Low Carbon Policy in Germany and Iran

The Role of RE+EE in the Iranian Low Carbon Policy

20th Reform Group Meeting, Salzburg

Aug. 31st-Sept. 4, 2015

On the Way to COP21 in Paris

Climate Protection Policy, Carbon Markets and Sustainability Agenda

Presented By: Bahram Taheri

بسم الله الرحمن الرحیم

Low Carbon Activity in Iran's Ministry of Energy

Iran's favourable geographical location, abundance of natural resources and young population offer great potential for strong economic growth

- Iran is **favourably located** in the centre of promising growth markets.
- Economic power shifts towards China, Asia in general and the MENA region.

- Iran has an abundance of natural resources.
- It has **the largest proven natural gas** reserves and the 4th largest proven **petroleum reserves.**

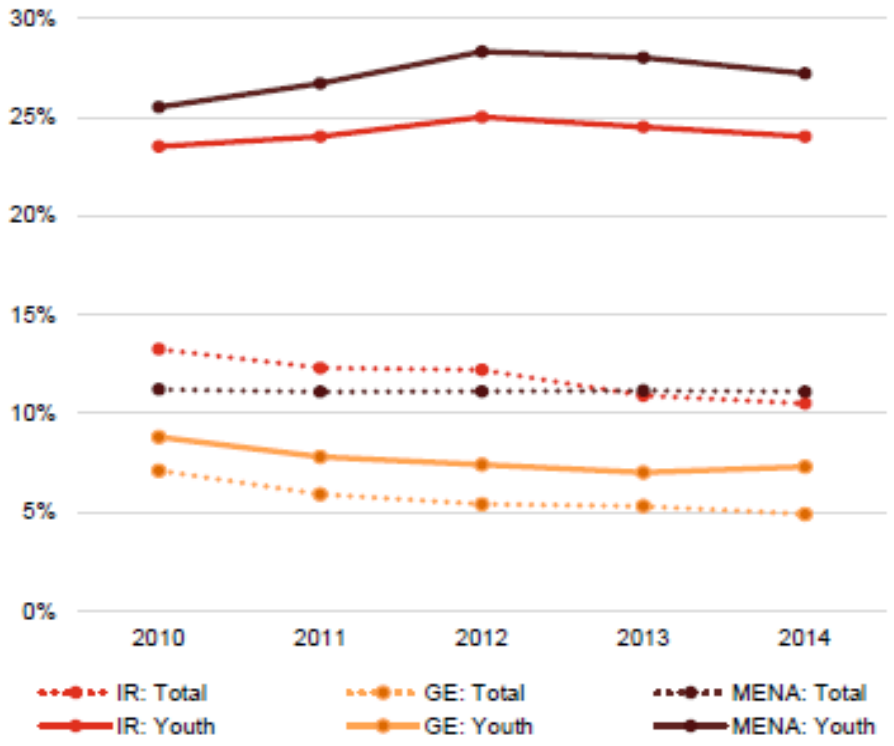
- Iran's **population** is rather **young**, with 18,7% aged 15-24 versus for example 11,2% in the European Union or 10,6% in Germany.

- Iran is **among the world's top:**
  - 15 automobile manufacturers
  - 15 steel producers and
  - 5 cement producers.
- In 2012 Iran was ranked as the world's 17th largest producer of scientific papers.

Iranian Youth as an Opportunity for the RE + EE Job Market

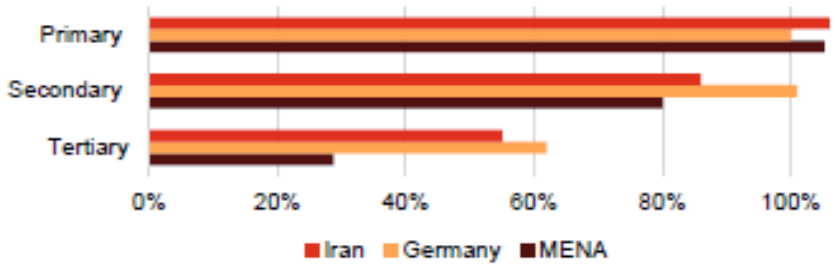
Despite education levels comparable to Germany, Iranian unemployment, especially amongst the youth, is very high

Total and youth* unemployment development



* % of unemployed labour force aged 15-24

Education levels* (Gross, 2011/2012)



* Can exceed 100% due to inclusion of over- and under-aged students because of early or late school entrance and grade repetition. Not all MENA member states are included as data was not available.

Observations

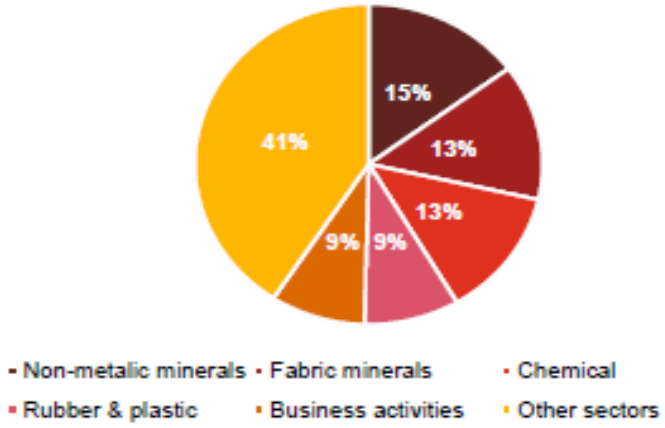
- Despite substantial improvements concerning unemployment in recent years, **youth unemployment** still is as high as 24% in 2013/2014.
- This is especially dramatic due to Iran's **demographic profile** with a relatively high share of youth population (over 60% of Iran's population being under 30).
- Iran shows **education levels similar to Germany**, with tertiary education levels being substantially higher than the MENA average.

Source: World Bank, PwC Analysis

Innovation Will Play a Role in the Iranian GDP and RE + EE Are Excellent Candidates

While SMEs play a major role in job creation, innovation and economic expansion, Iran's SMEs can further increase their contribution to GDP

Sectoral distribution of SMEs in Iran (2014)



SMEs increase economic outputs (2014)

SME contribution to private enterprises	SME contribution to GDP	SME contribution to employment
Iran: 95 % of total enterprises (<10 employees)	Iran: 20% of gross value added (GDP contribution)	Iran: 80% of total employment
EU: 99.8% of total enterprises (10<employees<250)	EU: 58.1% of gross value added (output minus intermediate consumption)	EU: 66,8% of total employment

Observations

- In Iran there is a considerable mismatch between small and micro enterprises (**95% of all businesses in Iran are micro-enterprises** with 1-9 employees compared to the EU where 99,8% of SMEs employ more than 10 employees) with a **significant lower contribution of its SMEs to GDP** compared to the EU.
- **SME's drive a dynamic innovative economy**: they increase research and development, create big innovations and economic expansion and increase foreign investment.
- Also, supporting SMEs can have a **positive impact on** innovation and **exports**.

Source: Iran International Magazine No.70 (2014), European Commission (2014), PwC Analysis

The Climate Change Performance Index

Country	Index World rank in 2015	Share of Global GDP	Share of World Population	Share of Global CO2 Emissions*	Share of Global Primary Energy Supply
Germany	22	3.44%	1.16%	2.23%	2.34%
Iran	57	1.27%	1.09%	1.57%	1.64%

*energy-related emissions and emissions from deforestation

Primary energy consumption (MTOE) from 2004 to 2013

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Iran	166.1	177.3	193.7	207.8	217.2	227	227.4	237.6	238.8	243.9
Change %		6.7	9.2	7.3	4.5	4.5	0.2	4.5	0.5	2.1
Germany	337.2	333.2	339.6	324.6	326.9	307.8	322.5	307.5	317.1	325
Change %		-1.2	1.9	-4.4	0.7	-5.8	4.8	-4.7	3.1	2.5

Source: BP 2014

Gasoline prices in Iran and Germany (USD/lit)

Country	2002	2003	2004	2005	2006		2007	2008	2009	2010	2011
Iran	0.06	0.08	0.09	0.09	0.09	1st quota	0.11	0.10	0.10	0.10	0.36
						2nd quota	0.43	0.42	0.40	0.39	0.64
Germany	0.97	1.21	1.38	1.50	1.59		1.82	2.05	1.80	1.88	2.24

Source: IFCO 2013

Fuel pricing mechanism

Iran	Germany
High fuel subsidies; Subsidy Reform Plan based on the Persian Gulf F.O.B. price	High fuel taxation; Base price plus 19% VAT plus eco tax & excise tax

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, (2014), *International Fuel Prices 2012/2013*, 8th Edition, Germany.

CO_2 emissions per GDP, using purchasing power parity in kilograms CO_2 / US dollar, using 2005 prices in Iran and selected regions

Regions	1990	1995	2000	2005	2010	2011	2012	Change 1990-2012
World	0.54	0.49	0.45	o.43	0.40	0.39	0.38	-27.9%
EU-28	0.42	0.37	0.32	0.30	0.26	0.25	0.25	-40.9%
US	0.59	0.55	0.49	0.44	0.40	0.38	0.36	-39.7%
China	1.38	1.07	0.79	0.81	0.65	0.65	0.62	-55.2%
Iran	0.41	0.49	0.50	0.51	0.49	0.49	0.51	23.3

Source: IEA 2014

Carbon Intensity using Market Exchange Rates (Metric Tons of Carbon Dioxide per Thousand U.S. Dollars, Year 2005)

Country	2007	2008	2009	2010	2011	Change(%) 2007-2011
World	0.59933	0.6015	0.61455	0.61647	0.61209	2.1
Germany	0.2789	0.27552	0.27232	0.27006	0.25935	-7.0
Iran	2.08577	2.19763	2.47088	2.42185	2.47036	18.4

Source: US EIA, 2013

Iranian energy Briefs in MBOE

All Energy Sources	2267.9
Energy Export and Fuel for Foreign ships and Planes	675.5
Petroleum Imports	7
Change in Petroleum Products	6.4
Primary Energy Supply for IRI	1598.2
Energy Sector Use and Energy Waste in Transfer	128.4
Energy Waste in Conversion	288.7
Final Consumption	1181.1

Sectoral Energy Use in the IRI

Household, Municipal and Service Sector	407.5
Industries	303.7
Transportation	299.7
Agriculture	47.6
Non-Energy Consumption	122.5
Total	1181.1

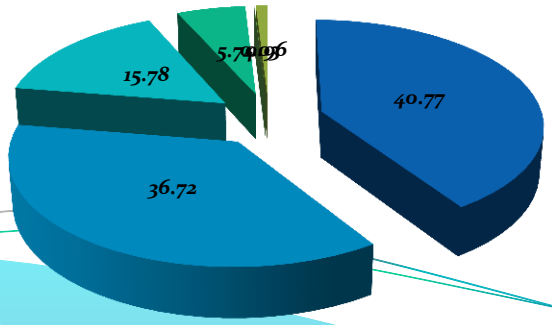
Percentages of GHG Emissions by Sector in the IRI, 2012 (1391, last reported Year before the conference)

Sector	Percent
Household and Business	22.92
Industries	16.99
Agriculture	2.27
Transportation	23.49
Power plants	31.36
Refineries	2.98

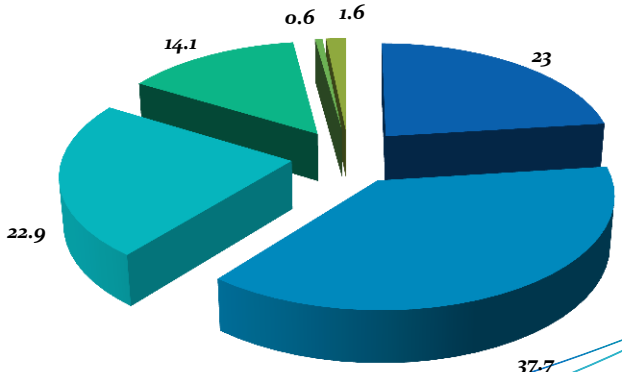
Overview of Electricity industry

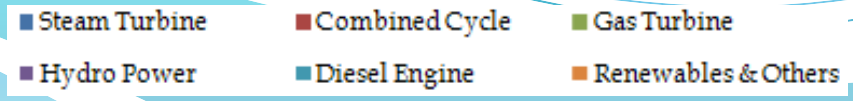
- ✓ IRAN's Electricity sector consumes about 26% of supplied primary energy, and has 36% share in total ultimate energy consumption.
- ✓ Electricity sector contribution to the nation's CO2 emissions is 32%.
- ✓ Industry, residential and agricultural sectors use 35%, 32% and 16% of supplied electrical respectively.

Total Annual Generated Electricity= 255 TWh



Total Installed Capacity = 71 GW





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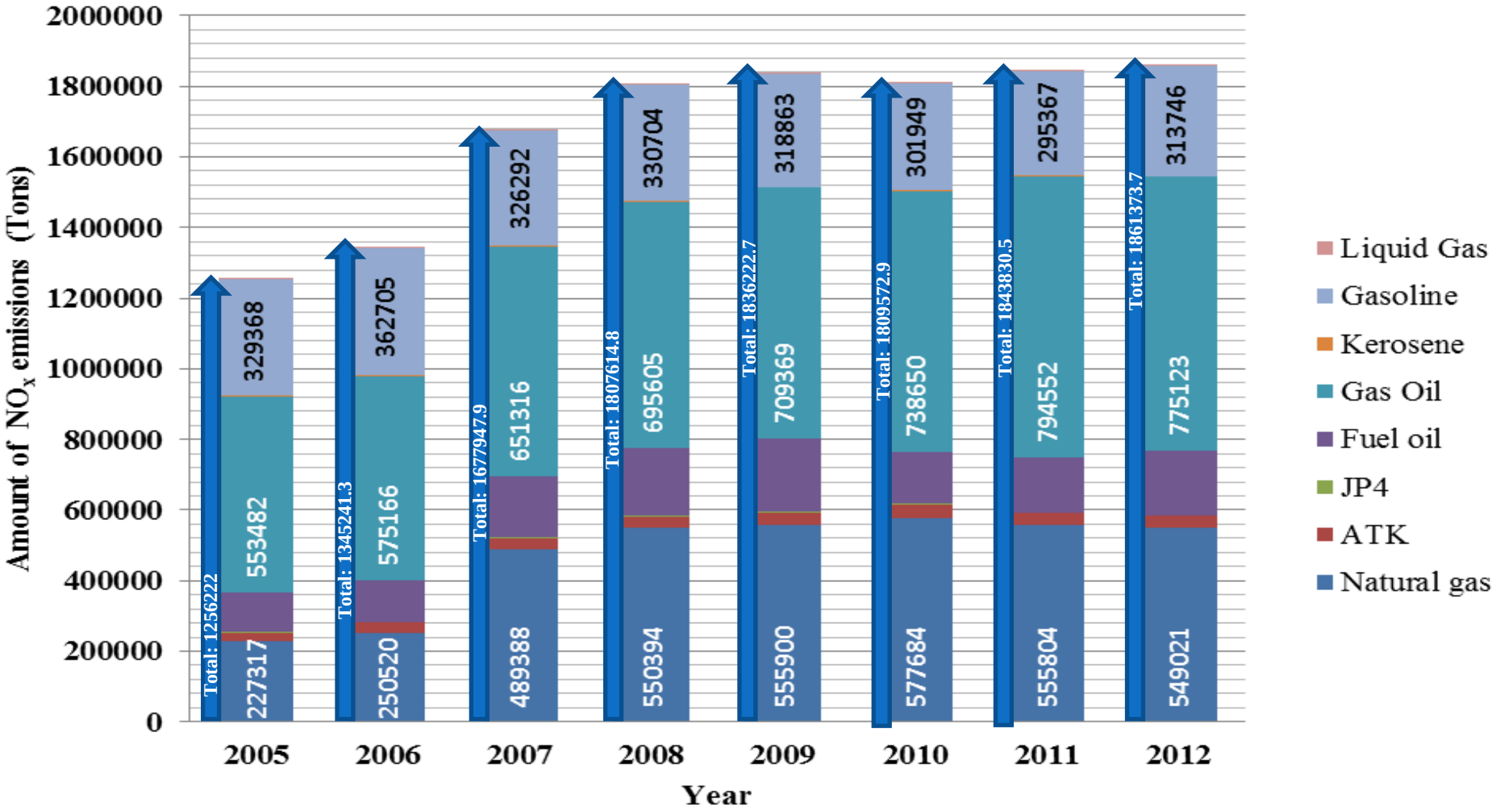
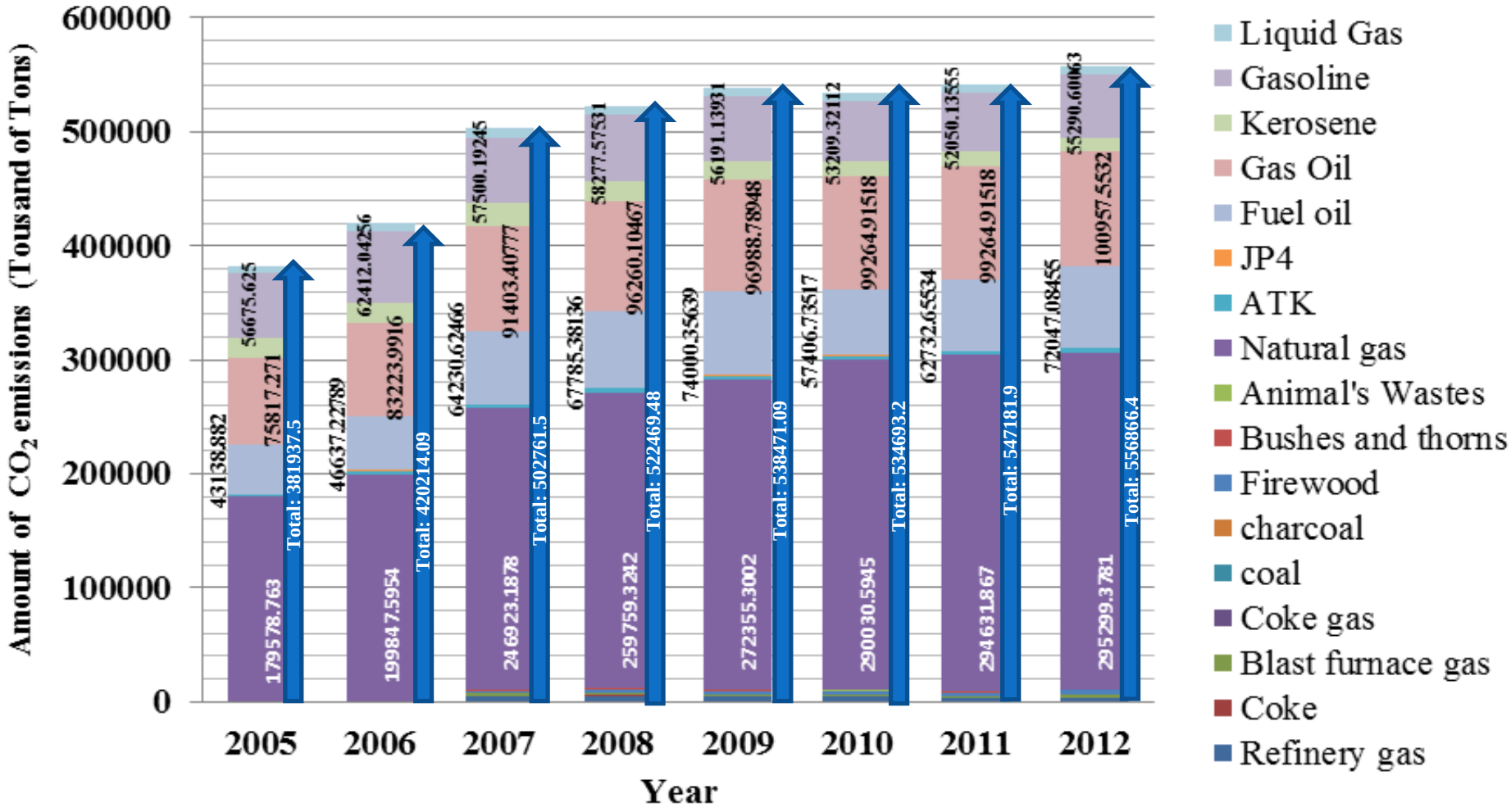
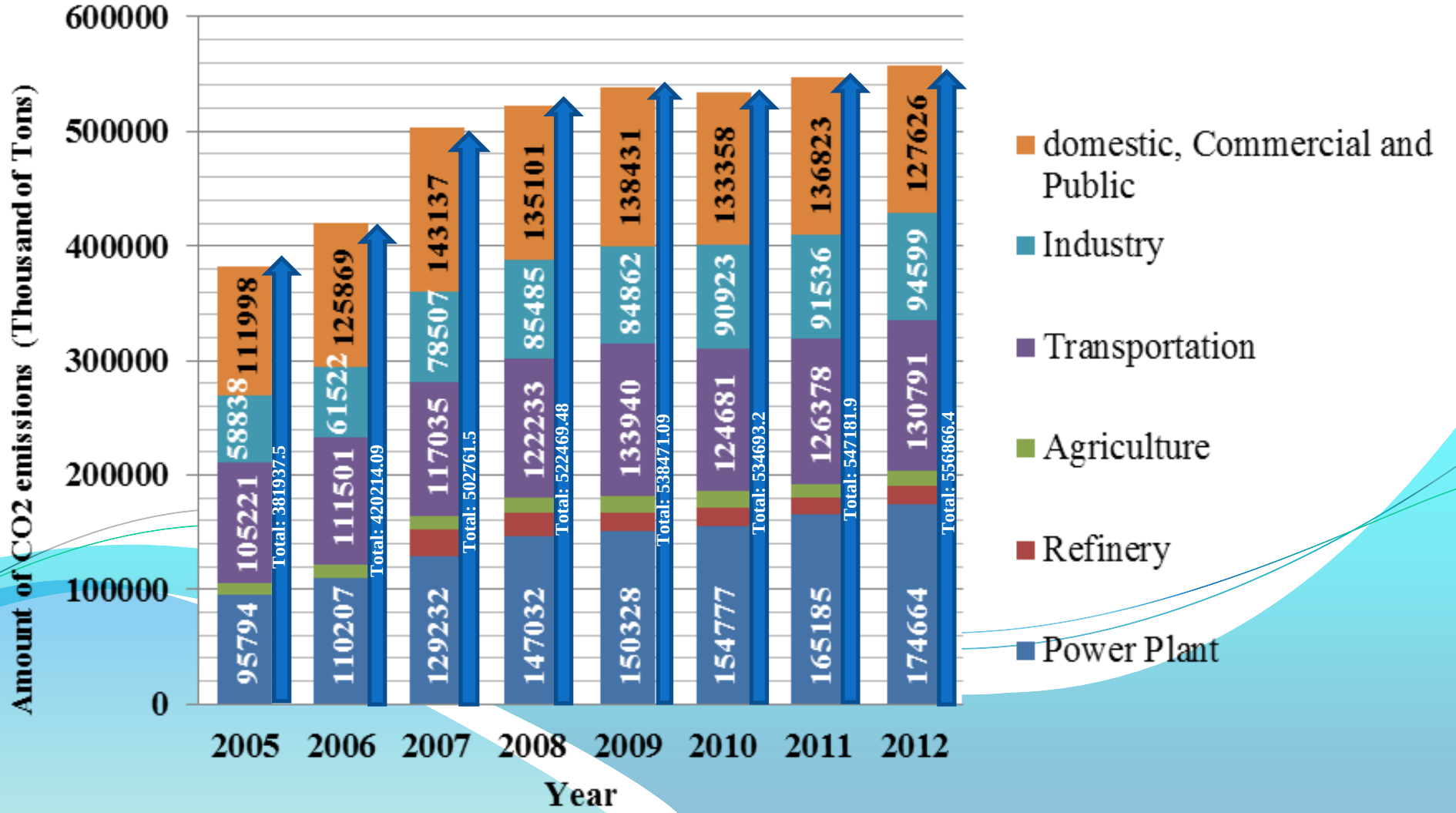
Amount of NOx emissions due to different types of energy consumptions



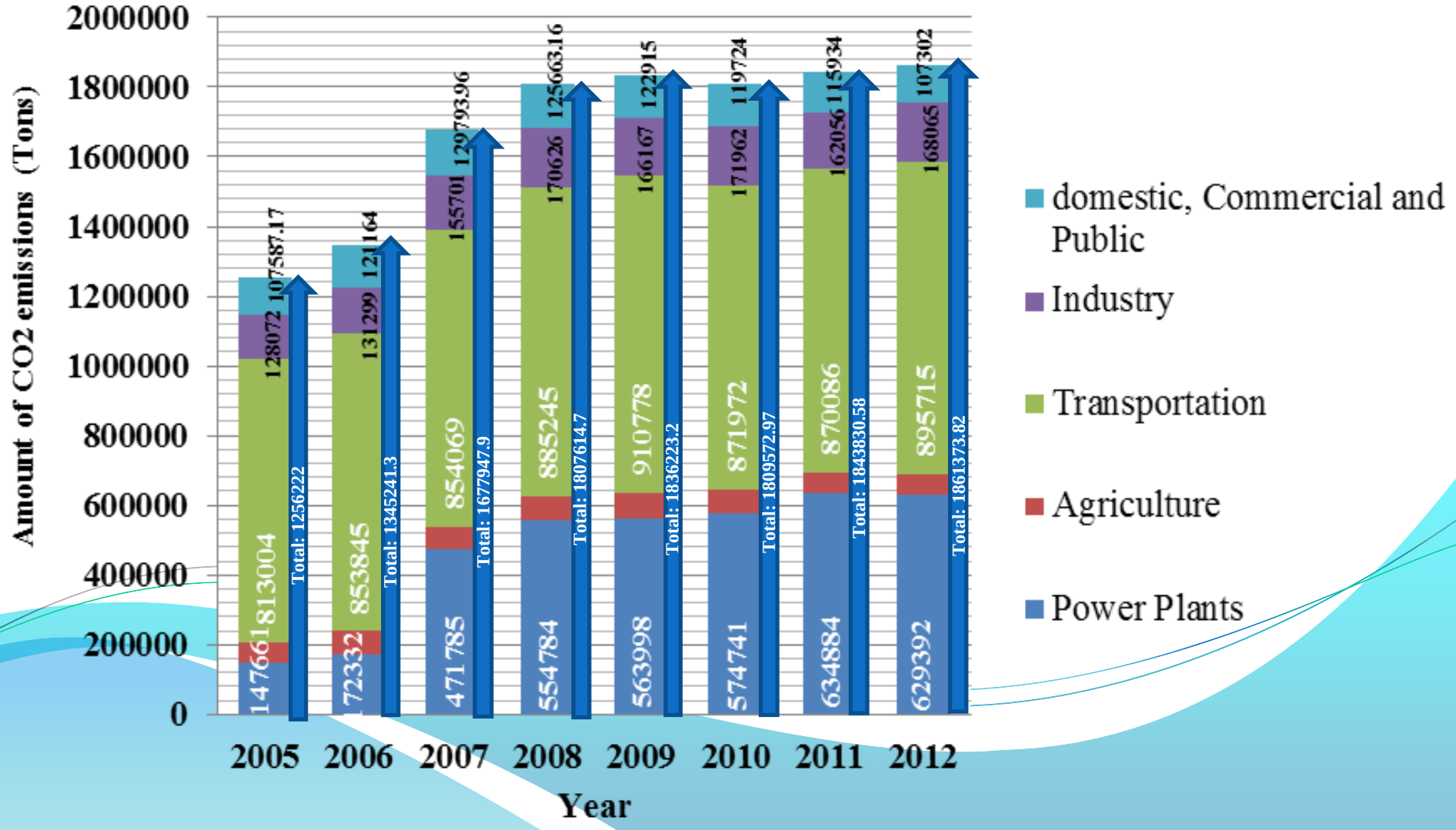
Amount of CO_2 emissions due to different types of energy consumptions



Amount of CO_2 emissions in different sectors of energy



Amount of NOx emissions in different sectors of energy



Result of CFL Project

- Technical, economical and environmental results of distribution of 93 million flame CFLs.
- **A reduction in electricity consumption equal to 3.8 billion kwh/year .**
- **2.5 million tons of reduction in GHG emissions.**
- Replacement of new electricity production facilities equal to 2100 Mega Watts capacity.
- **Avoiding of new power plants development, equivalent to $2.1 billion USD .**

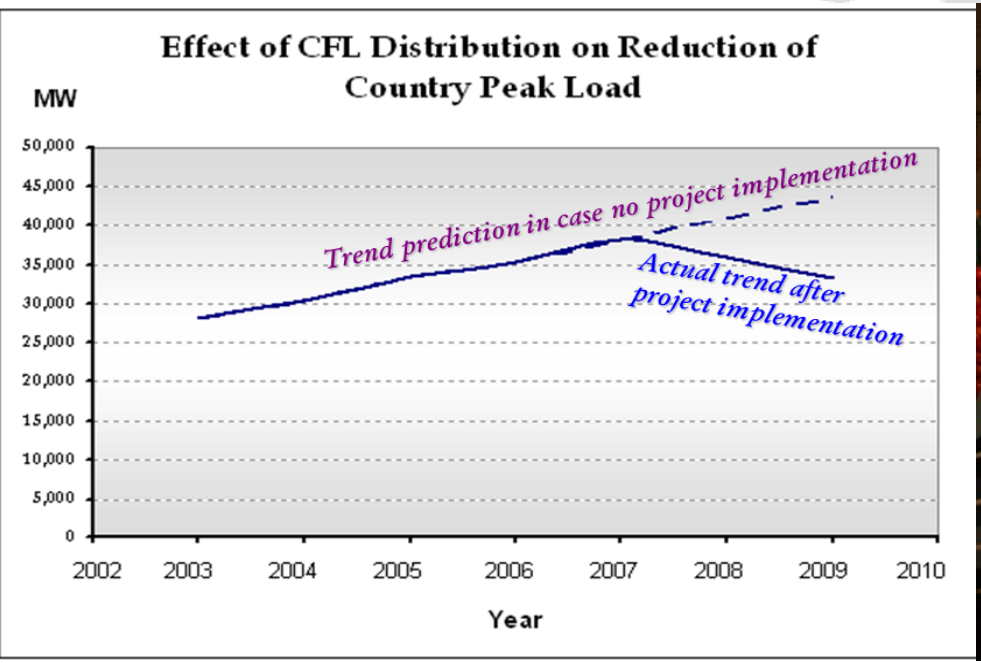
Some Recent Achievements

Decreasing high growing demand and peak on electricity by 1750 MW:

- saving 3800 GWh of annual electric energy,
- lowering the annual emission of greenhouse gases by 2.5 million tons,
- improving the quality of domestically produced lamps and etc.

by means of:

Subsidy allocation to CFLs production and distribution of more than 100 million lamps in the country within 2 years



Promoting Energy Efficiency in Refrigerators and Freezers

Some Recent Achievements

Compulsory Energy Labeling and standardization in 22 household appliances, buildings and more than 30 industries.

buildings and industries such as:

- New public and commercial buildings
- Cement Industry
- Steel Industry
- Ceramic Industry
- Glass industry
- ….

Household Appliances Such as:

- Refrigerators
- Washing machines
- Lamps
- Coolers
- ….

Implemented projects to reduce energy consumption in the industrial sector

projects	**Reduction of CO2 Emissions** 1000T/year	**lPotentia of energy saving** Mwh/ year
Energy efficiency in *Abade* cement plants	5.1	6967
Energy efficiency in *Kordestan* cement plants	3.3	4550
Energy efficiency in *Arta* cement plants	2.4	3300
Building CHP units in a textile factory	10.1	14000
Construction of production line for high efficient Electro pumps (evaporator cooler)	49	68000
Replacement of the existing Electromotors with high-efficiency Electromotors in wells and pumping stations	12.4	17238
Promoting energy efficiency in evaporator coolers *Garmaie gonob co.*	12.4	17215
Promoting energy efficiency in evaporator coolers *Sepehr electric co.*	16	22191
Promoting energy efficiency in evaporator coolers *Solan sabz co.*	7.8	10800
Promoting energy efficiency in evaporator coolers *Mashhad davam co.*	6.2	8553
Promoting energy efficiency in Refrigerator & Freezer *Donar khazar co.*	14.8	20527
Promoting energy efficiency in Refrigerator & Freezer *Emersan co.*	29.4	40775
Promoting energy efficiency in Refrigerator & Freezer *Electrostill co.*	25.7	35748
Promoting energy efficiency in Refrigerator & Freezer *Yakhsaran co.*	1.9	10552
Promoting energy efficiency in Refrigerator & Freezer *Niksan sanat save co.*	11.4	15839
Promoting energy efficiency in Refrigerator & Freezer *Azar cilvan tabriz co.*	5.4	7483

The Impact of Improving Efficiency for Air Pollution Reduction in BE-SAT Power Plant

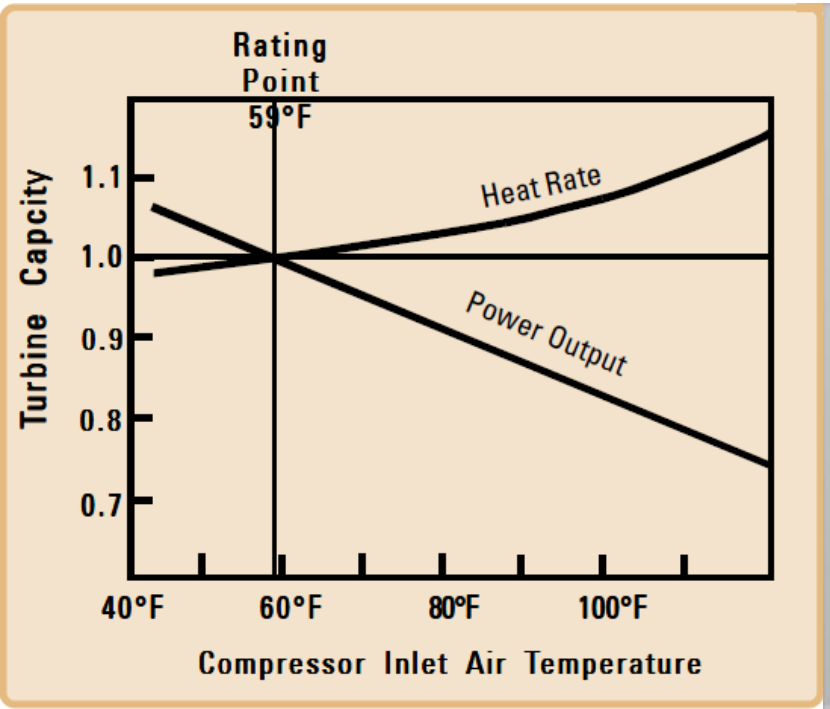
Air Pollutant emission reduction
(tons per year)

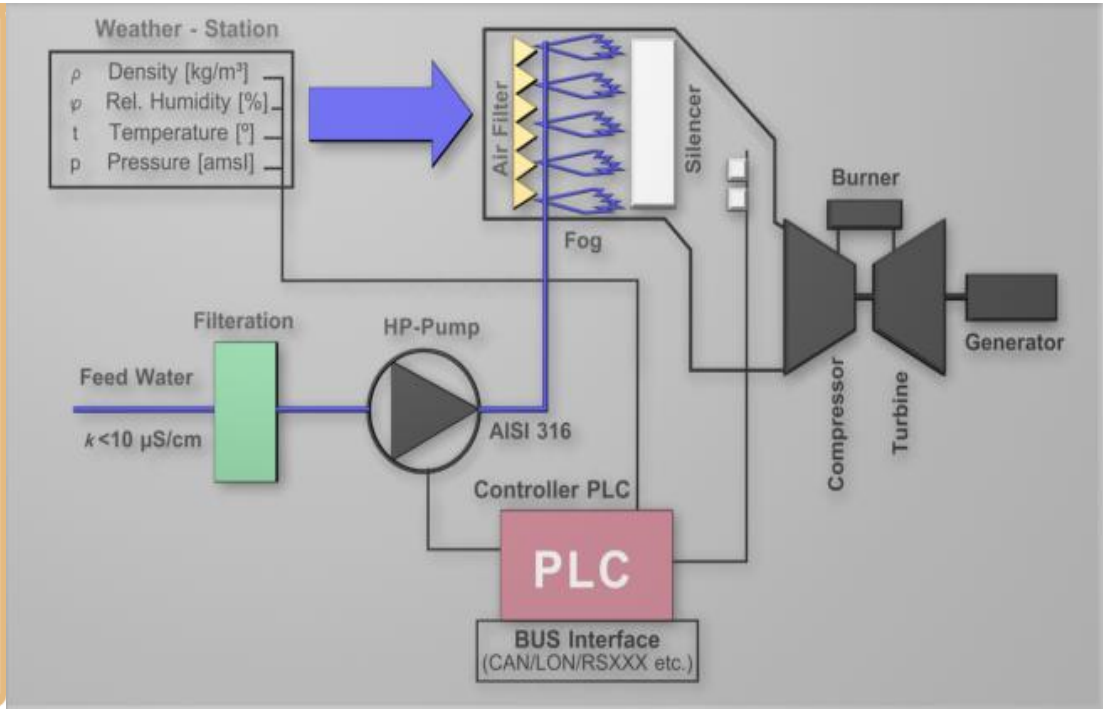
NOx	SOx	CO2
347	292	88513

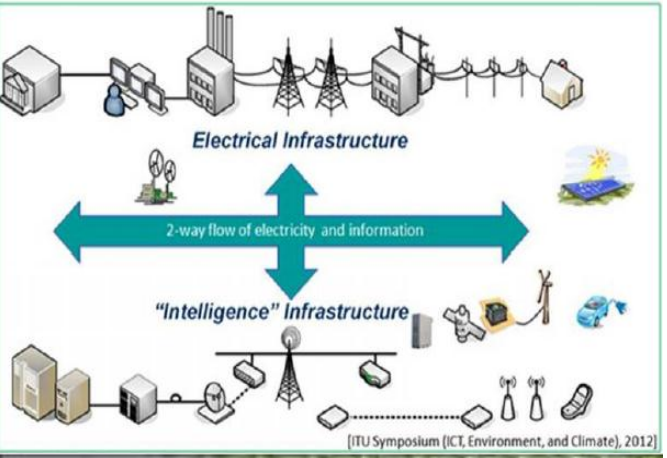
Some Recent Achievements

Some GT Power Plants were repowered totally by 275 MW, due to installation of evaporative cooling system in inletting air stream to GT.

FOG evaporative inlet air cooling system

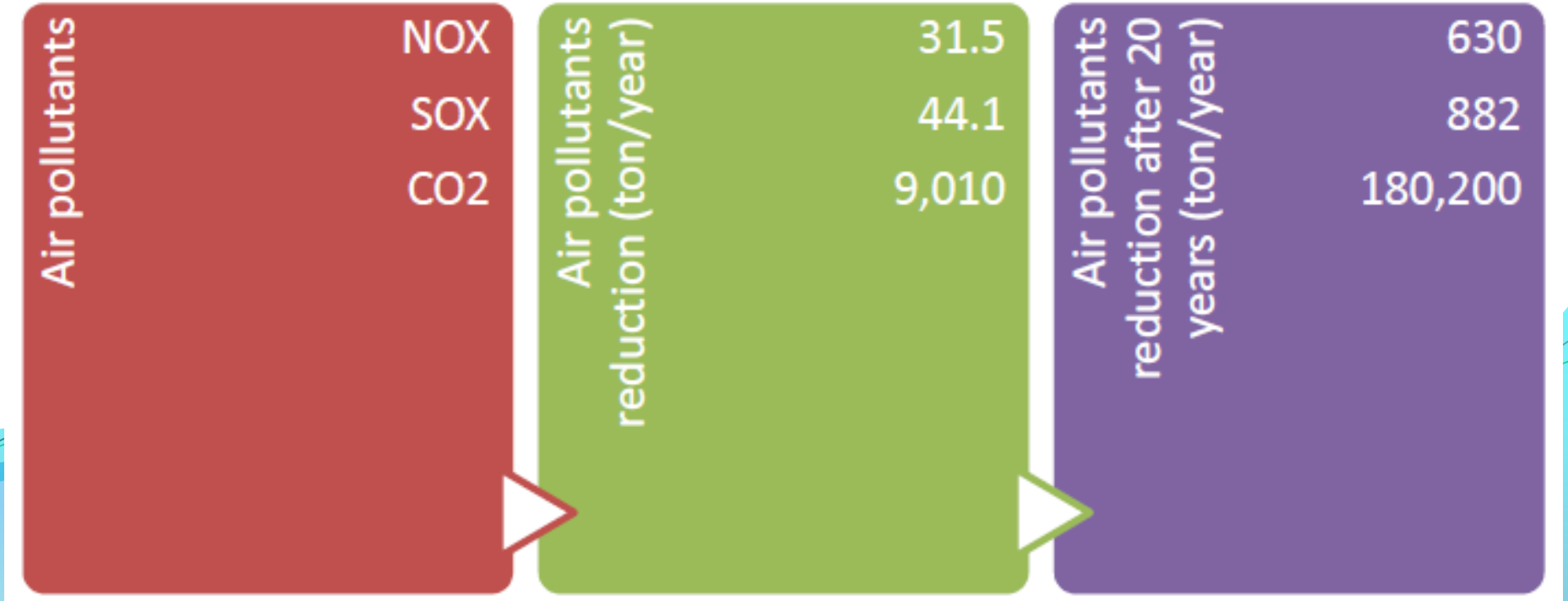






National Plan for Implementation of Smart Metering and Energy Management Infrastructure (FAHAM)

- Implementation can reduce energy consumption by at least 3% to 4% in power grid losses. Therefore with 262 TWh energy generation in a year, the consequences and impacts of the project implementation is estimated as follows:



General policies to reduce greenhouse gas emissions (All subject to the Additionality Framework)

Strategies	policy	Implementation policy	Responsible
a) Reduction of greenhouse gas emissions	1- Increase Energy Efficiency (implementing a national program to achieve optimized energy efficiency in supply and demand side)	Increasing the efficiency of power plants from the current 37 percent to 42 percent at the end of the sixth Development Plan (annual 1% improvement)	Ministry of energy
		Power distribution loss reduction in the annual rate of 1 percent from the current 23 percent to 18 percent at the end of the sixth D. P.	Ministry of energy
		Development of small power generation units combined with CHP, CCHP in an annual rate of 100 megawatts	Ministry of energy
		Collection of at least 70% of associated gas (Flare)	Ministry of Petroleum
		Programs to reduce energy intensity by 33% at the end of a Sixth Development Plan	Ministry of Petroleum & other organizations
		Reduction of the average carbon dioxide emissions from193 grams per kilometer to 140 grams/km in the fleet vehicle production lines	Ministry of Commerce, Mining & Industry
		Losses and leakage reduction in the gas distribution lines from 1.5 percent to 1 percent at the end of the Sixth Development Plan	Ministry of Petroleum
		Carbon dioxide capture and storage	Ministry of Petroleum

Strategies	policy	Implementation policy	Responsible
a) Greenhouse Gas Emissions Reduction	2- Increasing energy efficiency through policy reform and using cost / reward / penalties	Implementing a feasible trend of energy price increase to reach international prices	
		Supporting the industry with high added value and with low power consumption	Ministry of commerce and mining, industry
		Saving energy by improving industrial and combustion processes and energy consumption	Ministry of Energy, Ministry of Petroleum , Ministry of Commerce, Mining and Industry
		The development of small electricity and heat generating facilities	Ministry of Energy
		Guaranteed purchase of electricity from private sector	Ministry of Energy
		Applying a national penalty and reward policy toward high and low energy consumption in the industry and producers of greenhouse gases	Ministry of Commerce, Mining and Industry
		Giving priority to promotion of energy-efficient public transport system (or national transport plan aimed at reducing carbon dioxide emissions)	Ministry of Interior
		Establishment of a national audit of energy consumption and greenhouse gas emissions	Department of Environment, National Institute of Standards

Strategies	policy	Implementation policy	Responsible
a) Reduction of greenhouse gas emissions	3) increasing the share of renewable energy in the energy basket	Increasing renewable energy consumption by as much as 1,000 megawatts	Ministry of Energy
		Provision of long-term incentives to develop renewable energy generation facilities such as wind energy, solar and bio-mass in rural areas in localities which are far from the grid	Ministry of Energy
	4) increasing the share of low-carbon based fuel basket	Raising share of natural gas in the fuel basket	Ministry of Petroleum
		Construction of 2000 MW of new nuclear power plants to generate electricity	Ministry of Energy
	5) tools and economic incentives, financial and tax breaks for low-carbon technologies and efficient	Creation of a national emission trading market	Strategic Supervision Department of the Ministry of Economy and Finance
		Development of carbon pricing and carbon taxes	Strategic Supervision Department of the Ministry of Economy and Finance
		Development of emissions standards	Department of Environment
		Tax credits for imports of high-tech low carbon equipment	Ministry of Economy and Finance
		Prohibition of the energy-intensive imports and slapping environmental penalties against these	Department of Environment

Strategies	policy	Implementation policy	Responsible
a)Reduction of greenhouse gas emissions	5) Economic incentives, provision of financial facilities and tax breaks for low-carbon and efficient technologies	Prohibit the export or environmental crimes for energy-intensive exports	Department of Environment
	6) Efficient use of resources and international incentives and mechanisms		Ministry of Foreign Affairs, Ministry of Economy and Finance
b) Enhancing productivity, facilitating and improving the business and work Environment		Increasing Productivity	Ministry of Economy and Finance
		Changing the pattern of national development towards high value-added industries (avoiding raw retail)	Ministry of commerce and mining, industry
		Removing barriers to foreign investment	Ministry of Economy and Finance
		Removing obstacles to privatization	Ministry of Economy and Finance
		Agile economy	Ministry of Economy and Finance
C) Development of strategic knowledge	Education and applied research and using environmental friendly	The formulation, adoption and implementation of national adaptation document and taking into account the effects of climate change in all relevant executive agencies	Department of Environment

Vision

- To become the pioneer in the renewable energies sector throughout the country and in the region due to the defined mission.

Mission

- To contribute to the sustainability and diversification of energy resources, development of capacities, lessening of the long-term expenditures on energy production systems and preserving the environment through sustainable usage of renewable energy resources, expansion of renewable energy share in the national energy basket and encouraging private sector partnership.

Law/ Policy Related to "Renewable Energy" in IRAN

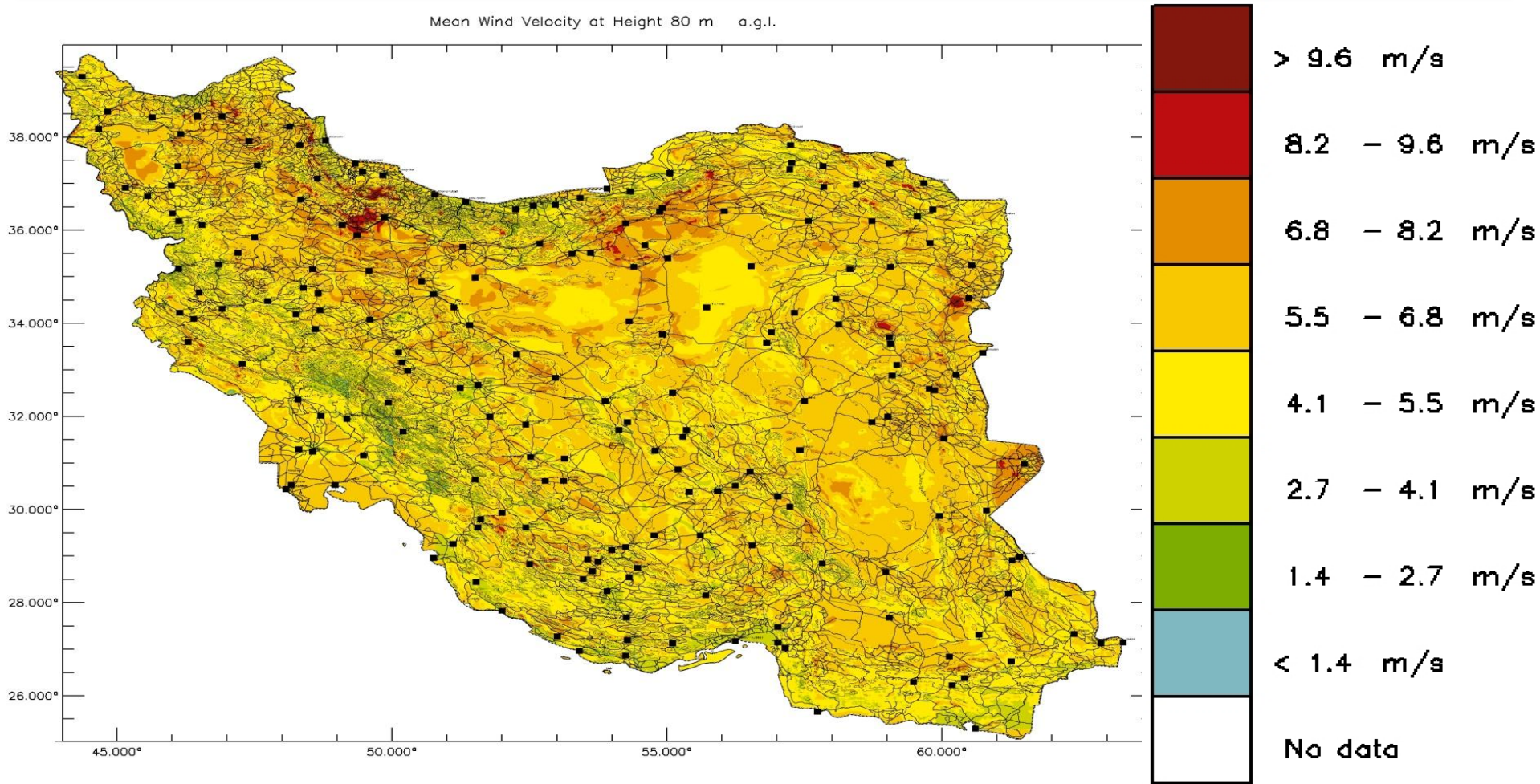
- Development of renewable energies and diversification of electricity energy basket of the country through construction of renewable power as macro policies of Ministry of Energy in the Islamic Republic of Iran.
- In order to accomplish these policies, government of Iran is allowed to support private and cooperative sectors via funds and subsidizing these in line with the national goal of installing Five Thousands Megawatts of wind energy and solar power plants in Iran by the end of the sixth five-year development plan (End of 2020), using international incentives and in accordance with the additionality principle.

Responsibilities

1. Development of renewable technologies via research and implementation of pilot projects and reinforcement of infrastructures especially in identifying renewable resources potential, in cooperation with countries which are in more advanced stages of technology development.

National Wind Resource Assessment

In the present conditions more than 15000MW economic potential and 40000MW technical potential have been recognized all over the country.



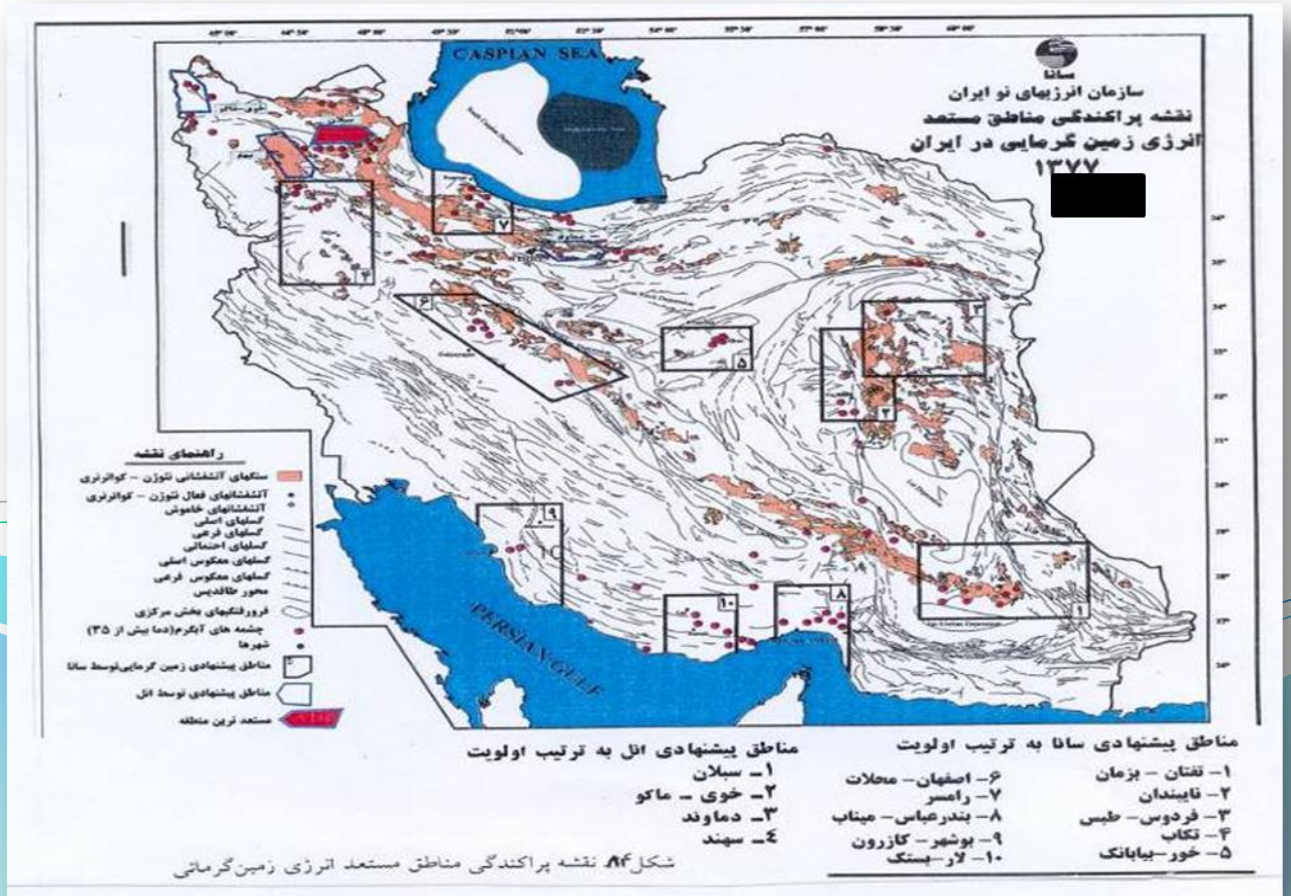
Solar Resource Assessment

Regarding studies by DLR Company from Germany, there is feasibility of installing 60000MW solar-thermal power plants in more than 2000 square kilometers of area.

By allocating 100×100 square kilometers of land to PV power plants , we can generate electricity equal to total electricity produced in the country in 1389.

Geothermal Resource Assessment

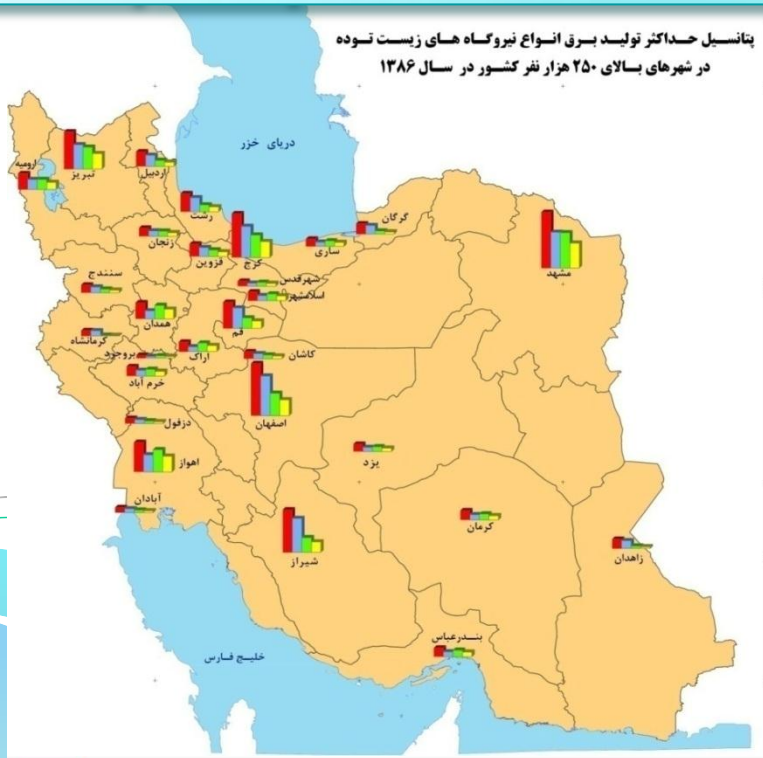
There are potentially 15 zones capable of geothermal energy production in Iran, where in Meshkinshahr as one of them, the reservoir capacity is 250MW electrical and 1250 MW thermal, based on feasibility and explorative studies.



شکل۸۴ نقشه پراکندگی مناطق مستعد انرژی زمین‌گرمائی

Biomass Resource Assessment

Maximum generated electricity potential from all types of biomass power plants for cities populated 250000 and above (30 cities) was more than 800MW in 1386(2007) including: 217 MW pyrolysis – gasification power plants , 311 MW waste incineration power plants, 159 MW anaerobic digestion power plant and 112 MW landfill power plant .



نام شهر	Pinc (MW)	Ppg (MW)	Pad (MW)	PsIf (Mw)
آبادان	۲/۱۲	۱/۵۳	۱/۰۳	۰/۷۲
اراک	۳/۹۱	۱/۹۵	۳/۴۴	۲/۴۳
اردبیل	۵/۹۵	۴/۴۸	۲/۴۲	۱/۷۱
ارومیه	۶/۵۰	۴/۰۳	۴/۰۶	۲/۸۶
اسلامشهر	۳/۶۴	۲/۰۸	۲/۷۴	۱/۹۳
اصفهان	۲۱/۱۶	۱۶/۰۲	۹/۰۶	۶/۳۹
اهواز	۱۲/۰۰	۶/۹۰	۸/۹۹	۶/۳۴
بروجرد	۱/۲۳	۰/۶۸	۰/۹۴	۰/۶۶
بندرعباس	۳/۶۲	۲/۰۲	۲/۶۸	۱/۸۹
تبریز	۱۵/۱۱	۹/۸۵	۸/۸۳	۶/۲۲
تهران	۱۱۰/۸۰	۸۰/۲۷	۵۱/۰۴	۳۵/۹۹
خرم آباد	۳/۸۹	۲/۳۱	۲/۷۳	۱/۹۳
دزفول	۲/۲۰	۱/۵۹	۱/۰۷	۰/۷۵
رشت	۷/۴۲	۵/۷۰	۲/۷۹	۱/۹۷
زاهدان	۳/۸۱	۳/۱۵	۱/۰۰	۰/۷۱
زنجان	۳/۴۱	۲/۱۹	۲/۱۲	۱/۴۹
ساری	۳/۰۵	۱/۷۳	۲/۲۶	۱/۵۹
سنندج	۳/۲۰	۲/۳۳	۱/۴۹	۱/۰۵
شهرقدس	۲/۰۹	۱/۱۹	۱/۵۷	۱/۱۱
شیراز	۱۷/۲۹	۱۳/۷۲	۵/۹۸	۴/۲۲
قزوین	۵/۱۱	۳/۵۸	۲/۶۳	۱/۸۵
قم	۱۰/۶۴	۸/۲۲	۴/۲۱	۲/۹۷
کاشان	۲/۹۲	۲/۰۵	۱/۵۲	۱/۰۷
کرج	۱۷/۷۸	۱۲/۵۸	۹/۰۷	۶/۴۰
کرمان	۳/۸۵	۲/۱۴	۲/۴۶	۱/۷۳
کرمانشاه	۲/۲۵	۲/۰۹	۰/۳۰	۰/۲۱
گرگان	۴/۲۲	۳/۴۵	۱/۲۶	۰/۸۹
مشهد	۲۲/۶۰	۱۴/۴۳	۱۴/۲۶	۱۰/۰۵
همدان	۶/۵۶	۳/۲۱	۵/۴۷	۳/۸۶
یزد	۲/۹۸	۱/۶۶	۱/۹۰	۱/۳۴
مجموع	۳۱۱/۲۸	۲۱۷/۱۵	۱۵۹/۳۱	۱۱۲/۳۴

راهنما:
(Pinc) حداکثر توان تولید برق نیروگاه زباله سوز از "پسماند ورودی به محل دفن" بر حسب مگاوات
(Ppg) حداکثر توان تولید برق نیروگاه پیرولیز-گازی سازی از "پسماند ورودی به محل دفن" بر حسب مگاوات
(Pad) حداکثر توان تولید برق نیروگاه هضم بی هوازی از "پسماند ورودی به محل دفن" بر حسب مگاوات
(PsIf) حداکثر توان تولید برق نیروگاه لندفیل مهندسی از "پسماند ورودی به محل دفن" بر حسب مگاوات

Installed Renewable energy power plants capacity Up to the end of 31 July/2015 in Iran

Item	Power plant	Governmental Capacity (MW)	Non-Governmental capacity (MW)	Total
1	Wind	98.860	55.9	154.76
2	Solar (PV)	7.20	0.514	7.714
3	Biomass	0	10.5	10.5
4	Small Hydropower	62.4	0.44	62.88
Total		168.46	67.354	235.854

Wind energy

100 MW Wind power plant- Manjil ongoing…

(27 × 300KW)+(18 × 550 KW)+(2 × 500 KW)+(81× 660 KW)+(1× 600KW)

28.4 MW Wind power plant - Binalood (43 × 660 KW) installed

Wind Atlas Project

Project aims:

1- Creating digital information data base on wind energy potential in Iran

2- Calculating wind energy at the altitudes higher than 40 Meters from the ground

3- Recognition of suitable regions for wind farms

4- 2.5 years data gathering in more than 110 locations

5- The acquired information is already available for public attention and renewable energy investors

MAPNA Co. MW-Scale wind turbine project in Takestan 8*2.5 MW

Beheen Ertebat Mehr Co.
1.5MW in Khaf

AP(Sep2012-2013): 5,988,544Kwh

Capacity Factor:45%

IRAN's capability in manufacturing wind turbines

- **Turbines with production line**

1. SabaNiroo Company- 660KW
2. Mapna Company-2.5MW

- **Prototype wind turbines**

1. Eivazian Company-600 KW
2. Niroo Research Institute -2MW (ongoing)

Solar energy

Shiraz CSP power Plant

- **Completion of the optimal design of parabolic collectors and collectors farm.**
- **Basic and Detailed design of steam and oil cycles for the first time for a solar thermal power plant in Iran.**

•**Achieving know-how for producing all of the equipment parts of solar thermal power plants (parabolic)**

Laser test for mirror bending:

Given executed efforts in bending and exerting modifications on mold, furnace and laser test device with bending precision has reached from 7 milli radian to less than 3 milli radian.

Rural Electrification

- SUNA has installed 600 pilot PV systems for electrification of some rural areas.
- With experience gained by these pilot projects, Tavanir is implementing the same projects with capacity of 2000 house-holds.
- Installed systems have 0.7 and 1.5 kW capacities because they can be widely used throughout the country based on experiences

Total installed capacity of PV systems (By the end of 31 July/2015 in Iran).

Row	Regional Electricity/ Distribution company	Installed up to 21 June 2015
1	Azerbaijan Regional Electricity	0
2	Isfahan Regional Electricity	150
3	Tehran Regional Electricity	5
4	Khorasan Regional Electricity	870
5	Semnan Regional Electricity	100
6	Siastan Regional Electricity	100
7	Gharb Regional Electricity	80
8	Kerman Regional Electricity	20
9	Yazd Regional Electricity	160
10	Zanjan Regional Electricity	100
11	Mazandaran Regional Electricity	100
12	Hormozgan Regional Electricity	100
13	Isfahan Province Distribution Company	384
14	Tehran Province Distribution Company	300
15	Alborz Province Distribution Company	45
16	South Khorasan Distribution Company	211
17	Razavi Khorasan Distribution Company	183
18	North Khorasan Distribution Company	25
19	Semnan Distribution Company	44
20	South Kerman Distribution Company	190
21	North Kerman Distribution Company	267
22	Kordestan Province Distribution Company	85
23	Hormozgan Province Distribution Company	150
24	Yazd Province Distribution Company	325
25	Isfahan City Distribution Company	362
26	Shiraz City Distribution Company	235
27	Mashhad City Distribution Company	270
28	Qom Province Distribution Company	70
29	Mazandaran Province Distribution Company	180
30	Tabriz Distribution Company	75
31	Sistan & Balochestan Distribution Company	210
32	Gilan Province Distribution Company	40
33	Markazi Distribution Company	212
34	Eastern Azarbayejan Distribution Company	195
35	Hamedan Province Distribution Company	120
36	Fars Province Distribution Company	170
37	Khozestan Province Distribution Company	460
38	Qazvin Province Distribution Company	120
39	Zanjan Province Distribution Company	105
40	Kermanshah Province Distribution Company	230
41	Charmaha& Bakhtiari Province Distribution Company	110
41	Lorestan Province Distribution Company	0
TOTAL		7158

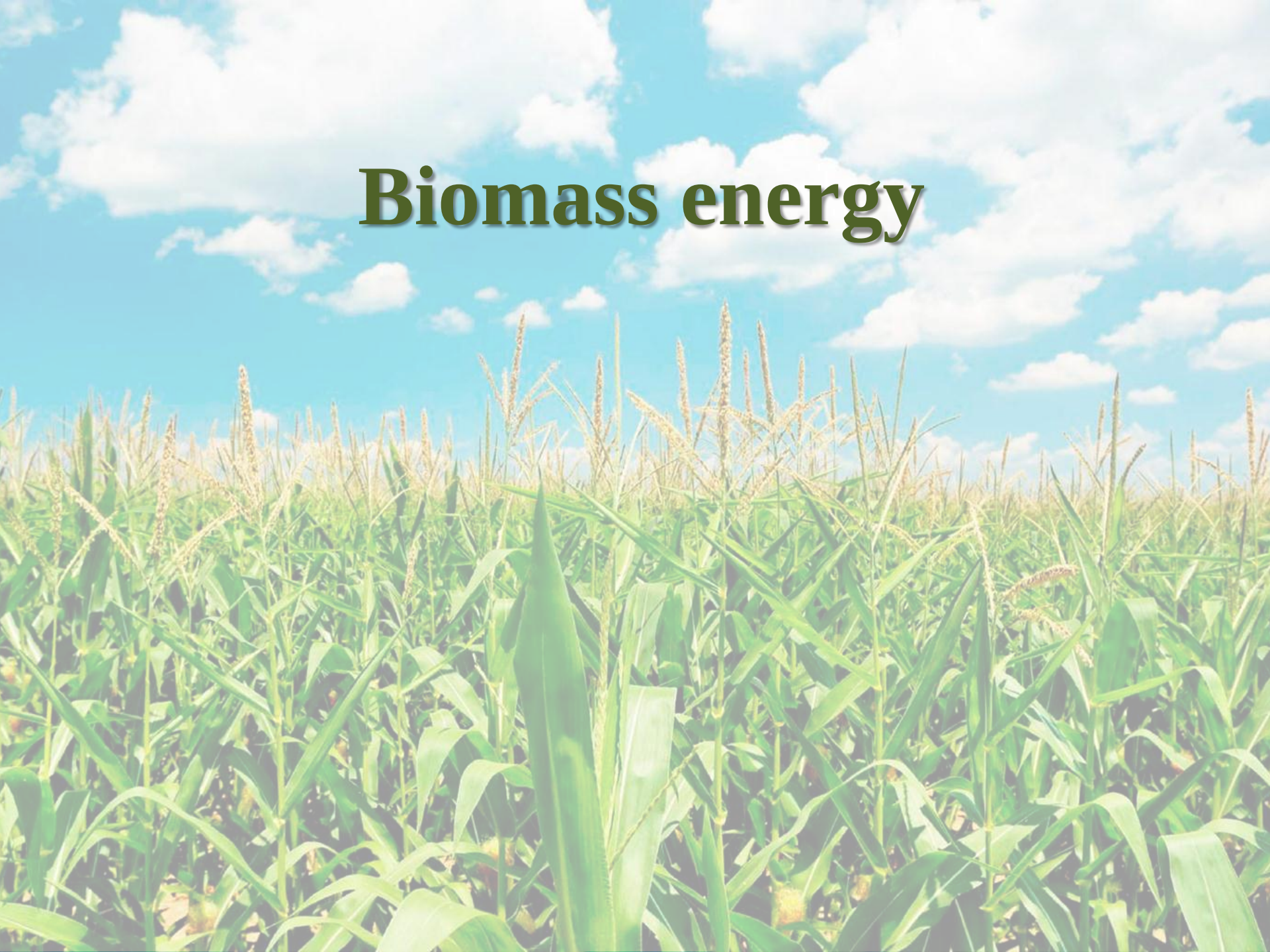
Geothermal energy

Development of the field and construction of Sabalan geothermal power plant

- Installation of 5 MW pilot power plant (phase 1)
- Installation of 50 MW power plant (phase 2)
- Explorative and Productive excavation
- Preservation of environment through development of field.

Constructing four samples of geothermal heat pumps

In this project four samples of heat pumps with other required equipments have been installed in: Rasht, Meshkinshahr, Taleghan, Ahvaz, Bandarabbas and Boushehr.


Biomass energy

Biogas pilot in Saveh

Shiraz and Mashhad biogas power plants

Capacity:1 MW

Capacity:660 KW

Design and production of 5 and 10 KW PEM fuel cell as CHP with the aim of localization of know-how

Design and production of Hybrid fuel cells and battery motorcycles

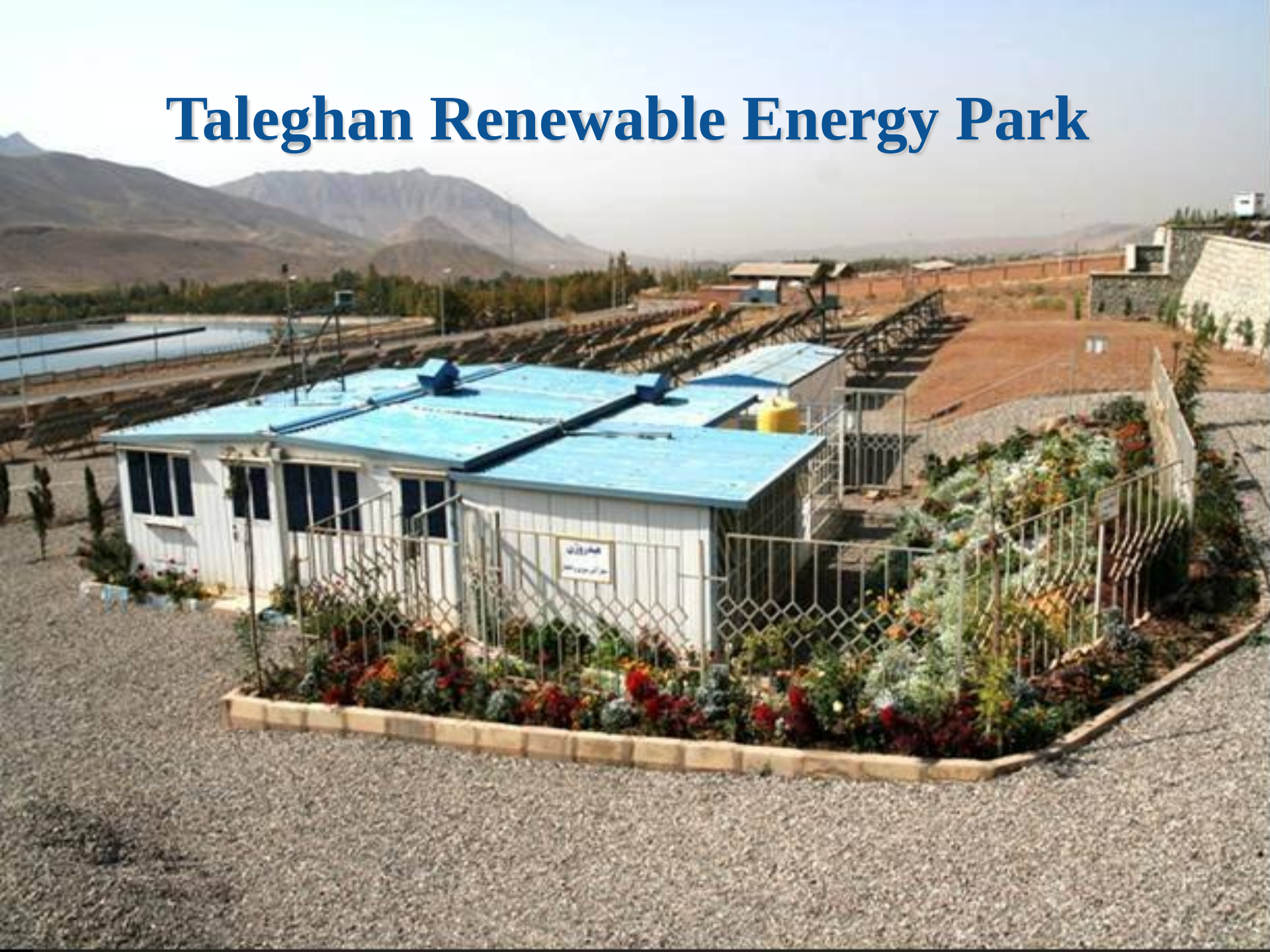
Fuel cell type	High temperature
Fuel cell capacity	1.4 KW
Battery type	Lithium ion
Battery capacity	2 KW.h
Hydrogen storage capacity	300 NL
Power of electromotor	4 KW

Design of Control Systems for Hybrid Fuel cell and battery cars (University of Khaje Nasir)

Production of Fuel cell car (University of Rafsanjan)

Fuel cell capacity	**3.5KW**
Battery capacity	**1.5KW**
Hydrogen storage type	**Metal hydride**
Hydrogen storeage capacity	**10Nm^3**
Maximum speed	**45Km/h**
Travelling with once fuelling	**200Km**

Taleghan Renewable Energy Park



Responsibilities

Increasing the share of non-public sector participation in the country's electricity production portfolio by guarantying a competitive purchasing price for renewable electricity (Close to 16 USD Cents/Kwh as of August 30, 2015).

Increasing the share of non-public sector participation in the country's electricity production portfolio by guaranteed purchase of renewable electricity at a competitive price

Summary of information related to permits of non-public sector for construction of renewable power plants						
Number	Stage of progress	Wind (MW)	Solar (MW)	Biomass (MW)	Small-hydro power (MW)	Total (MW)
1	In Operation	53.88	0.514	10.56	-	64.954
2	Exchanged contract of electricity purchase	1510.5	15.3	-	4.37	1530.17
3	Primary Construction Agreement	4356.66	543.42	83.49	10.3	4993.87
Total issued permissions						

Guaranteed Renewable Electricity Purchase Tariffs

On the implementation of the legal obligations of Ministry of Energy, the guaranteed electricity purchase tariff for types of renewable and clean energy are notified as follows:

Row	Technology type	Guaranteed electricity purchase tariff (IRRs per kWh)
1	Biomass-landfill	2900
	Biomass- The anaerobic digestion	3150
	Biomass- incineration	5870
2	Wind farm above 50 megawatt capacity	4060
	Wind farm with the capacity of 50 megawatt and less	4970
	Wind with the capacity of 1 megawatt and less (allocated to the subscribers and limited to the distribution capacity)	5930
3	Solar farm above 10 megawatt capacity	5600
	Solar farm with the capacity of 10 megawatt and less	6750
	Solar with the capacity of 100 kilowatt and less (allocated to the subscribers and limited to the distribution capacity)	8730
	Solar with the capacity of 20 kilowatt and less (allocated to the subscribers and limited to the distribution capacity)	9770

Row	Technology type	Guaranteed electricity purchase tariff (IRRs per Kwh)
4	Geothermal (including excavation and equipment)	5770
5	Turbo expanders	1800
6	Waste Recycling in industrial processes	3050
7	Small hydropower with the capacity of 10 MW and less	3700
8	Other types of renewable and clean power plants except hydropower	4873

1- Contract of guaranteed purchase of electricity from power plants subject to this announcement excluding those power plants subject to articles 5, 6, and 7 is held for a twenty-year period, in which the tariff value by the end of the contract is adjusted according to note 3 of article 3 of the Economic Council Act.

Note 1: Tariff value for all power plants subject to this article, except wind farms subject to article 2, will be multiplied by 0.7 from the beginning of the second 10-year period until the end of contract period after annual price adjustment.

Note 2: Tariff value for wind power plants with production factor of 40% and beyond in the first 10-year period is multiplied by 0.4 from the beginning of the second 10-year period until the end of the contract; for power plants with production factor under 20%, it is multiplied by 1, and for power plants with production factor between 20% and 40%, it is multiplied by an appropriate number.

2- The period of guaranteed electricity purchase from power plants subject to statements 5, 6, and 7 is specified to be 10 years with mentioned tariffs, and the tariff is adjusted until the end of contract according to note 3 of article 3 of the Economy Council Act.

3- For power plants connected to the distribution grid, subject to article 4 of Economy Council Act, 148 IRRs per kWh as transfer services rate is added to the abovementioned costs.

4- After the end of guaranteed purchase period, the investor will be allowed to sell electricity across the country according to bilateral contracts, energy exchange, electricity market, or any framework approved by the Ministry of Energy. Electricity exports of power plants subject to this act depends upon separate permits.

5- To support localization and indigenous construction of renewable and clean power plants, rate of purchase from units designed and built locally using technical know-how, is increased at most by 15 percent proportionately. The Renewable Energy Organization of Iran (SUNA) is bound to determine and publicize relevant weight tables depending on components and technology.

6- In case investors benefit from government grants in plant construction subject to guaranteed electricity purchase contract, their tariff of guaranteed power purchase will be adjusted proportionately in order to avoid double computation.

7- Rates subject to this act will be applied to contracts whose power plants are commercially deployed at most within 18 months since holding the contract. For geothermal and biomass power plants, this period is extendable up to 9 months. In case of delay in commercial deployment, the latest rate approved by Ministry of Energy as the beginning of commercial deployment of the plant will be grounded on action for remaining period of the contract.

8- The Ministry of Energy seeks the policy of reducing guaranteed tariffs of power purchase from renewable and clean resources in proportion with increasing installed capacities in the country. The Renewable Energy Organization of Iran (SUNA) is responsible to take care of this policy in preparing tariff draft in the coming years.

Current Ratified Regulation
Subject to using incentives

Ministry of energy is obliged to keep 30 IRRs/Kwh of electricity charges included in the relevant bills from subscribers except for rural households and agricultural wells, to support the expansion of renewable energies in the national energy basket.

Gained sums will be deposited in an specified account in the Department of the Treasury for the abovementioned cause.

In addition a maximum of up to 4.000.000.000.000 IRRs of will be spent by Tavanir Company exclusively for supporting development and maintenance of rural networks as well as clean and renewable power generation

Intended Goals of Iran's Nationally Determined Contributions on Renewable Energies

Preparing INDC is one of the approved items of COP20 that was proposed in Lima, Peru and agreed upon by the members of the Kyoto Protocol.
According to the last message of UNFCCC Secretary sent to members, countries can register their INDC on UNFCCC's website from March to September 2015 so that it could form the basis for future Negotiations during COP21 in Paris.
National INDC's focus will be on maximizing received support on conditional reduction commitment due to the impossibility of getting this support during the sanction years.

Technology	Year	2015	2020	2025
The Contribution of renewable technologies in the power generation basket (%)	Hydropower	16.2	14	15.1
	Wind power plant	0.4	3.5	4.9
	Solar power	0	0.2	0.5
	Other renewables	0.1	0.2	0.5

The 6th Development Plan

The overall objective: Balanced and Sustainable Development of Power Sector

Strategies:

Diversification of primary energy sources and power generation technologies

Upgrading of power generation capability from renewable energy resources

Reduction of environmental pollution

Executive Policies:

- Expansion of non-governmental sector contribution in renewable energy production
- Guaranteed purchase of generated power from renewable resources
- Financial support of renewable energy development

In order to increase the renewable energy share, diversification of power generation, reduction in pollution and improvement of the scientific capabilities in the Iranian energy market, the following policies will be implemented:

A. The state shall plan for increasing the renewable energy share in the national energy basket to at least 5% during the 6th Development Plan, with priority given to the private sector investors and maximization of using home made components of the plants.

B. Ministry of Energy will be responsible to purchase the power generated in renewable energy facilities based on adopted Tariffs or shall grant export license to the generated electricity with no transmission charges.

Ministry of Energy is allowed to finance development, upgrading and maintenance of rural power distribution networks and to purchase renewable energies by taxing Non-rural consumers. The taxing rate will be recommended by the Ministry of Energy each year, subject to approval by the council of ministers. Renewable tax revenues, transferable to the next fiscal year, shall be deposited to TAVANIR account in the National Treasury and shall be spent exclusively on upgrading, expansion and maintenance of the rural power network and subsidizing the renewable generated power.

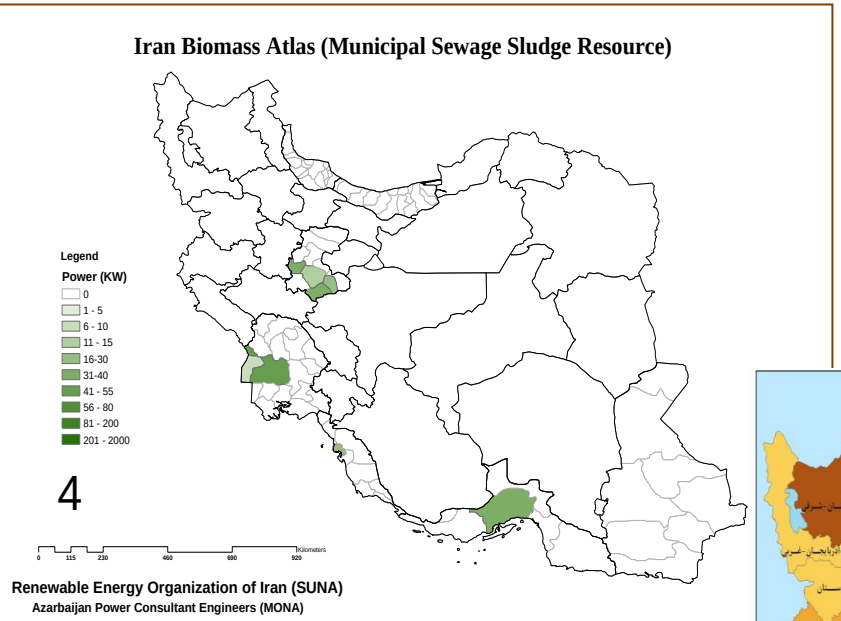
The Ministry of Energy shall bind the construction permit of non-governmental thermal power plants with capacity greater than 100 MW to simultaneous installation of a renewable power plant with a capacity equivalent to %3 of the nominal capacity of the thermal plant.

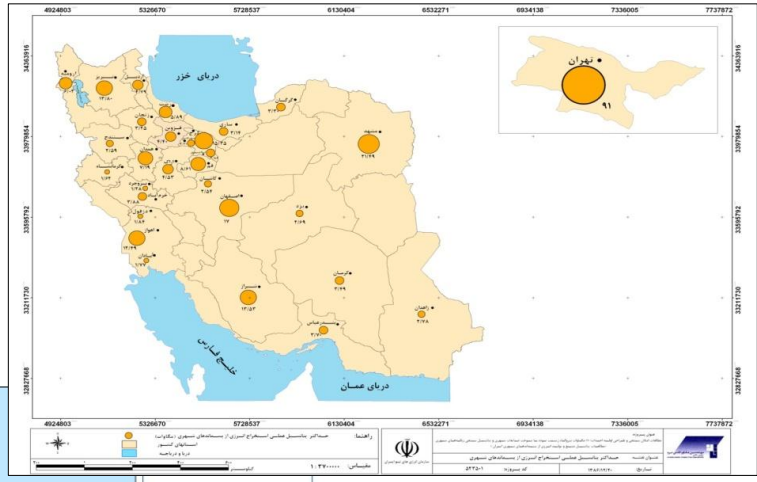
From the beginning of the second year of the 6th Development Plan, those power plants which do not comply with/ or do not meet the standards set forth by the Department of the Environment, shall install renewable energy plants equivalent to 10% of their real market share.

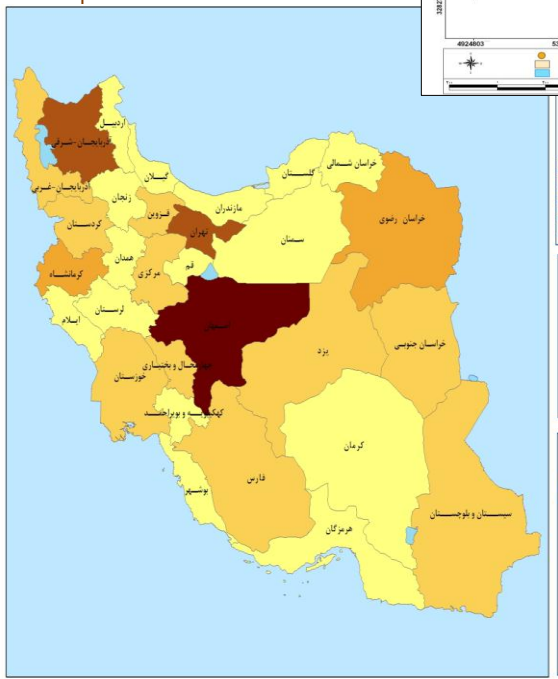
Note 1: The Ministry of Energy shall purchase renewable power generated by these plants based on approved tariffs or grant them the export license for the renewable power generated without transmission charges.

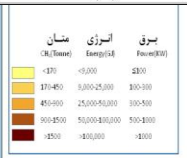
Note 2: In absence of renewable energy generation according to the issued licenses, a penalty will be slapped against the power plant, whose value will be determined based on the average production factor of the private renewable energy plants subject to the last fiscal year’s purchasing tariffs from the renewable power generation facilities.

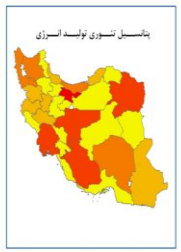
Atlas Maps in Energy Potential of Urban Wastes in Iran



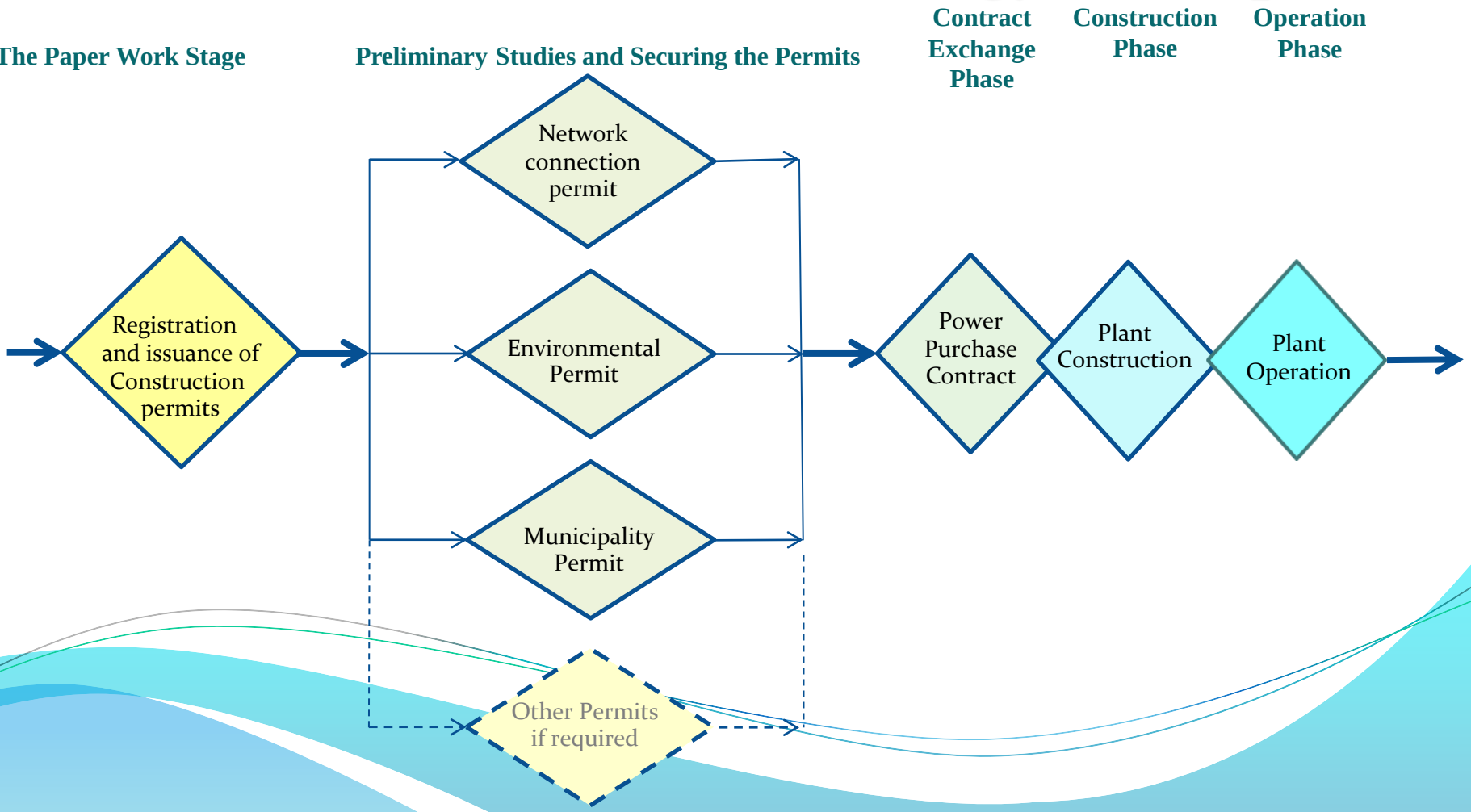








Schematic Operational Procedure Diagram for Investment in Renewable Energy Powerplants



Subject to Additionality Rules and Using International Incentives

Stated List of Priorities for Low Carbon

- Annual efficiency improvement in the power plants by 1% on average, 5 years, MOE, DOE
- Energy transmission loss reduction by 1% each year, 5 years, MOE, DOE
- Landuse standards declaration for small scale CHP and CCHP installation in cities based on environmental and ecological capacity, 6 months, DOE

Continued

- Increase of electricity production capacity from renewable sources to the tune of 1000 MW/year, 5 years, MOE, DOE
- Household organic waste collection and landfill system improvement and renewable energy development in 10% of the landfill locations, 5 years, MOI, DOE

Continued

- Forestation of 200,000 ha/year, 5 years, MOJA, DOE
- Improvement and upgrading of pastureland, 200,000 ha/year, 5 years, MOJA, DOE
- Decommissioning of old cars (mini trucks and sedans), 5 years, 200,000/year, Transportation & Fuel Authority, MIMT, Customs
- Renovation of the national inter-city transport vehicles (10,000 buses, 28,000 mini-buses) 5years, Ministry of Transportation and Urban Development, MIMT, DOE

Continued

- Renovation of City Public Transport buses (17,000 buses, one & two wagons), 5 years, MOI, MIMT, DOE
- Renovation of truck transportation fleet of the country 41,000 trucks < 19 tons, 13,000 trucks > 19 tons, 18,000 trailers, 5 years, Ministry of Transportation and Urban Development, MOPA, DOE, Standards Institute

Continued

- Manufacturing of 60,000 light diesel cars by the end of 2016 and 120,000 after that, MIMT, DOE, MOP, Standards Institute
- Manufacturing of electric and hybrid cars, 10,000 by the end of 2016 and 15,000 afterwards, MIMT, DOE, MOE, Standards Institute
- Manufacturing of gas powered/engine cars, 180,000 units, 5 years, MIMT, DOE, MOP

Continued

- Manufacturing of electric motorcycles, 500,000 units, 5 years, MIMT, DOE, MOE, Standards Institute
- Renovation and expansion of the country's rail navigation system, 5,000 wagons (4300 inner city transport, 700 inter city), 27,500 for goods transport, by 2019, Ministry of Transportation and Urban Development, DOE, MIMT

Continued

- Renovation of agricultural machines, 50,000 tractors and 500 combines, 5 years, MOJA, DOE, MIMT
- Manufacturing of 2 million more energy efficient stoves (C-Grade), till 2018, MIMT, DOE, MOP, Standard Institute
- Manufacturing of 1.2 million energy efficient refrigerators (A-Grade), 5 years, MIMT, DOE, MOE, Standard Institute

Continued

- Manufacturing of 1.5 million more energy efficient cooler electromotors and pumps, 5 years, MIMT, DOE, MOE, Standards Institute
- Development of 500,000 kW photovoltaic electricity with priority given to 340,000 households, 5 years, MOE, MOP, DOE, MIMT, Ministry of Transportation and Urban Development

Continued

- Development of 1000 MW collector heat capacity with priority given to 340,000 households (~3kWh/family), 5 years, MOE, MOP, DOE, MIMT, Ministry of Transportation and Urban Development
- Energy efficient lamp production (Low Energy LED) 100 million lights, 5 years, MIMT, MOE, DOE

A Vital Need!

A Reshaping of the Shares of Agriculture, Industries and Services is a Key Requirement of Preservation of Iran's Energy, Water and Other Natural Resources, and Hence Moving in Direction of Green and Low Carbon Economy. This Requires Elimination of All Sanctions and Recognition of Special Status for Iran Which Was Cut off from the First Round of Using the International Green Economy Incentives Due to Sanctions. A Strengthening of the Service Sector and Energy Efficient Industries Will Follow.

Comparison of Iran's GDP

Rank	Country	Nominal GDP	Agr. %	Industry %	Services %	Agr. Net	Ind. Net	Services Net
0	World	71,707,302	5.90%	30.50%	63.60%	4,230,731	21,870,727	45,605,844
1	United States	15,684,750	1.12%	19.10%	79.70%	188,217	2,995,787	12,500,746
2	China	9,181,377	10.00%	43.90%	46.10%	918,138	3,611,671	3,792,665
3	Japan	5,963,969	1.20%	27.50%	71.40%	71,568	1,640,091	4,258,274
4	Germany	3,400,579	0.80%	28.10%	71.10%	27,205	955,563	2,417,812
5	France	2,608,699	1.90%	18.30%	79.80%	49,565	477,392	2,081,742
6	United Kingdom	2,440,505	0.70%	21%	78.30%	17,084	512,506	1,910,915
7	Brazil	2,395,968	5.40%	27.40%	67.20%	129,382	656,495	1,610,090
8	Russia	2,021,960	3.90%	36%	60.10%	78,856	727,906	1,215,198
25	Iran	482,445	11.20%	40.60%	48.20%	54,034	195,873	232,538

Share of agriculture in GDP

Rank	Country	Nominal GDP	Agr. %	ndustry %	Services%	Agr. Net	Ind. Net	Services Net
1	India	1,841,710	17.40%	25.80%	56.90%	320,458	475,161	1,047,933
2	Indonesia	894,854	14.30%	46.90%	38.80%	127,964	419,687	347,203
3	Iran	482,445	11.20%	40.60%	48.20%	54,034	195,873	232,538
4	China	9,181,377	10.00%	43.90%	46.10%	918,138	3,611,671	3,792,665
5	Turkey	783,064	8.90%	28.10%	63%	69,693	220,041	493,330
6	World	**71,707,302**	**5.90%**	**30.50%**	**63.60%**	**4,230,731**	**21,870,727**	**45,605,844**
21	Switzerland	622,855	1.30%	27.70%	71%	8,097	172,531	442,227
22	Japan	5,963,969	1.20%	27.50%	71.40%	71,568	1,640,091	4,258,274
23	United States	15,684,750	1.12%	19.10%	79.70%	188,217	2,995,787	12,500,746
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25	United Kingdom	2,440,505	0.70%	21%	78.30%	17,084	512,506	1,910,915
26	Belgium	513,396	0.70%	21.60%	77.70%	3,594	110,894	398,909

Share of industry in the GDP

Rank	Country	Nominal GDP	Agr. %	Industry %	Services%	Agr. Net	Ind. Net	Services Net
1	Saudi Arabia	657,049	2%	66.90%	31.10%	13,141	439,566	204,342
2	Indonesia	894,854	14.30%	46.90%	38.80%	127,964	419,687	347,203
3	China	9,181,377	10.00%	43.90%	46.10%	918,138	3,611,671	3,792,665
4	Iran	482,445	11.20%	40.60%	48.20%	54,034	195,873	232,538
5	South Korea	1,151,271	2.70%	39.80%	57.50%	31,084	458,206	661,981
22	Netherlands	770,224	2.80%	24.10%	73.20%	21,566	185,624	563,804
23	Belgium	513,396	0.70%	21.60%	77.70%	3,594	110,894	398,909
24	United Kingdom	2,440,505	0.70%	21%	78.30%	17,084	512,506	1,910,915
25	United States	15,684,750	1.12%	19.10%	79.70%	188,217	2,995,787	12,500,746
26	France	2,608,699	1.90%	18.30%	79.80%	49,565	477,392	2,081,742

Share of services in GDP

Rank	Country	Nominal GDP	Agr. %	Industry %	Services %	Agr. Net	Ind. Net	Services Net
1	France	2,608,699	1.90%	18.30%	79.80%	49,565	477,392	2,081,742
2	United States	15,684,750	1.12%	19.10%	79.70%	188,217	2,995,787	12,500,746
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24	China	9,181,377	10.00%	43.90%	46.10%	918,138	3,611,671	3,792,665
25	Indonesia	894,854	14.30%	46.90%	38.80%	127,964	419,687	347,203
26	Saudi Arabia	657,049	2%	66.90%	31.10%	13,141	439,566	204,342

Thanks for

your kind attention