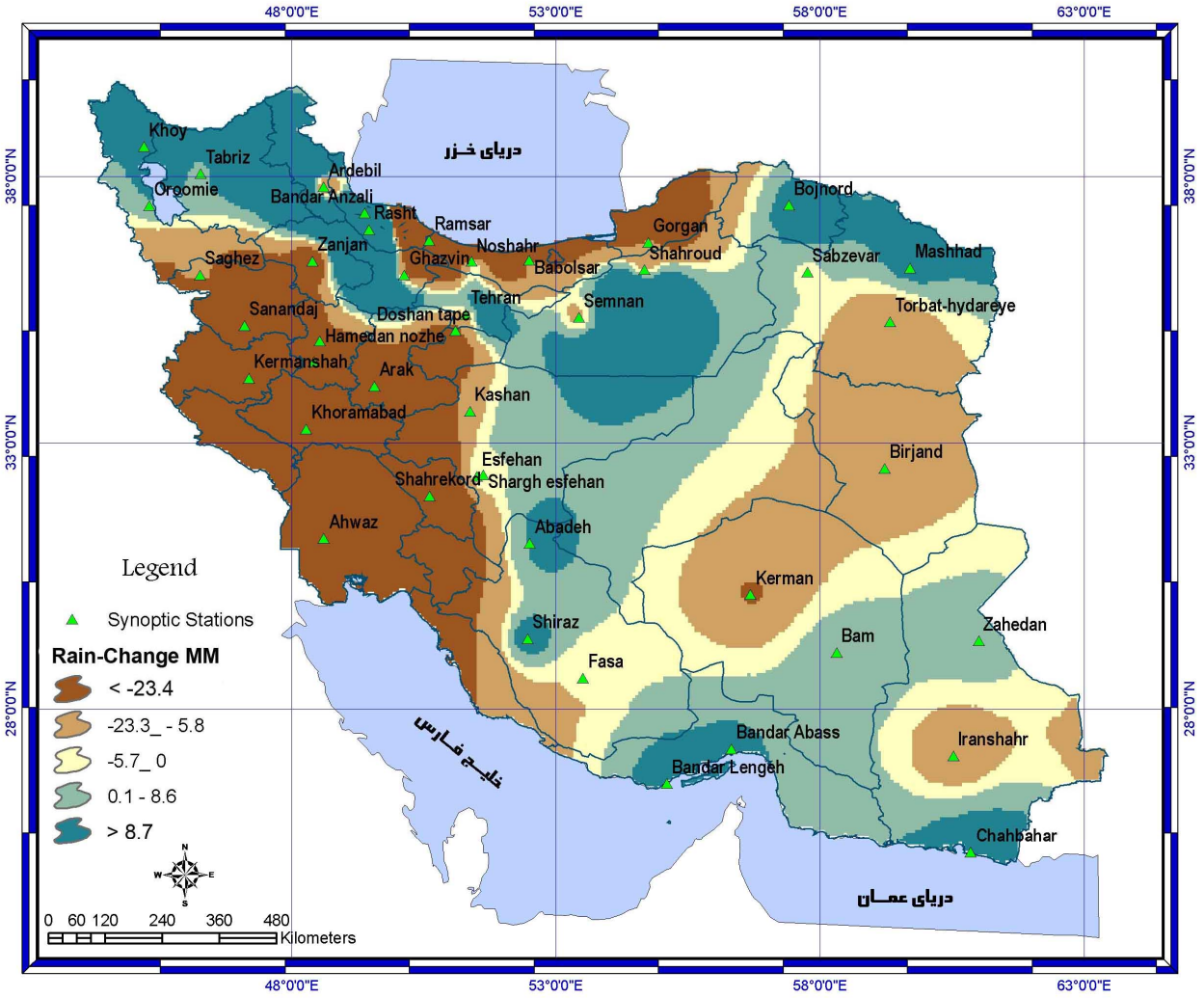
Vulnerability and Adaptation:

Temperature Changes Projected for the 2010-2039 with Respect to the 1976-2005 Projected by LARS-WG.



Vulnerability and Adaptation:

Rainfall Changes Projected for 2010-2039 with Respect to the 1976-2005 Projected by LARS-WG.

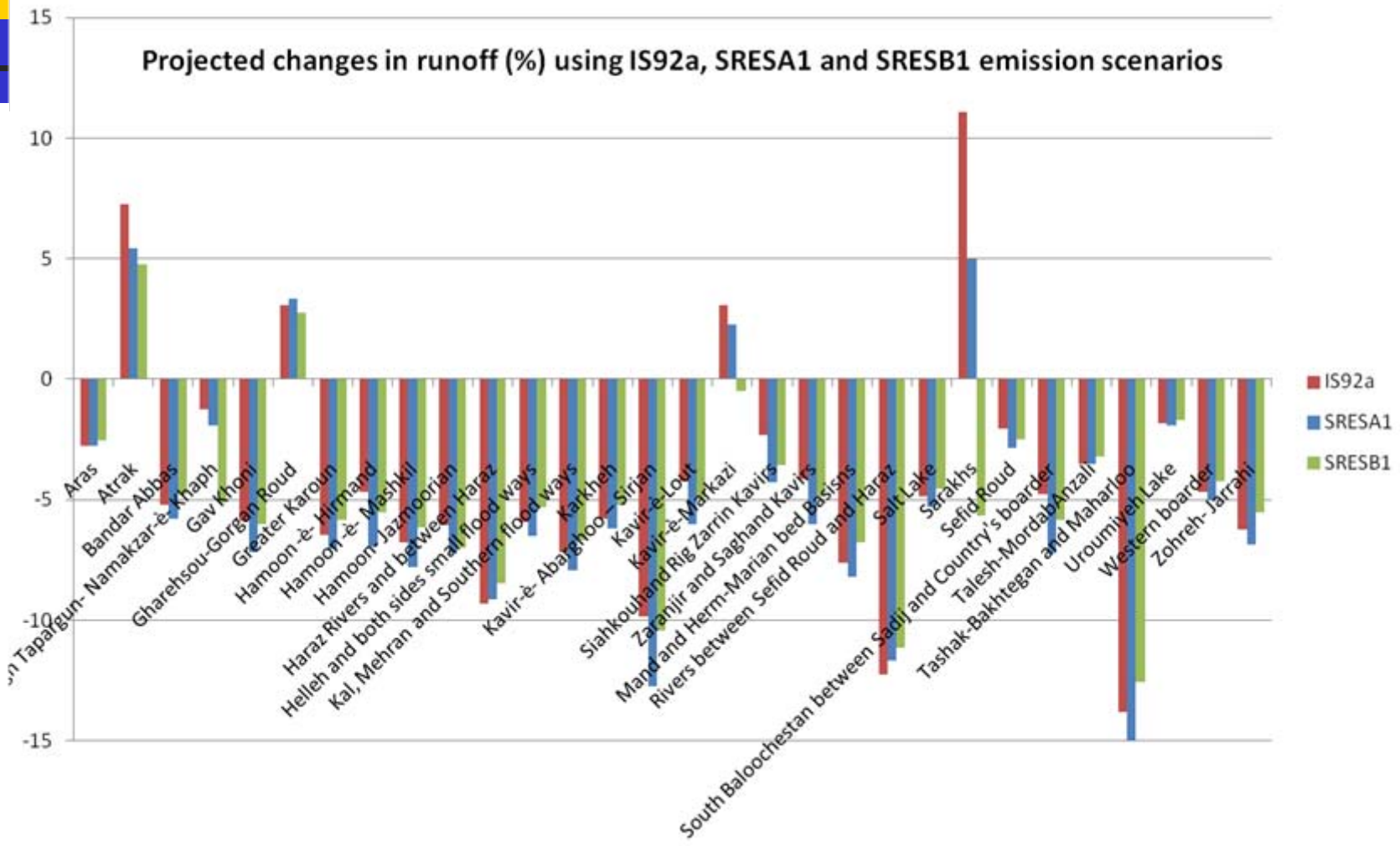


Vulnerability and Adaptation:
Summary of LARS WG Results

- 9% reduction in the average precipitation
- Average temperature will increase by 0.5 C
- Threshold of heavy rainfall will be increased, therefore the flood index will increase
- Drought and number of dry days will increase

Vulnerability and Adaptation:

Water Resources: Climate change impact on run-off in different basins (%)



Vulnerability and Adaptation:

Agricultural Products

Potential changes in cereal yields of Iran in comparison to the year 1990 by HadCM3 SRES model .

Scenario	Time slice	Potential changes in cereal yields (%)	
		Without CO2 effect	With CO2 effect
A1	2020s	-5 to -10	-2.5 to -5
	2050s	-10 to -30	-5 to -10
	2080s	-10 to -30	-10 to -30
A2	2020s	-5 to -10	0 to -2.5
	2050s	-10 to -30	-2.5 to -5
	2080s	-10 to -30	-5 to -10
B1	2020s	-2.5 to -5	0 to -2.5
	2050s	-5 to -10	-2.5 to -5
	2080s	-10 to -30	-5 to -10
B2	2020s	-5 to -10	-2.5 to -5
	2050s	-10 to -30	-5 to -10
	2080s	-10 to -30	-5 to -10

A1: very high economic growth and low population growth
A2: high economic growth and high population growth
B1: high economic growth and low population growth
B2: high economic growth and moderate population growth

Vulnerability and Adaptation:

Impact of Response Measure

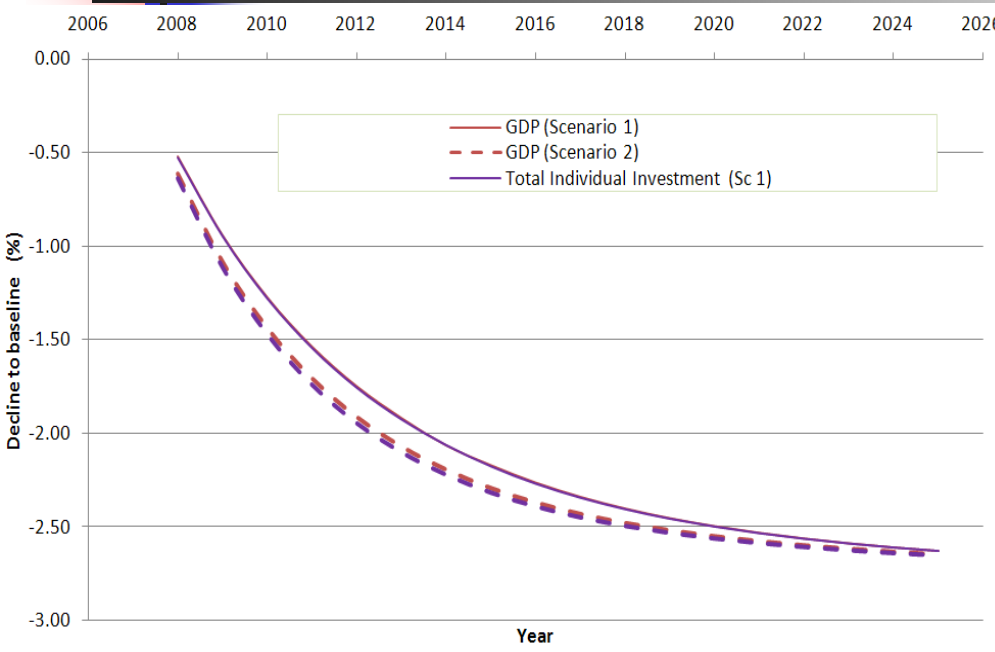


Figure A: Estimate of the Effect of Oil Price Decline on GDP and Individual Investment (%)

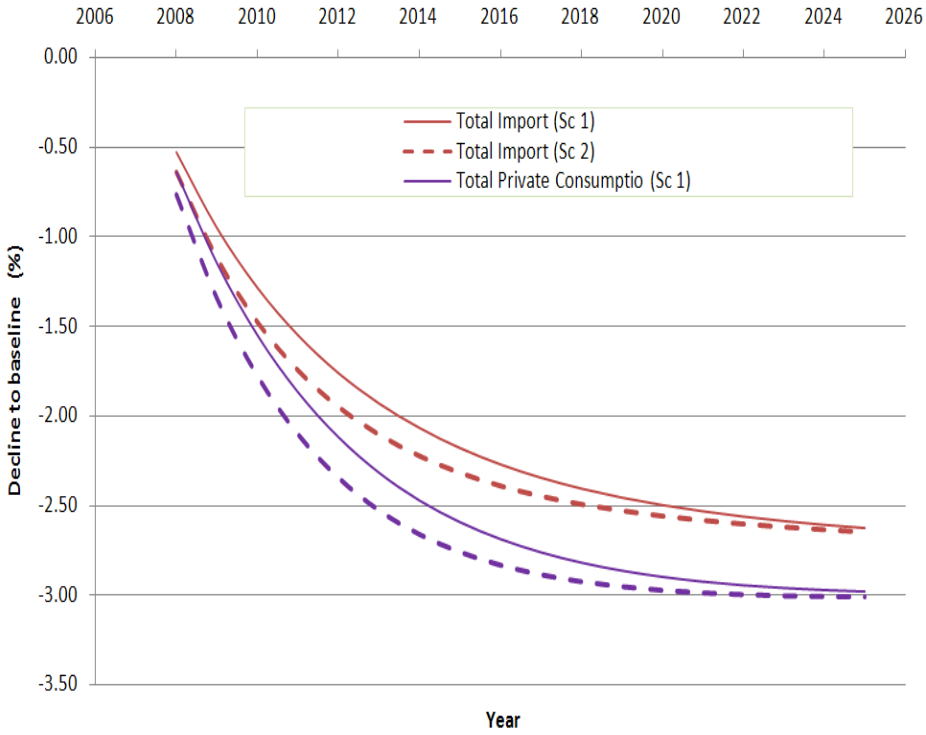


Figure B: Estimate of the Effect of Oil Price Decline on Import and Private Consumption (%)

Technology Needs Assessment:

Priority for Mitigation Technology in Energy Sector

List of International Existing Climate Friendly Technologies Consistent with Country Condition and Its Priority

Energy Sub-sectors	Energy Technologies		Priority
Oil and Gas Industries	Associated gas recovery		0.059
	Utilization of excessive pressure in main pipeline		0.057
	Process integration (oil & gas)		0.054
	Energy conservation in transmission		0.051
	Fuel upgrading		0.047
	Pre-cleaning of departing gases		0.045
	Flare facilities		0.036
	Reduction of gas leakage		0.029
Power Generation	Cogeneration		0.038
	Small hydro		0.036
	Waste energy		0.036
	Combined cycle		0.035
	Thermal power plant		0.032
	Biogas and biomass gasification		0.03
	Wind power		0.029
	Biomass combustion and power generation		0.028
	Solar thermal heat		0.025
	Nuclear		0.024
	Geothermal		0.023
	CO_2 separation and recovery		0.02
	Photo voltaic (PV)		0.018
	CO_2 capture and storage		0.012
Transmission and Distribution	Energy conservation in transmission		0.051
	Reduction of gas leakage		0.029
	Utilization of excessive pressure in main pipeline		0.057
End Use Technology	Transportation	Vehicle info. & trans. Sys. (VICS)	0.009
		Low fuel consumption technologies	0.009
		Public transportation	0.011
	Residential, Commercial and Institutional	Green lightning	0.019
		Lightning control	0.016
		Energy saving building	0.014
		Central heating	0.01
		Heat pumps	0.013
		Small CHP(Distributed Generation)	0.012
		Central heating	0.01
		High efficiency cook stoves	0.014
		High efficiency home appliances	0.015
		Hot stove waste heat recovery devices	0.015
	Industry	Process integration (industry)	0.018
		High efficiency boilers	0.017
		High efficiency electric motors	0.016
		Compressors	0.013
		Pumps	0.015

Challenges

In the process of preparation of the Second National Communication:

- **Difficulties in coordination of different stakeholders**
- **Frequent changes of the National Project Director and other authorities**
- **Changes in the financial rules by UNDP/GEF**
- **Insufficient funds for the task**
- **Limited skilled experts**
- **Difficulties in obtaining reliable and consistent data and information**

In the use of the guidelines and methodologies

- **Difficulties in using the vulnerability assessment guidelines (limited data and experts)**
- **Difficulties in the UNFCCC and IPCC guidelines for GHG inventories (limited data and experts)**

Lessen Learnt, Innovation and Best practices

Ways to overcome/address the challenges:

- **Streamling climate change considerations with the official national development plans by establishing the appropriate institutional arrangements**
- **Establishing the national climate change center and network**
- **Establishing the national climate change data base**
- **Establishing the necessary national laws and regulations on climate change**
- **Training courses for the national team of expert**
- **Educational programs and coordinated research**

Other information which could be useful for other countries in the process of preparation of their second and third national communications

- **Exchange of views and experiences among countries with similar circumstances**
- **Use the national communication experience to develop the national programs on climate change (Very successful in Iran)**

Next steps

- **The project proposal for the Third National Communication (TNC) has been prepared, approved by GEF National Focal Point and submitted to the UNDP/GEF for funding**
- **The Government is engaging through the National Climate Change Committee in preparing the National Action Plan and Annual Country Report on Climate Change for integration into the National Development Plans**
- **Capacity building in the relevant ministries/organizations for implementation of National Rule of Procedures for Climate Change which was adopted by the Government in August 2009.**

Thanks

for

Your attention

For further information please visit:

www.climate-change.ir