CLIMATE CHANGE – KEY FINDINGS FROM THE IPCC FIFTH ASSESSMENT REPORT (AR5) RELEVANT TO IRAN

In the occasion of the meeting:

OUTREACH EVENT ON THE ACTIVITIES AN D FINDINGS
OFTHE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE – THE IPCC

Tehran, IR Iran
18 June 2018
The Islamic Republic of Iran Meteorological Organization (IRIMO)

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AR6, WGII, Chapter 10, Asia

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POINTS OF DISCUSSION

Climate Change – key findings from the IPCC - ar5 relevant to Iran

The issue could be considered in two dimensions:

I) Direct reference to Iran in the IPCC-ar5 reports

II) Reference to the region like (Middle East, and/ or West Asia)

III) Also we have a glance on Iran' activities in the same time slice

IRAN LISTED AS WEST ASIA GROUP

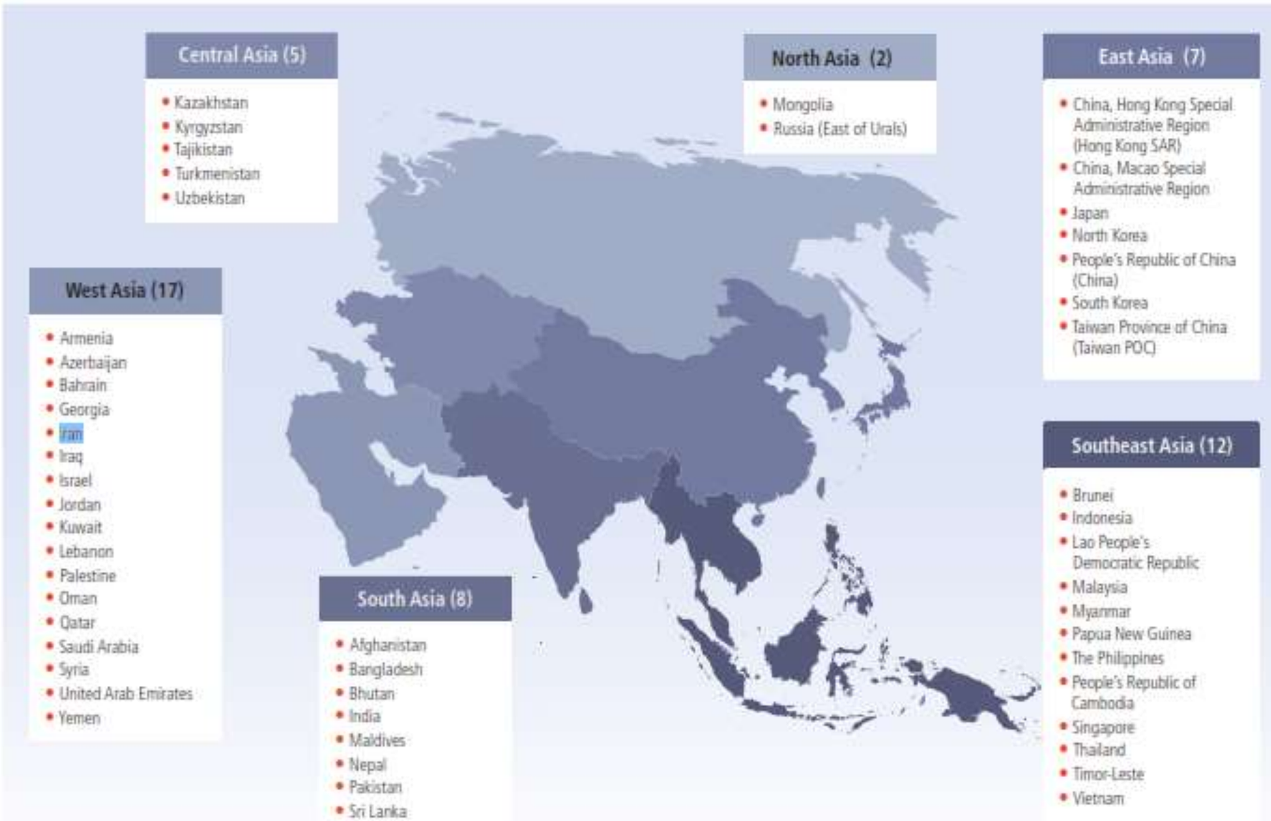

Figure 24-1 | The land and territories of 51 countries/regions in Asia. Maps contained in this report are only for the purpose of geographic information reference.

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REFERENCE TO IRAN IN IPCC-AR5 REPORTS

Despite of Iranian work on climate change, which have been done in Iran, the direct reference to Iran location and condition is limited.

Perhaps because of limited access to the available publication.

Few example of direct references are listed here:

VULNERABILITY

Biodiversity

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Asia

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major impacts on distributions (Menon et al., 2009; Li, R. et al., 2010; Ko et al., 2012). Projections for butterflies in Thailand (A2 and B2 scenarios) suggest that species richness within protected areas will decline approximately 30% by 2070–2099 (Klorvuttimontara et al., 2011). Projections for dominant bamboos in the Qinling Mountains (A2 and B2 scenarios) suggest substantial range reductions by 2100, with potentially adverse consequences for the giant pandas that eat them (Tuanmu et al., 2012). Projections for snow leopard habitat in the Himalayas (B1, A1B, and A2 scenarios) suggest contraction by up to 30% as forests replace open habitats (Forrest et al., 2012).

24.4.2.3.3. Permafrost

In the Northern Hemisphere, a 20 to 90% decrease in permafrost area and a 50 to 300 cm increase in active layer thickness driven by surface warming is projected for 2100 by different models and scenarios (Schaefer et al., 2011). It is *likely* that permafrost degradation in North Asia will spread from the southern and low-altitude margins, advancing northward and upward, but rates of change vary greatly between model projections (Cheng and Wu, 2007; Riseborough et al., 2008; Romanovsky et al., 2008; Anisimov, 2009; Eliseev et al., 2009; Nadyozhina et al., 2010; Schaefer et al., 2011; Wei et al., 2011). Substantial retreat is also expected on the Qinghai-Tibet Plateau (Cheng and Wu, 2007). Near-surface permafrost is expected to remain only in Central and Eastern Siberia and parts of the Qinghai-Tibet Plateau in the late-21st century.

24.4.2.3.4. Inland waters

Climate change impacts on inland waters will interact with dam construction, pollution, and land use changes (Vörösmarty et al., 2010; see also Sections 3.3.2, 24.9.1). Increases in water temperature will impact species- and temperature-dependent processes (Hamilton, 2010; Dudgeon, 2011, 2012). Coldwater fish will be threatened as rising water temperatures make much of their current habitat unsuitable (Yu, D. et al., 2013). Climate change is also expected to change flow regimes in running waters and consequently impact habitats and species that are sensitive to droughts and floods (see Box CC-RF). Habitats that depend on seasonal inundation, including floodplain grasslands and freshwater swamp forests, will be particularly vulnerable (Maxwell, 2009; Bezuijen, 2011; Arias et al., 2012). Reduced dry season flows are expected to combine with sea level rise to increase saltwater intrusion in deltas (Hamilton, 2010; Dudgeon, 2012), although non-climatic impacts will continue to dominate in most estuaries (Syvitski et al., 2009). For most Asian lakes, it is difficult to disentangle the impacts of water pollution, hydro-engineering, and climate change (Battarbee et al., 2012).

24.4.2.4. Vulnerabilities to Key Drivers

Permafrost melting in response to warming is expected to impact ecosystems across large areas (*high confidence*; Cheng and Wu, 2007; Tchebakova et al., 2011). The biodiversity of isolated mountains may also be particularly vulnerable to warming, because many species already have small geographical ranges that will shrink further (La Sorte and Jetz, 2010; Liu et al., 2010; Chou et al., 2011; Noroozi et al., 2011; Peh et al., 2011; Jump et al., 2012; Tanaka, N. et al., 2012; Davydov et al., 2013). Many freshwater habitats are similarly isolated and their restricted-range species may be equally vulnerable (Dudgeon, 2012). In flatter topography, higher velocities of climate change (the speeds that species need to move to maintain constant climate conditions) increase the vulnerabilities of species that are unable to keep pace, as a result of limited dispersal ability, habitat fragmentation, or other non-climatic constraints (Corlett and Westcott, 2013). In the tropics, temperature extremes above the present range are a potential threat to organisms and ecosystems (Corlett, 2011; Jevanandam et al., 2013; Mumby et al., 2013). For much of interior Asia, increases in drought stress, as a result of declining rainfall and/or rising temperatures, are the key concern. Because aridity is projected to increase in the northern Mongolian forest belt during the 21st century (Sato et al., 2007), larch cover will likely be reduced (Dulamsuren et al., 2010a). In the boreal forest region, a longer, warmer growing season will increase vulnerability to fires, although other human influences may overshadow climate impacts in accessible areas (Flannigan et al., 2009; Liu et al., 2012; Li et al., 2013; see Section 4.3.3.1.1). If droughts intensify in lowland Southeast Asia, the synergies between warmth, drought, logging, fragmentation, and fire (Daniau et al., 2012) and tree mortality (Kumagai and Porporato, 2012; Tan et al., 2013), possibly acerbated by feedbacks between deforestation, smoke aerosols, and reduced rainfall (Aragão, 2012; Tosca et al., 2012), could greatly increase the vulnerability of fragmented forest landscapes (*high confidence*).

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24.4.2.5. Adaptation Options

Suggested strategies for maximizing the adaptive capacity of ecosystems include reducing non-climate impacts, maximizing landscape connectivity, and protecting "refugia" where climate change is expected to be less than the regional mean (Hannah, 2010; Game et al., 2011; Klorvuttimontara et al., 2011; Murthy et al., 2011; Ren et al., 2011; Shoo et al., 2011; Mandych et al., 2012). Additional options for inland waters include operating dams to maintain environmental flows for biodiversity, protecting catchments, and preserving river floodplains (Vörösmarty et al., 2010). Habitat restoration may facilitate species movements across climatic gradients (Klorvuttimontara et al., 2011; Hughes et al., 2012) and long-distance seed dispersal agents may need protection (McConkey et al., 2012). Assisted migration of genotypes and species is possible where movements are constrained by poor dispersal, but risks and benefits need to be considered carefully (Liu et al., 2010; Olden et al., 2010; Tchebakova et al., 2011; Dudgeon, 2012; Ishizuka and Goto, 2012; Corlett and Westcott, 2013). *Ex situ* conservation can provide backup for populations and species most at risk from climate change (Chen et al., 2009).

24.4.3. Coastal Systems and Low-Lying Areas

24.4.3.1. Sub-regional Diversity

Asia's coastline includes the global range of shore types. Tropical and subtropical coasts support approximately 45% of the world's mangrove forest (Giri et al., 2011) and low-lying areas in equatorial Southeast Asia support most of the world's peat swamp forests, as well as other

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ADAPTATION

Disease
Malaria

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cost of living related poverty impacts of climate change than those who directly depend on agriculture for their livelihoods (Hertel et al., 2010). In Indonesia, drought-associated fires increase vulnerability of agriculture, forestry, and human settlements, particularly in peatland areas (Murdiyarso and Lebel, 2007). Human health is also a major area of focus for Asia (Munslow and O'Dempsey, 2010), where the magnitude and type of health effects from climate change depend on differences in socioeconomic and demographic factors, health systems, the natural and built environment, land use changes, and migration, in relation to local resilience and adaptive capacity. The role of institutions is also critical, particularly in influencing vulnerabilities arising from gender (Ahmed and Fajber, 2009), caste and ethnic differences (Jones and Boyd, 2011), and securing climate-sensitive livelihoods in rural areas (Agrawal and Perrin, 2008).

24.4.6.5. Adaptation Options

Disaster preparedness on a local community level could include a combination of indigenous coping strategies, early-warning systems, and adaptive measures (Paul and Routray, 2010). Heat warning systems have been successful in preventing deaths among risk groups in Shanghai (Tan et al., 2007). New work practices to avoid heat stress among outdoor workers in Japan and the United Arab Emirates have also been successful (Morioka et al., 2006; Joubert et al., 2011). Early warning models have been developed for haze exposure from wildfires, in, for example, Thailand (Kim Oanh and Leelasakultum, 2011), and are being tested in infectious disease prevention and vector control programs, as for malaria in Bhutan (Wangdi et al., 2010) and Iran (Haghdoost et al., 2008), or are being developed, as for dengue fever region-wide (Wilder-Smith et al., 2012).

Some adaptation practices provide unexpected livelihood benefits, as with the introduction of traditional flood mitigation measures in China, which could positively impact local livelihoods, leading to reductions in both the physical and economic vulnerabilities of communities (Yu et al., 2009). A greater role of local communities in decision making is also proposed (Alauddin and Quiggin, 2008) and in prioritization and adoption of adaptation options (Prabhakar et al., 2010; Prabhakar and Srinivasan, 2011). Defining adequate community property rights, reducing income disparity, exploring market-based and off-farm livelihood options, moving from production-based approaches to productivity and efficiency decision-making based approaches, and promoting integrated decision-making and outsiders (van Aalst et al., 2008), address the location-specific nature of adaptation (Iwasaki et al., 2009; Rosegrant, 2011), help facilitate community learning processes (Baas and Ramasamy, 2008), and help design location-specific solutions (Ensor and Berger, 2009). Some groups can become more vulnerable to change after being "locked into" specialized livelihood patterns, as with fish farmers in India (Coulthard, 2008).

Livelihood diversification, including livelihood assets and skills, has been suggested as an important adaptation option for buffering climate change impacts on certain kinds of livelihoods (Selvaraju et al., 2006; Nguyen, 2007; Agrawal and Perrin, 2008; IFAD, 2010; Keskinen et al., 2010; Uy et al., 2011). The diversification should occur across assets, including productive assets, consumption strategies, and employment opportunities (Agrawal and Perrin, 2008). Ecosystem-based adaptation has been suggested to secure livelihoods in the face of climate change (Jones et al., 2012), integrating the use of biodiversity and ecosystem services into an overall strategy to help people adapt (IUCN, 2009). Among financial means, low-risk liquidity options such as microfinance programs and risk transfer products can help lift the rural poor from poverty and accumulate assets (Barrett et al., 2007; Jarvis et al., 2011).

24.4.7. Valuation of Impacts and Adaptation

Economic valuation in Asia generally covers impacts and vulnerabilities of disperse sectors such as food production, water resources, and human health (Aydinalp and Cresser, 2008; Kelkar et al., 2008; Lioubimtseva and Henebry, 2009; Su et al., 2009; Srivastava et al., 2010). Multi-sector evaluation that unpacks the relationships between and across sectors, particularly in a context of resource scarcity and competition, is very limited. Information is scarce especially for North, Central, and West Asia.

Generally, annual losses from drought are expected to increase based on various projections under diverse scenarios, but such losses are expected to be reduced if adaptation measures are implemented (ADB, 2009; Sutton et al., 2013). It is also stressed that there are great uncertainties associated with the economic aspects of climate change. In China, the total loss due to drought projected in 2030 is expected to range from US$1.1 to 1.7 billion for regions in northeast China and about US$0.9 billion for regions in north China (ECA, 2009), with adaptation

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MIDDLE EAST

Food price

poverty

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governance, and institutional arrangements to be able to deal with the uncertainty and unprecedented challenges implied by climate change (Revi, 2008; Birkmann et al., 2010; Garschagen and Kraas, 2011).

24.4.6. Human Health, Security, Livelihoods, and Poverty

24.4.6.1. Sub-regional Diversity

Although rapidly urbanizing, Asia is still predominantly an agrarian society, with 57.28% of its total population living in rural areas, of which 81.02% are dependent on agriculture for their livelihoods (FAOSTAT, 2011). Rural poverty is higher than urban poverty, reflecting the heavy dependence on natural resources that are directly influenced by changes in weather and climate (Haggblade et al., 2010; IFAD, 2010). Rural poverty is expected to remain more prevalent than urban poverty for decades to come (Ravallion et al., 2007). However, climate change will also affect urbanizing Asia, where the urban poor will be impacted indirectly, as evident from the food price rises in the Middle East and other areas in 2007–2008. Certain categories of urban dwellers, such as urban wage labor households, are particularly vulnerable (Hertel et al., 2010).

MIDDLE EAST

Carbon price
deforestation

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Economic mitigation potential of supply-side measures in the AFOLU sector is estimated to be 7.18 to 10.60 (full range: 0.49–10.60) $GtCO_2eq/yr$ in 2030 for mitigation efforts consistent with carbon prices up to 100 USD/tCO_2eq, about a third of which can be achieved at < 20 USD/tCO_2eq (*medium evidence; medium agreement*) [11.6]. These estimates are based on studies that cover both forestry and agriculture and that include agricultural soil carbon sequestration. Estimates from agricultural sector-only studies range from 0.3 to 4.6 $GtCO_2eq/yr$ at prices up to 100 USD/tCO_2eq, and estimates from forestry sector-only studies from 0.2 to 13.8 $GtCO_2eq/yr$ at prices up to 100 USD/tCO_2eq (*medium evidence; medium agreement*) [11.6]. The large range in the estimates arises due to widely different collections of options considered in each study, and because not all GHGs are considered in all of the studies. The composition of the agricultural mitigation portfolio varies with the carbon price, with the restoration of organic soils having the greatest potential at higher carbon prices (100 USD/tCO_2eq) and cropland and grazing land management at lower (20 USD/tCO_2eq). In forestry there is less difference between measures at different carbon prices, but there are significant differences between regions, with reduced deforestation dominating the forestry mitigation potential in Latin America and Caribbean (LAM) and Middle East and Africa (MAF), but very little potential in the member countries of the Organisation for Economic Co-operation and Development (OECD-1990) and Economies in Transition (EIT). Forest management, followed by afforestation, dominate in OECD-1990, EIT, and Asia (*medium evidence, strong agreement*) [11.6]. Among demand-side measures, which are under-researched compared to supply-side measures, changes in diet and reductions of losses in the food supply chain can have a significant, but uncertain, potential to reduce

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MIDDLE EAST

Increase number of animals

CH4 trend

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AFOLU

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11.2.1 Supply and consumption trends in agriculture and forestry

In 2010 world agricultural land occupied 4889 Mha, an increase of 7% (311 Mha) since 1970 (FAOSTAT, 2013). Agricultural land area has decreased by 53 Mha since 2000 due to a decline of the cropland area (Organisation for Economic Co-operation and Development (OECD)-1990, Economies in Transition (EIT)) and a decrease in permanent meadows and pastures (OECD-1990 and Asia). The average amount of cropland and pasture land per capita in 1970 was 0.4 and 0.8 ha and by 2010 this had decreased to 0.2 and 0.5 ha per capita, respectively (FAOSTAT, 2013).

Changing land-use practices, technological advancement and varietal improvement have enabled world grain harvests to double from 1.2 to 2.5 billion tonnes per year between 1970 and 2010 (FAOSTAT, 2012). Average world cereal yields increased from 1600 to 3030 kg/ha over the same period (FAOSTAT, 2012) while there has also been a 233% increase in global fertilizer use from 32 to 106 Mt/yr, and a 73% increase in the irrigated cropland area (FAOSTAT, 2013).

Globally, since 1970, there has been a 1.4-fold increase in the numbers of cattle and buffalo, sheep and goats (which is closely linked to the trend of CH_4 emissions in the sector; Section 11.2.2), and increases of 1.6- and 3.7-fold for pigs and poultry, respectively (FAOSTAT, 2013). Major regional trends between 1970 and 2010 include a decrease in the total number of animals in Economies in Transition (EIT) and OECD-1990 (except poultry), and continuous growth in other regions, particularly Middle East and Africa (MAF) and Asia (Figure 11.3, bottom panel). The soaring demand for fish has led to the intensification of freshwater and marine fisheries worldwide, and an increased freshwater fisheries catch that topped 11 Mt in 2010, although the marine fisheries catch has slowly declined (78 Mt in 2010; FAOSTAT, 2013). The latter is, how-

MIDDLE EAST

Severe water

Scarce

Bioenergy

production

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AFOLU

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11.13.7 Tradeoffs and synergies with land, water, food, and biodiversity

This section summarizes results from integrated models (models that have a global aggregate view, but cannot disaggregate place-specific effects in biodiversity and livelihoods discussed above) on land, water, food, and biodiversity. In these models, at any level of future bioenergy supply, land demand for bioenergy depends on (1) the share of bioenergy derived from wastes and residues (Rogner et al., 2012); (2) the extent to which bioenergy production can be integrated with food or fiber production, which ideally results in synergies (Garg et al., 2011; Sochacki et al., 2013) or at least mitigates land-use competition (Berndes et al., 2013); (3) the extent to which bioenergy can be grown on areas with little current or future production, taking into account growing land demand for food (Nijsen et al., 2012); and (4) the volume of dedicated energy crops and their yields (Haberl et al., 2010; Batidzirai et al., 2012; Smith et al., 2012d). Energy crop yields per unit area may differ by factors of > 10 depending on differences in natural fertility (soils, climate), energy crop plants, previous land use, management and technology (Johnston et al., 2009a; Lal, 2010; Beringer et al., 2011; Pacca and Moreira, 2011; Smith et al., 2012a; Erb et al., 2012a). Assumptions on energy crop yields are one of the main reasons for the large differences in estimates of future area demand of energy crops (Popp et al., 2013). Likewise, assumptions on yields, strategies, and governance on future food/feed crops have large implications for assessments of the degree of land competition between biofuels and these land uses (Batidzirai et al., 2012; de Wit et al., 2013).

However, across models, there are very different potential landscape transformation visions in all regions (Sections 6.3.5 and 11.9.). Overall, it is difficult to generalize on regional land cover effects of mitigation. Some models assume significant land conversion while other models do not. In idealized implementation scenarios, there is expansion of energy cropland and forest land in many regions, with some models exhibiting very strong forest land expansion and others very little by 2030. Land conversion is increased in the 450 ppm scenarios compared to the 550 ppm scenarios, but at a declining share, a result consistent with a declining land-related mitigation rate with policy stringency. The results of these integrated model studies need to be interpreted with caution, as not all GHG emissions and biogeophysical or socio-economic effects of bioenergy deployment are incorporated into these models, and as not all relevant technologies are represented (e.g., cascade utilization).

Large-scale bioenergy production from dedicated crops may affect water availability and quality (see Section 6.6.2.6), which are highly dependent on (1) type and quantity of local freshwater resources; (2) necessary water quality; (3) competition for multiple uses (agricultural, urban, industrial, power generation), and (4) efficiency in all sector end uses (Gerbens-Leenes et al., 2009; Coelho et al., 2012). In many regions, additional irrigation of energy crops could further intensify existing pressures on water resources (Popp et al., 2011). Studies indicate that an exclusion of severe water scarce areas for bioenergy production (mainly to be found in the Middle East, parts of Asia, and western United States) would reduce global technical bioenergy potentials by 17 % until 2050 (van Vuuren et al., 2009). A model comparison study with five global economic models shows that the aggregate food price effect of large-scale lignocellulosic bioenergy deployment (i.e., 100 EJ globally by the year 2050) is significantly lower (+5 % on average across models) than the potential price effects induced by climate impacts on crop yields (+25 % on average across models (Lotze-Campen et al., 2013). Possibly hence, ambitious climate change mitigation need not drive up global food prices much, if the extra land required for bioenergy production is accessible or if the feedstock, e.g., from forests, does not directly compete for agricultural land. Effective land-use planning and strict adherence to sustainability criteria need to be integrated into large-scale bioenergy projects to minimize competitions for water (for example, by excluding the establishment of biofuel projects in irrigated areas). If bioenergy is not managed properly, additional land demand and associated LUC may put pressures on biodiversity (Groom et al., 2008; see Section 6.6.2.5). However, implementing appropriate management, such as establishing bioenergy crops in degraded areas represents an opportunity where bioenergy can be used to achieve positive environmental outcomes (Nijsen et al., 2012).

SCIENTIFIC COOPERATION – IPCC AR5

Iranian scientists' cooperation with the latest report:

IPCC – ar5 - 2014

WGI – Chapter 5 – RE
WGIII – Chapter 11 – LA

IPCC, 2014: Annex IV: Contributors to the IPCC WGIII Fifth Assessment Report. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

IRAN' ACTIVITIES IN THE SAME TIME SLICE

Valuable reports and analysis produced and published by IRIMO could be used as source of data and IPCC references for its assessments.

Heavy work have been done on "National Climate Change strategy"

Important data and information available in "3rd National Report on Climate Change" as national communication to UNFCCC

Some activities such as "National strategic plan on climate change" and "3rd National Report" could be used as references.

Note: It is a need which an "official" paper, article or report be published.

IRAN'S ACTIVITIES UNDER THE UNFCCC

Reported by
National Climate Change Project Manager
(Dr. Mohammad Soltanieh)
Department of Environment

2013

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)

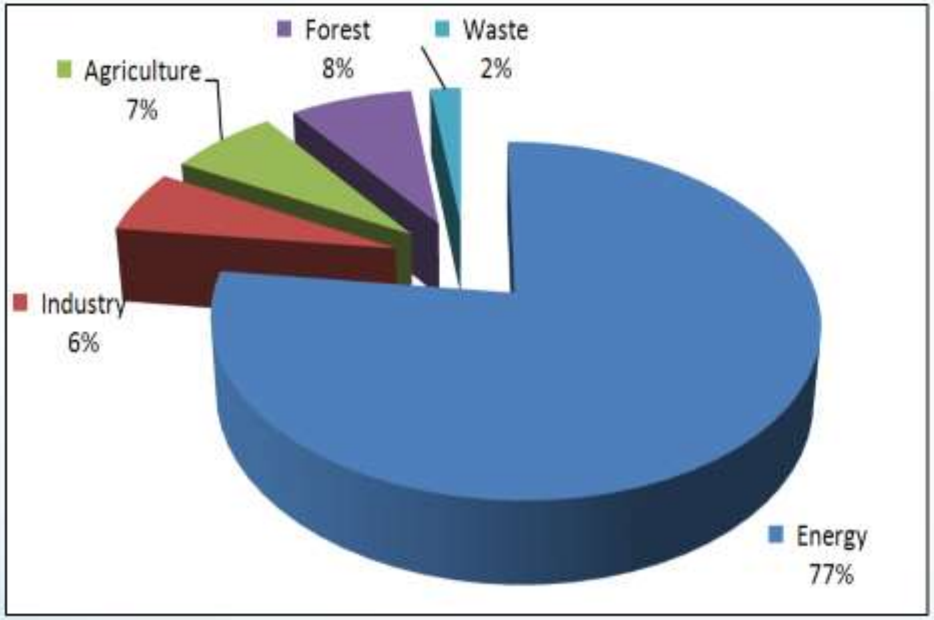
Comparison of GHGs Emission Inventory in 1994 -2000 (Gg)

Sources	1994	2000	Annual growth rate (%)
CO_2 Emission: Energy	285,891	337,351	2.5
Fuel Combustion	254,354	304,026	2.7
Fugitive Emissions	31,537	33,325	0.9
CO_2 Emission: Overall	342,062	375,186	1.5
GHGs Emission: Overall	**417,000**	**491,000**	**2.5**

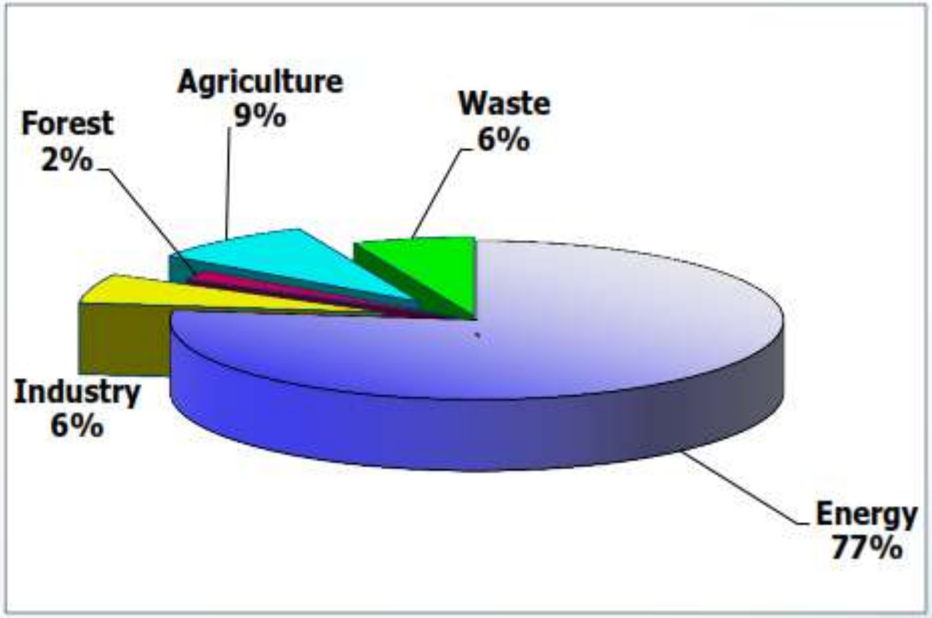
Source: Iran Second National Communications

National GHGs Inventory (Continued)

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



1994



2000

GHG Mitigation Policies

Definition and development 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.

GHG Mitigation Policies

Definition of Scenarios (Continued)

- **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.

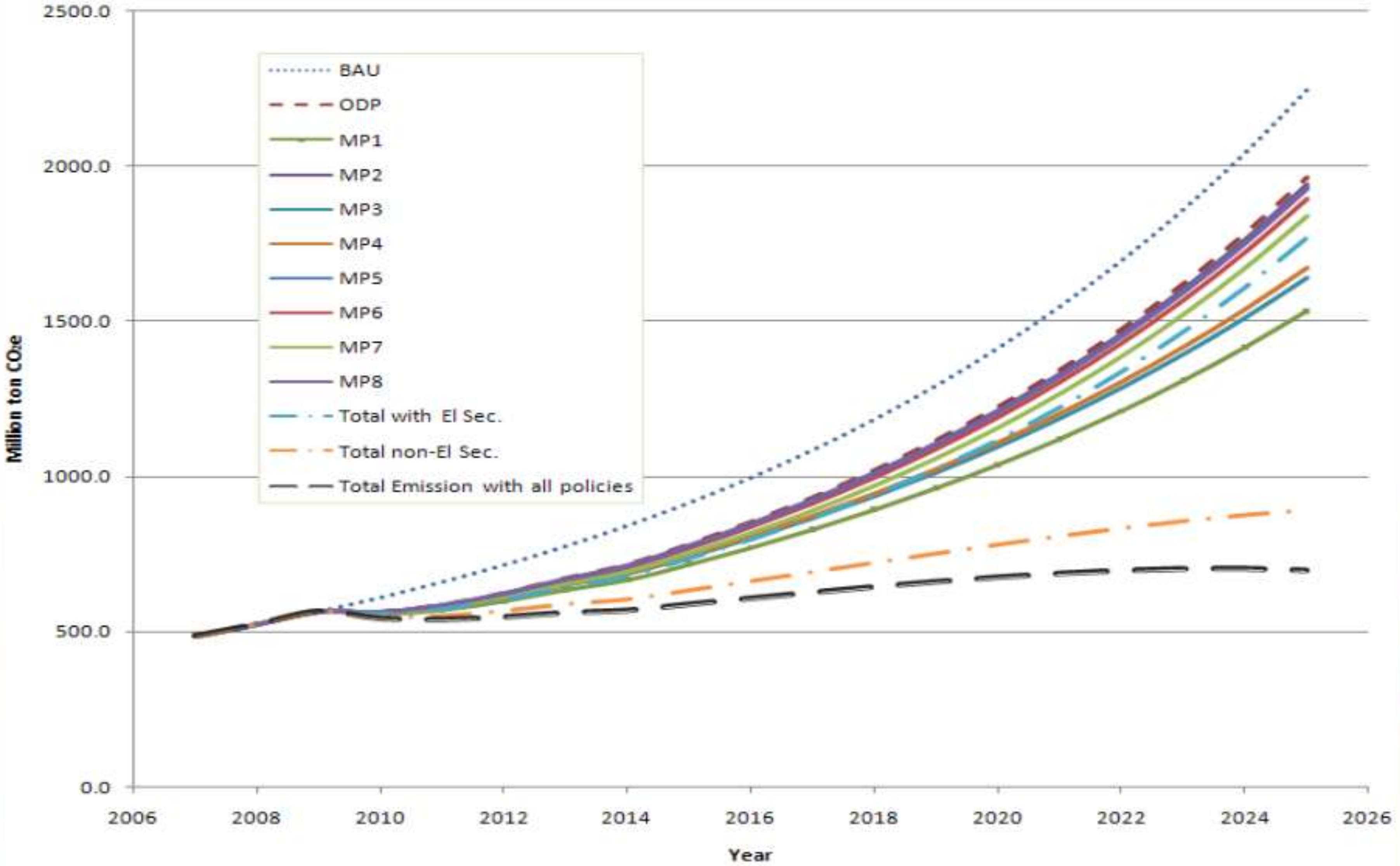
GHG Mitigation Policies

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 1.48 BOE/million Rials 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.

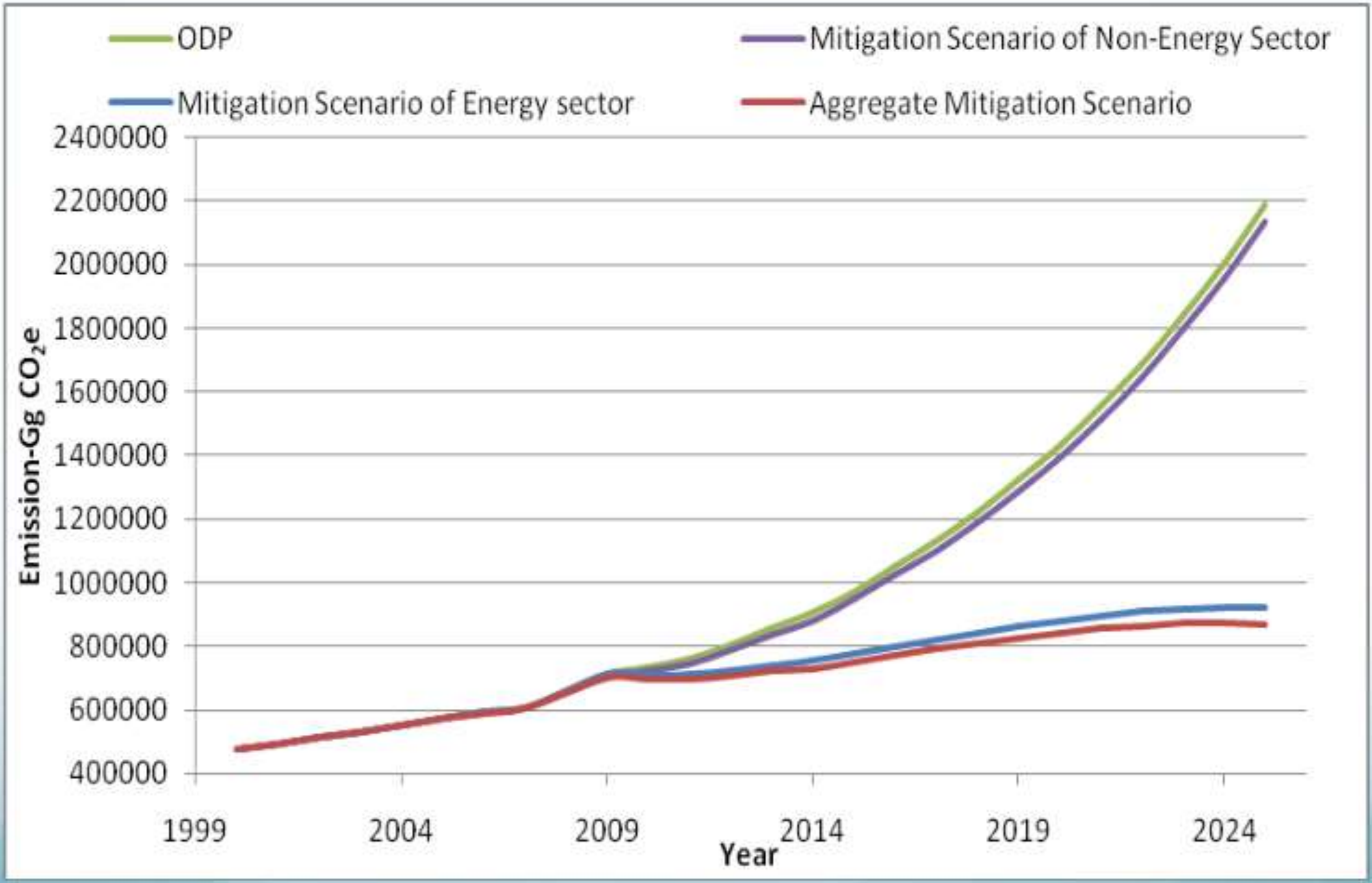
GHG Mitigation Policies

GHGs Emission Trend in Different Scenarios for Energy Sector



GHG Mitigation Policies

GHGs Emission Trend in Different Scenarios for All Sectors



RESEARCH PRIORITY

High council of

Science, Research and Technology

Climate Change Group

Working Group III contribution to the
IPCC Fifth Assessment Report

مهندس کاظمی در نشست هم اندیشی اولویت های تحقیقاتی بخش کشاورزی مطرح کرد: کمیسیون های تخصصی شورای عالی عتف آینه اولویت های تحقیقاتی کشور هستند

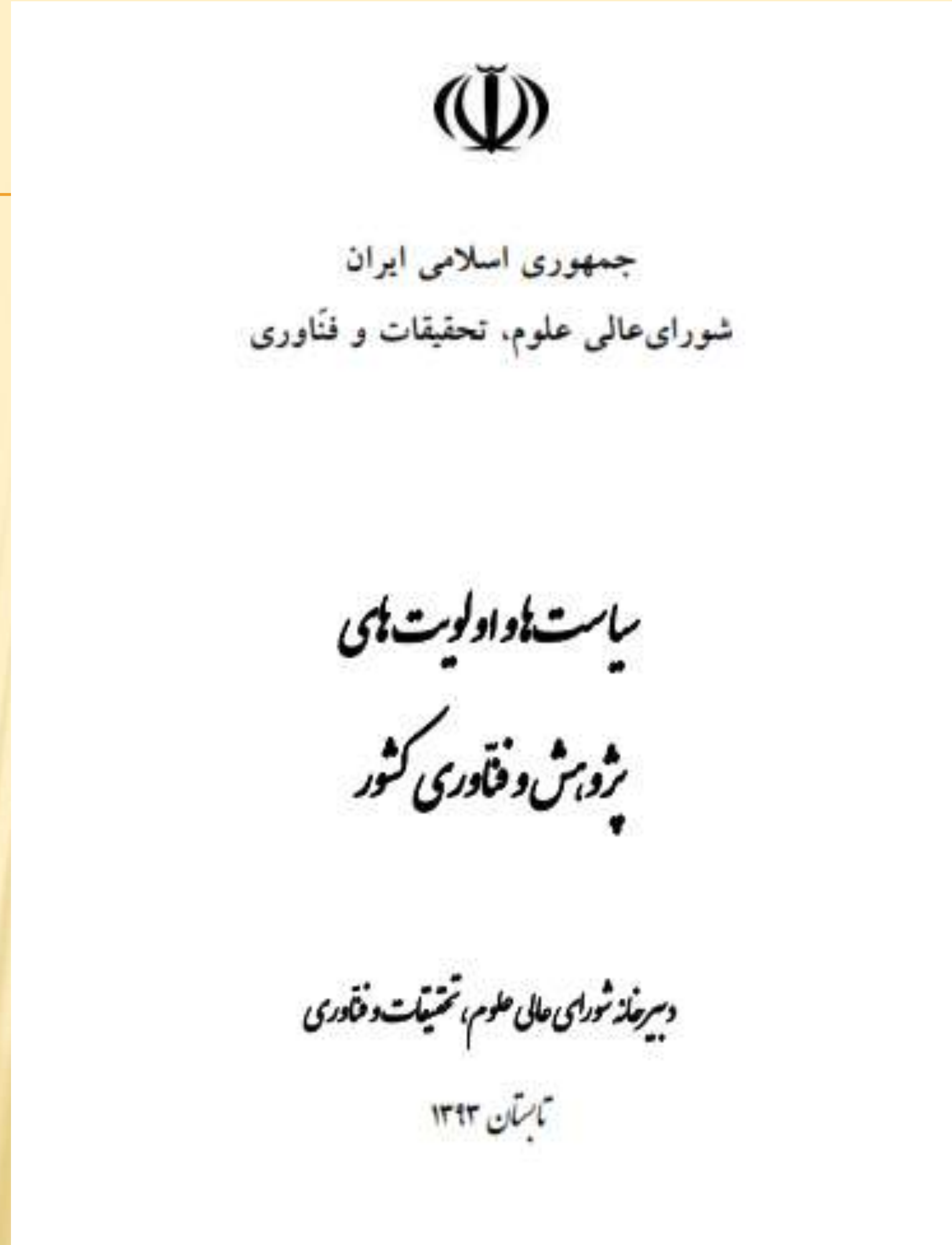
نشست هم اندیشی سیاست ها و اولویت های تحقیقاتی بخش کشاورزی، آب و منابع طبیعی با حضور متخصصان این حوزه برگزار شد. در این نشست، مهندس مصطفی کاظمی، کمیسیون های تخصصی شورای عالی عتف را آینه اولویت های تحقیقاتی کشور دانست. همچنین در شش کارگاه، چالش ها و موضوعات بخش های مختلف حوزه راهبردی کشاورزی، آب و منابع طبیعی در راستای تدوین اولویت ها به بحث گذاشته شد.

به گزارش روابط عمومی دبیرخانه شورای عالی علوم، تحقیقات و فناوری)عتف(، نشست هم اندیشی سیاست ها و اولویت های تحقیقاتی بخش کشاورزی، آب و منابع طبیعی با حضور نخبگان، اساتید، مدیران و کارشناسان حوزه کشاورزی، آب و منابع طبیعی برگزار شد. در ابتدای این نشست یک روزه که در مرکز همایش های کتابخانه ملی ایران برگزار شد، مهندس مصطفی کاظمی، معاون اجرایی دبیرخانه شورای عالی عتف با اشاره به تکلیف قانونی شورای عالی عتف در زمینه تدوین سیاست ها و اولویت های علم و فناوری کشور، گفت: در راستای تدوین اولویت ها و سیاست های علم و فناوری، سیاست دبیرخانه بر این است که کمیسیون های تخصصی شورای عالی عتف خود اولویت های بخش های مربوط به خود را استخراج کنند. او ادامه داد: این کمیسیون های تخصصی، آینه اولویت های تحقیقاتی کشور هستند. کاظمی ضمن اشاره به همزمانی تدوین این اولویت ها برای دوره ای 5 ساله با تصویب برنامه ششم توسعه، گفت: امسال با توجه به اینکه قانون برنامه ششم توسعه هنوز نهایی نشده است، کمیسیون ها می توانند اولویت های تحقیقاتی خود را در راستای برنامه ششم توسعه تدوین کنند تا اهداف برنامه ششم توسعه نیز در بخش علم و فناوری با انسجام بیشتری پی گرفته شوند. در ادامه نشست، دکتر بهزاد قره یاضی، دبیر کمیسیون تخصصی کشاورزی، آب و منابع طبیعی شورای عالی عتف و رئیس امور پژوهشی و فناوری سازمان مدیریت و برنامه ریزی کشور در گزارشی به ارائه توضیحاتی در مورد تکالیف شورای عالی عتف، اعضای کمیسیون کشاورزی، آب و منابع طبیعی، وظایف کمیسیون در راستای شرح تفصیلی شورای عالی عتف پرداخت. او همچنین شاخص های بخش کشاورزی، آب و منابع طبیعی را در بحث اولویت گذاری و تعیین سیاست ها برشمرد. همچنین دکتر اسکندر زند، رئیس سازمان تحقیقات، آموزش و ترویج کشاورزی و عضو کمیسیون کشاورزی، آب و منابع طبیعی و مهندس علی اکبر مهاجری، معاون تحقیقات و منابع انسانی وزارت نیرو نیز در مورد چالش های بخش کشاورزی و آب صحبت کردند. در ادامه دکتر سید فرهنگ فصیحی، دبیر کمیسیون هماهنگی شورای عالی عتف، توضیحاتی را در مورد ضرورت آشنایی نخبگان حاضر با روش شناسی پیشنهادی دبیرخانه شورای عالی عتف و کمیسیون هماهنگی این شورای عالی ارائه کرد و گفت: نشست امروز، در واقع کارگاهی عملی خواهد بود و خروجی های هر یک از کارگاه ها، مستقیما در روند تدوین اولویت ها و سیاست های علم و فناوری در بخش کشاورزی، آب و منابع طبیعی تاثیرگذار خواهند بود. همچنین گزارشی از روش شناسی پیشنهادی کمیسیون هماهنگی شورای عالی عتف ارائه شد. همچنین دکتر بهزاد قره یاضی با معرفی کارگروه های شش گانه مدیریت آب، تغییر اقلیم، امنیت غذایی، تنوع زیستی و ذخایر ژنتیکی، منابع طبیعی آب و خاک و مدیریت اقتصادی و اجتماعی از حاضران خواست بنا بر تخصص و علاقمندی خود یکی از کارگاه ها را انتخاب کرده و با مشارکت در بحث های آن کارگاه در روند تدوین سیاست های و اولویت های حوزه راهبردی خود تاثیرگذار باشند. SA-AR NONE-X US-EN false

POLICY AND PRIORITIES

For Research and technology

Including Climate Change Group


جمهوری اسلامی ایران
شورای‌عالی علوم، تحقیقات و فنّاوری

سیاست‌ها و اولویت‌های
پژوهش و فناوری کشور

دبیرخانه شورای عالی علوم، تحقیقات و فناوری

تابستان ۱۳۹۳

REPORT AND ANALYSIS

Prepared by office of climate change, department of environment

No official report

No scientific article

Difficult to use in IPCC report, according to reference regulation

وضعیت تغییر اقلیم در ایران
(مبتنی بر گزارش دوم و سوم)

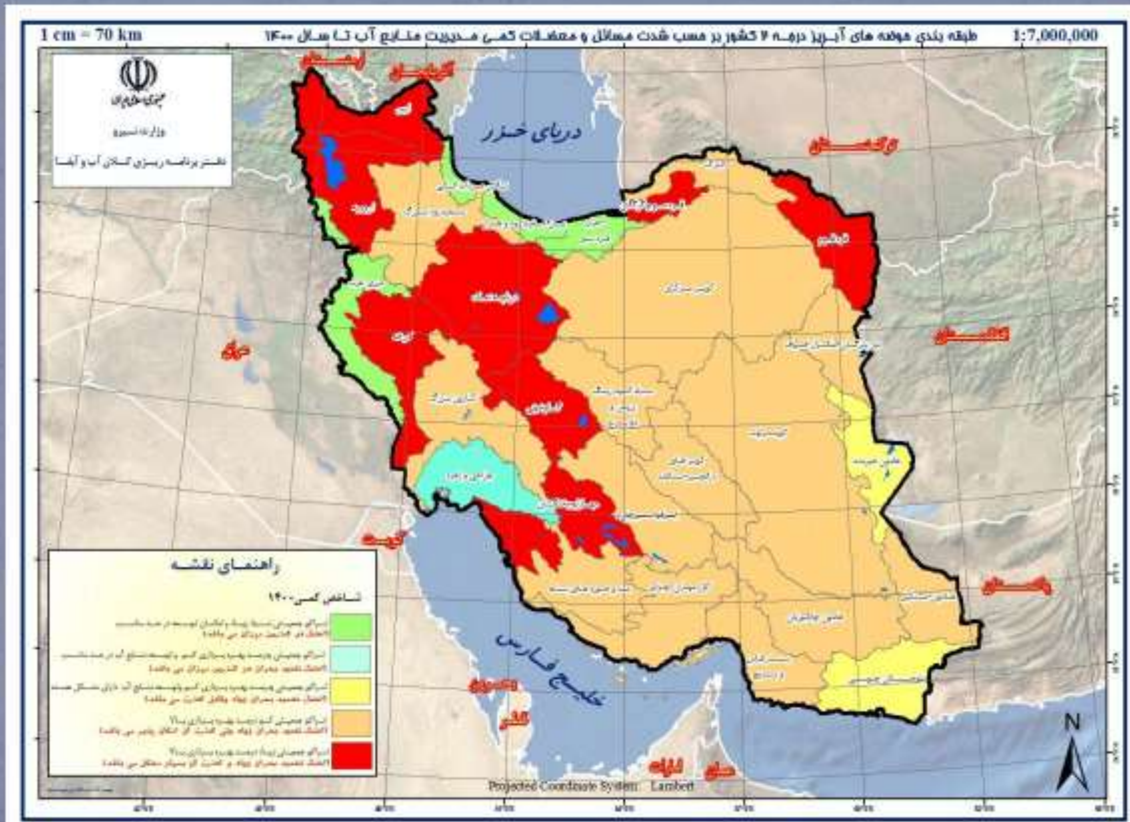
دفتر طرح تغییر آب و هوا

پروژه توانمندسازی جمهوری اسلامی ایران در تهیه گزارش سوم تغییر آب و هوا

سازمان حفاظت محیط زیست

ارائه گزیده نتایج موجود در گزارش سوم تغییر اقلیم

- ارائه ارزیابی کلی از اثرات تغییر اقلیم بر منابع آب کشور



برحسب شدت مسائل و معضلات کمي مديريت منابع آب كشور در سال ۱۴۰۰

OTHER REPORTS

NGOs or

Governmental report

Working Group III contribution to the IPCC Fifth Assessment Report

Mansouri Daneshvar MR (2016). Climate change facts and statistics in Iran. Report of the environmental challenges of I. R. Iran to UNEA-2 delivering on the 2030 Agenda in Nairobi 2016. Research Institute of Shakhes Pajouh, 14 pp.

شاخص پژوه

Research Institute of Shakhes Pajouh

Climate change facts and statistics in Iran

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Abstract:

Iran as a main country of the Middle East is under intensive climate change impacts. In vice versa, high-level contribution of Iran to GHGs emissions depends on a major product of oil, largest reserves of gas and rapid urbanization. In this manuscript, the statistical evidences on climate change were investigated in global, regional and national scales. For this purpose, the main increasing of annual temperature and GHGs emissions were considered. Then the governmental agreements toward the many international adoptions and conventions on climate change were reviewed from Rio 1992 to NY 2016. It seems that the further technological research and development on exploration the novel methods in renewable energy applications and mitigation of GHGs emissions will be necessary in order to future adaptations.

Keywords: Climate change, Greenhouse Gas (GHG), IPCC, Iran

IMPACTS

Agriculture

Uncertinities

Journal of Integrative Agriculture 2018, 17(1): 1–15

Available online at www.sciencedirect.com

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ELSEVIER

REVIEW

Climate change and agriculture: Impacts and adaptive responses in Iran

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Abstract

The impacts of climate change on agriculture are still shadowed with uncertainty. However, climate change is expected to adversely affect Iran's agricultural practices through changes in precipitation, temperature and carbon dioxide fertilization. Therefore, adaptation of this sector to the increasing weather events is imperative. This study is aimed to document the likely impacts of climate change on Iran's agriculture and the current adaptation efforts made by government and farmers. The review of literature shows that changes in rainfall and water endowments will have significant impacts on crop yield, crops' water requirements and income and welfare of farm families. The extent of the changes in yield depends on the crop type, assumptions related to the CO_2 fertilization effect, climate scenarios and adaptation abilities. On adaptation, the government's efforts have been distinguished in the improving agricultural productivity and irrigation development based on current technology, developing new technologies and policy reforms. Farmers' adaptive responses have also been identified. Some conclusions and recommendations are offered to increase the adaptive capacity of farmers and reduce negative impacts of climate change.

Keywords: climate change, agriculture, impacts, adaptation, Iran

Working Group III contrib
IPCC Fifth Assessment Rep

CONCLUSIONS

General

National communications to UNFCCC are good source of information

Professional reports and analysis produced by professional agencies such as IRIMO also are good source of reliable data and information

How it is possible to calculate uncertainties in these reports?

In comparison with peer review papers, How we can consider these reports to play its role in IPCC assessments?

Which mechanism could facilitate and help IPCC to access to the scientifically published articles in national level and local languages?

Thank you

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