

Sector fiche – IPA National programmes / Component I

1. IDENTIFICATION

Title	Energy
MIPD Sector Code	5. Energy
ELARG Statistical code	Measure 1: Energy Efficiency: 15 Energy Measure 2: Renewable Energy: 15 Energy Measure 3: Electricity and Gas Market Development: 15 Energy Measure 4. Long-term energy scenarios, capacity building and establishment of an Energy Electronic Data Centre: 15 Energy Measure 5. Improvement of Nuclear Safety Regulatory Infrastructure : 15 Energy Measure 6: Awareness raising among all relevant Stakeholders: 15 Energy
DAC Sector code	23010
Total cost (VAT excluded)¹	€ 39,130,488
EU contribution	€ 39,035,378
Management mode	Joint Management / Decentralized Management
<i>Centralised mngmt:</i> EU Delegation in charge <i>Decentralised mngmt:</i> Responsible Unit or National Authority/Implementing Agency(ies)	Beneficiary: Ministry of Energy and Natural Resources (MENR) Implementing Agencies: EBRD, World Bank, CFCU
Implementation management	Mr. Sefa Sadık Aytekin Deputy Undersecretary Ministry of energy and Natural Resources
Implementing modality	Trust Fund and Twinning
Zone benefiting from the action(s)	Turkey

2 RATIONALE

2.1 LINKS WITH NATIONAL SECTOR OBJECTIVE(S) AND MIPD SECTOR OBJECTIVE(S)

¹ The total cost should be net of VAT and/or of other taxes. Should this not be the case, clearly indicate the amount of VAT and the reasons why it is considered eligible.

Turkey is one of the world's fastest growing energy economies. Both primary energy and electricity demand are increasing rapidly in parallel with growing economy and rising social wealth. Turkey's strategies in the energy policy are outlined in six different strategies/plans: Electricity Market and Security of Supply Strategy Paper, MENR 2010-2014 Strategic Plan, Energy Efficiency Strategy, Ninth Development Plan 2007-2013, National Climate Change Strategy 2010–2020 and National Climate Change Action Plan (prepared by Ministry of Environment and Urbanisation, MoEU), which describe the main objectives to meet the energy needs of economic growth and social development. In addition, within the EU-Turkey Financial Cooperation, an Energy Sector Alignment Strategy, which summarises and sets the priorities of the abovementioned strategies, has been recently issued by the Ministry for European Union Affairs (MEUA). By completing the energy sector liberalization process, Turkey aims at establishing a well-functioning, free and competitive energy market.

In recent years, Turkey has also concentrated on increasing the use of national energy resources in a cost-effective manner. This requires sustainable private sector investments and a well-functioning and regulated energy market, while limiting environmental damage, reducing greenhouse gas emissions, and increasing energy efficiency. In this context, the improvement of nuclear safety is of paramount importance to ensure compliance with the *acquis* in this area.

Energy is the 15th chapter of the accession negotiations. The opening of the chapter to negotiations is currently blocked in the Council.

Energy is a priority sector in the Multi-annual Indicative Planning Document (MIPD) 2011-2013. Setting up priorities similar to those of Turkey's own policy objectives, in the MIPD the following are the specific objectives for the Energy sector:

- increased capacity and better alignment in the energy efficiency field
- further alignment with and implementation of *acquis* on the internal gas and electricity market
- to bring nuclear safety in line with EU standards.

Related indicators in the MIPD are:

- Promoted energy efficiency and renewable energies.
- Activities completed to support alignment with and implementation of *acquis* on the internal gas and electricity market, cross border exchanges in electricity, and gas transmission.
- Supported nuclear safety, in particular through the safe management of spent fuel and radioactive waste.

Moreover, energy efficiency, effective use of renewable energy sources, alignment and capacity building for the implementation of fair and non-discriminatory rules in internal energy markets are also prioritized in Annual Progress Report (2012), Accession Partnership (AP) document and in Turkish NPAA. Support in this sector is also strongly contributing to the Europe 2020 and 2050 strategies and related climate change targets by supporting the reduction of greenhouse gases, increased use of renewable resources and the promotion of energy efficiency. The relevant EU targets are:

- greenhouse gas emissions 20% (or even 30%, if the conditions are right) lower than 1990;
- 20% of energy from renewables;
- 20% increase in energy efficiency.

2.2 SECTOR ASSESSMENT – POLICIES AND CHALLENGES

2.2.1 National Sector Policy, Strategy and Context

Strategic planning for energy sector is linked to resource allocation. The share for energy sector in total budgetary allocation for public investments is 13.6 % for the year 2012. Further information is to be seen on section 2.2.3.

Energy efficiency, renewable energy, development of internal electricity and gas markets and nuclear safety and radiation protection are among the highest priorities of Turkey's energy policy and strategies mentioned under section 2.1.

Firstly, *energy efficiency and renewable energy* are prioritized in Turkey's energy policy. National strategies and development plan include specific short, medium and long term targets and goals for reducing primary energy intensity and energy losses, decreasing energy demand and GHG emissions, increasing the share of renewable energy sources in electricity production, institutional capacity building, awareness raising, creating market mechanisms for financing energy efficiency and renewable energy sources. The Energy Efficiency Strategy Paper was published in the Official Gazette on February 25, 2012. The strategy has been prepared with the cooperation of all stakeholders including public and private sector, NGOs and aims at reducing energy intensity by 20 % per GDP until 2023; and energy losses in industry and service sectors, decreasing energy demand and carbon emissions of buildings, providing 30% of total electricity production from renewables, efficient use of energy in the public sector, strengthening of institutional structures, capacities and cooperation, employing advanced technologies and increasing awareness raising activities, creating other financing sources than public sources, are highlighted as strategic goals. A set of supporting secondary regulations are under development to provide additional details on implementation of the Law and the Strategy Paper. Moreover, Turkey has undergone an institutional restructuring, establishing "DG Renewable Energy" (YEGM), in order to develop and intensify the studies on legislative framework in the realms of Renewable Energy (RE) and Energy Efficiency (EE). And with regard to renewable energy, in recent years Turkey has made important steps regarding both primary and secondary legislation, to strengthen the EE and RE market in Turkey.

Secondly, *acquis alignment in energy sector* is also referred as a priority in national strategies. Both under relevant legislation and in national strategies and development plan, relevant targets are envisaged for developing internal energy markets, including privatization of public electricity generation and distribution facilities, construction of transit gas pipelines, integration to ENTSO-E system, institutional capacity building.

Thirdly, bringing *nuclear safety* in line with EU standards is also an important issue for Turkey. Turkey is party to the Convention on Nuclear Safety. Necessary and sufficient secondary legislation is in place which has been prepared based on the recommendations of the International Commission on Radiological Protection and the International Atomic Energy Agency. The regulation on High-activity Sealed Radioactive Sources and Orphan Sources has been published in 2009. Another regulation to protect outside workers from the risks of ionizing radiation was published in 2011. Compliance of the existing regulations with the EU acquis still needs to be verified.

2.2.2 Sector and Donor Coordination

Donors active in the area of energy include but are not limited to the World Bank, EBRD, EIB, KfW, AFD, GIZ, JICA, and United Nations Development Program (UNDP).

The sector coordination, including the international finance institutions has always been an active tool of implementation in terms of grant applications as well as donor coordination arrangements for the state actors in Turkey. The IFI financing will be integrated as a new element into EU - IPA perspective. The facilitation options of this new opportunity have been consulted with all the related actors on the Turkish and European sides. The relations with the non-state actors have been coordinated under the leadership of the relevant sector public institutions in Turkey. This active relationship and coordination of IFI's will be strengthened through IPA.

Under the coordination of the MEUA and in cooperation with the Commission, a working group consisting of representatives from line institutions, NGOs, universities, international organizations (e.g. UNDP) and IFIs (e.g. World Bank) has been established in order to establish the state of play as regards legislative alignment and implementation, to present a gap assessment, and then to identify the actions, including the projects to be implemented, to be taken to fill this gap. EC pre-accession financial assistance will contribute to actions to be taken to fill this identified gap. The outcomes of the Working Group are laid down in EU-Turkey Financial Cooperation – Energy Sector Alignment Strategy (SAS), which is a living document. This working group has conducted four meetings from July 2011 to August 2012 with the participation of the representatives from line institutions, NGOs, universities, international organizations (e.g. UNDP) and IFIs (e.g. the World Bank) on SAS and additionally two Working Groups on Sector Identification Fiche on May 2012 and August 2012. For the upcoming IPA II period, MENR is willing to take on responsibility as lead institution for the energy sector, including for needs analysis, preparation of future programming documents and organization of a sector working groups.

While bilateral coordination mechanisms are in place between the Government (with the leadership of the Treasury), World Bank, IFC, and various other IFIs and donors, a Steering Committee under the leadership of MENR will be established for the IPA 2012 energy project of which this IPA 2013 sector intervention is a continuation. MEUA, Undersecretariat of Treasury, EU Delegation to Turkey and World Bank (WB) will be members while related state bodies and EBRD, EIB and IFC and potentially others will participate as observers. In 2013 programming the experience gained in 2012 project's Steering Committee will be enhanced through a much more comprehensive inclusion of the IFIs and other relevant stakeholders. In IPA II programming, the Steering Committee could evolve towards a Sector Committee under the leadership of MENR. Activities geared towards the industrial and building end users and financiers and ESCOs would be open to all interested participants to ensure the benefits span all parties and donor programs. A consolidated role by MENR's new General Directorate for Renewable Energy, now responsible for all renewable and energy efficiency activities, will also help bring various policy initiatives together, and help coordinate the various initiatives in the same sectors.

In the context of this intervention, the division of labor between EBRD and World Bank is as follows regarding the Energy Efficiency and Renewable Energy measures:

Under the Energy Efficiency measure, EBRD funds are delivered through 5 private sector banks whereas World Bank funds are delivered through 3 state-owned banks which are under the Treasury's guarantee. In order for both state-owned and private commercial banks to be involved in the project, both IFIs that provide loans for EE investments to these banks must be included in the

tendering/procurement activities under this measure. Therefore, both IFIs will be actively involved in the tendering/procurement process under this measure by tendering and procuring for the same activities to which the extent of the budget will allow them to deliver the services. Thus, two contracts will be taken care of by the two IFIs separately but for the exactly same activities. Guidelines of the two IFIs do not allow for each other's rules to be applied to the tendering and procurement at the same time. Hence, in order for the 5 private and 3 state-owned banks which will actually deliver the loans to the investors to proceed, the two contracts will be implemented by EBRD and World Bank separately.

As regards the Renewable Energy measure, since EBRD has an ongoing process of providing funds for renewable energy investments but World Bank does not, the contract for the Renewable Energy measure will be implemented by EBRD.

To conclude, the technical assistance obtained through the IPA intervention will play a facilitating role in increasing the access and eligibility of the SMEs, real and legal persons and municipalities as regards IFI loans. In order to apply for EE and RE investment loans provided by IFIs through commercial banks, SMEs real and legal persons, and municipalities have been facing serious shortcomings, particularly in the preparation of documentation and development of Business Development plans, which are compulsory for the acquisition of IFI loans. As the leading fund providers in EE and RE investments in Turkey, WB and EBRD have been experiencing certain difficulties in implementing their lending programs due to the deficiencies in SMEs applications. Therefore, involvement of WB and EBRD in the technical assistance activities of this IPA project will facilitate effective implementation of their loan programmes, as well as increasing EE and RE investments throughout the country. In this context, all the studies which will be completed under this measure are going to be financed by the aforementioned IFIs. Outcomes of this IPA intervention will pave the way for IFIs to prepare their loan programmes for future terms in Turkey with further accuracy and effectiveness, which will contribute meaningfully to Turkey's EE and RE investments by the private sector participants for the coming decades.

2.2.3 Sector Budget and Medium Term Perspective

Turkey's Public Financial Management and Control Law no: 5018, requires the annual preparation of the Medium Term Programme (MTP) for a three year perspective. Moreover, Medium Term Fiscal Plans (MTFP) are developed by the Ministry of Development (MoD). The budget proposals of public institutions are assessed on the basis of priorities provided in these documents, which are shared with them and accordingly, allocations are made. These documents take into account EU accession requirements as well. In compliance with MTFP, MENR 2010-2014 Strategic Plan has a 'Costing' section which sets out budget forecasts intended for aims and targets included in the plan. During the assessment of the costs, the entire Ministry budget (estimated budget) is distributed according to the aims and targets that are affiliated.

AIMS	TARGETS	ESTIMATED COST (1,000 TL.)					
		2010	2011	2012	2013	2014	TOTAL
	<i>Target 1.1</i>	34,800	38,280	42,108	46,319	50,951	212,457

AIM – 1 (Providing Diversity in Resources by Giving Priority to the Domestic Resources)	(The domestic oil, natural gas and coal exploration works will be increased.)						
	<i>Target 1.2</i> (The domestic coal thermal plants of 3,500 Mega Watt (MW) will be completed by 2013.)	20,880	22,968	25,265	27,791	30,570*	127,474
	<i>Target 1.3</i> (By the year 2014, the construction of nuclear plant will start.)	13,920	15,312	16,843	18,528	20,380	84,983
	TOTAL	69,600	76,560	84,216	92,638	101,901	424,914
AIM – 2 (Increasing the share of the renewable energy resources within the energy supply)	<i>Target 2.1</i> (The hydroelectricity plans of 5,000 MW will be completed by 2013.)	21,270	23,400	25,740	28,310	31,150	129,870
	<i>Target 2.2</i> (The wind plant installed capacity will be increased up to 10,000 MW by the year 2015.)	34,030	37,430	41,180	45,290	49,830	207,760
	<i>Target 2.3</i> (The installed capacity for the geothermal plant will be increased up to 300 MW until 2015.)	8,510	9,360	10,300	11,330	12,470	51,970
	TOTAL	63,810	70,190	77,220	84,930	93,450	389,600
AIM – 3 (Increasing Energy Efficiency)	<i>Target 3.1</i> (10 percent of reduction in comparison to the year 2008 will be secured by the year 2015.)	39,150	43,080	47,380	52,120	57,330	239,060
	<i>Target 3.2</i> (The completion of the maintenance, rehabilitation and modernization studies conducted for increasing the efficiency and production capacity through the use of new technologies in the existing state owned electricity production plants by the end of 2014 will be secured.)	13,050	14,370	15,800	17,380	19,120	79,720

	TOTAL	52,200	57,450	63,180	69,500	76,450	318,780
AIM – 4 (Making the free market conditions operate fully and providing for the improvement of the investment environment)	<i>Target 4.1</i> (By the year 2014, the targeted privatizations in the electricity sector will be completed.)	9,280	10,208	11,229	12,352	13,587	56,655
	<i>Target 4.2</i> (By the year 2015, the formation of the market structure that works as based on competition will be secured.)	23,200	25,520	28,072	30,879	33,967	141,638
	<i>Target 4.3.</i> (By the year 2015, the formation of the market structure that works as based on competition will be secured in the natural gas sector.)	13,920	15,312	16,843	18,528	20,380	84,983
	TOTAL	46,400	51,040	56,144	61,758	67,934	283,276
AIM – 5 (Providing the diversity of resources in the area of oil and natural gas and taking the measures for reducing the risks due to importation)	<i>Target 5.1</i> (By the year 2015, the external crude oil and natural gas production will be redoubled in comparison to the production amounts in 2008.)	6,960	7,660	8,430	9,270	10,200	42,520
	<i>Target 5.2</i> (The existing natural gas storage capacity which is 2,1 billion m ³ in 2009 will be redoubled by 2015.)	16,240	17,864	19,650	21,615	23,777	99,147
	<i>Target 5.3</i> (In natural gas imports, by the year 2015, we will decrease the share of the country from which the highest amount of import is made and the diversity of source countries will be provided.)	16,240	17,864	19,650	21,615	23,777	99,147
	<i>Target 5.4</i> (The sustainability of the storage of the national oil stocks at a secure level will be provided)	8,120	8,932	9,825	10,808	11,888	49,573
	TOTAL	47,560	52,320	57,556	63,309	69,642	290,387

Annex — Template of the Sector fiche for IPA national programmes / component I -
centralised and decentralised management

AIM – 6 <i>(Turning our country into an energy hub and terminal by using our geo-strategic position effectively within the framework of the regional cooperation processes)</i>	<i>Target 6.1</i> (By the year 2015, the implementation of the projects on the agenda for the increase of the oil and natural gas supply security of our country and Europe will be secured.)	18,560	20,420	22,470	24,710	27,180	113,340
	<i>Target 6.2</i> (By the year 2015, the amount of oil received in Ceyhan will be redoubled compared to the amount in 2008.)	6,960	7,660	8,430	9,270	10,200	42,520
	<i>Target 6.3</i> (Ceyhan Region will be turned into an integrated energy terminal where various quality and feature of crude oil may be offered for international markets, and where a refinery, petrochemicals facilities and liquefied natural gas (LNG) exportation terminal will be available.)	12,760	14,040	15,450	16,990	18,690	77,930
	<i>Target 6.4</i> (By the year 2011, full integration into UCTE will be provided.)	12,760	14,040	15,450	16,990	18,690	77,930
	TOTAL	51,040	56,160	61,800	67,960	74,760	311,720
AIM – 7 <i>(Minimizing the negative environmental impacts of the activities in the energy and natural resources area)</i>	<i>Target 7.1</i> (After the year 2014, reduction will be achieved in the rise of greenhouse gas emission arising from the energy sector operations.)	8,120	8,932	9,825	10,808	11,888	49,573
	<i>Target 7.2</i> (By the year 2015, the environmental compliance plan supervision will be conducted on 10 thousand mining operations in the mining market.)	32,480	35,728	39,300	43,231	47,554	198,294
	TOTAL	40,600	44,660	49,126	54,039	59,442	247,867
AIM – 8 <i>(Increasing</i>	<i>Target 8.1</i> (By the year 2013, the conduction of the mining transactions will be provided	39,730	43,710	48,290	52,890	58,180	242,800

<i>the contribution of our natural resources into the national economy)</i>	within the scope of e-state.)						
	<i>Target 8.2</i> (By the year 2015, our total mining production will be redoubled in comparison to 2008.)	21,170	23,300	25,830	28,190	31,010	129,500
	TOTAL	60,900	67,010	74,120	81,080	89,190	372,300
AIM – 9 <i>(Increasing the production of our industrial raw material, metal and non-metal mineral reserves and providing for their utilization on a national scale)</i>	<i>Target 9.1</i> (The boron chemicals and equivalent products capacity, which was 1,3 million tons in the year 2009 will be increased up to 2.8 million tons by the year 2015.)	23,490	25,850	28,630	31,270	34,400	143,640
	<i>Target 9.2</i> (By the year 2015, efforts will be made for increasing the marble and natural stone processed product exportation up to 5 billion dollars.)	14,210	15,640	17,410	18,920	20,810	86,990
	TOTAL	37,700	41,490	46,040	50,190	55,210	230,630
AIM – 10 <i>(Increasing the effectiveness in the management of energy and natural</i>	<i>Target 10.1</i> (By the year 2011, the restructuring works of our ministry will be completed and a career structure that is based on specialization will be adopted.)	37,700	41,470	45,617	50,179	55,197	230,163
	<i>Target 10.2</i> (For the purpose of rendering the structure of specialization and conducting strategic researches in the area of energy, by the year 2015, an “Energy Academy” will be established.)	3,770	4,147	4,562	5,018	5,520	23,017
	<i>Target 10.3</i> (By the year 2012, institutional regulations will be made for increasing effectiveness in the license and supervision transactions for mining sector.)	11,310	12,441	13,685	15,054	16,559	69,049
	<i>Target 10.4</i>	7,540	8,294	9,123	10,036	11,039	46,032

<i>resources)</i>	(By the year 2012, institutional structuring for nuclear regulation will be provided.)						
	<i>Target 10.5</i> (By the year 2012, the studies for strengthening the statistics and planning infrastructure in the areas of energy and natural resources will be completed.)	15,080	16,588	18,247	20,071	22,079	92,065
	TOTAL	75,400	82,940	91,234	100,358	110,394	460,326
AIM – 11 (Being the pioneer and supporter of innovation in the area of energy and natural resources)	<i>Target 11.1</i> (In the year 2010, the EN-AR (Energy Researches) Program will be put into practice and by the year 2014, support worth TL 50 million will be supplied.)	20,880	22,968	25,265	27,791	30,570	127,474
	<i>Target 11.2</i> (100 percent of increase in the R&D investments conducted by the related and affiliated institutions by the year 2015, compared to the R&D investments in 2009.)	13,920	15,312	16,843	18,528	20,380	84,983
	TOTAL	34,800	38,280	42,108	46,319	50,951	212,457
GENERAL TOTAL		580,000	638,000	702,744	772,000	849,323	3,542,067

MTFPs cover the future investment allocations for various sectors including electrical energy, natural gas and petroleum exploration. However, budget allocation is performed with respect to governmental entities instead of the sector itself. By taking this issue into consideration it can be said that:

- i) Declared policies and national budgets/MTFPs have been mostly consistent in the last few years,
- ii) Both MTPs and MTFPs are technical documents approved by the government,
- iii) IPA sector plans can boost up the reliability of specific sectoral targets mentioned in MTPs,
- iv) Current declared policy documents (annual programs, national strategy documents, etc.) are mainly consistent with MTFPs. When additional funding is needed to fulfil some specific objectives, it is possible to change the coming year's MTFPs.

Distribution of all allocations can be seen in the following table. Please note that numbers belonging to 2012 indicate the initial allocations and total investment budgets of the some of the entities may increase during the year. On the other hand, forecasted numbers belonging to 2013 and 2014 are derived from both 2012 MTFP issued in 2011 and Ministry of Development's web-based prediction and monitoring system. Euro ²			
	2012	2013 (Forecast)	2014 (Forecast)
DSİ (General Directorate of State Hydraulic Works)	719,421,306.4	807,765,892	890,572,117.5
Ministry of Energy and Natural Resources	12,056,115.7	11,075,405.5	12,210,872.4
South-Eastern Anatolia Project Regional Development Adm.	688,294.6	772,906.6	852,257.8
TCK (General Directorate of Highways)	23,673,827.3	26,580,885.6	29,305,567.7
Ministry of Environment and Urbanization	2,740,026.3	3,076,282.3	3,391,495
TEİAŞ (Turkish Electricity Transmission Company)	284,962,735.6	306,882,946.1	350,723,367
EÜAŞ (Electricity Generation Company)	372,643,577.4	398,947,830	482,244,629.5
TETAŞ (Turkish Electricity Trade and Contracting Co. Inc.)	1,128,890.8	909,688.7	909,688.7
ADÜAŞ (Ankara Electricity Generation and Trade Company)	17,536.2	17,536.2	17,536.2
TEDAŞ (Turkish Electricity Distribution Company)	328,803,156.5	-	-
BOTAŞ (Petroleum Pipeline)	219,202,104.3	149,057,431	138,097,325.7

² The Exchange rate used in calculations is as 1 Euro=2,281 TL, as of 5.11.2012.

Corporation)			
TPAO (Turkish Petroleum Corporation)	314,774,221.8	482,244,629.6	1,315,212,626
ENERGY TOTAL	2,280,111,793	2,187,331,433.6	3,223,537,483.5

Total budgetary allocation for public investments is 16,733,351,161.8 Euro for the year 2012 in which the share for energy sector is 2,280,111,793.1 Euro (13,6 % of total public investments). For the year 2013 2,187,331,433.6 Euro and for the year 2014 3,223,537,483.56 Euro are projected to be allocated from investment subsidies.

2.2.4 Sector Monitoring System

Monitoring and evaluation structure of the projects conducted under IPA is defined in the Prime Ministry Circular No. 2009/18. Project monitoring and evaluation within the scope of IPA 1st component is under the responsibility of MEUA. Monitoring committees have been established to carry out the tasks defined in the Framework Agreement, Sectoral Agreement and Financing Agreement. Besides, at sub-sector level there have also been Sectoral Monitoring Sub-Committees (SMSC) established under component-I. SMSC for energy sector (SMSC 5) have been established in accordance with the MIPD document. The latest Energy SMSC meetings were held in Ankara, on 28 May and 19 November 2012 with the participation of the representatives from line institutions which have different projects funded under IPA I. SMSC meetings provide support to Joint Monitoring Committee (JMC) meetings. The SMSC meetings are organized twice a year and provide implementable operational conclusions.

Apart from the SMSC process, the MENR will conduct studies on the impact analysis regarding in particular IPA projects of the energy sector whose outcomes will contribute to the sector monitoring system and evaluation. Additionally, the coordination and monitoring of the IFI financing in the energy sector will be fulfilled by MENR in cooperation with the Undersecretariat of Treasury.

2.2.5 Institutional Setting

All relevant institutions contribute the realization of the **national outputs** envisaged for the sector in the national strategy documents in accordance with the responsibilities and rights given to them which are also summarized below. Regarding the capacity of the key sector organizations, some institutions need further strengthening of their capacity as mentioned below.

The Energy Sector is governed by a very large number of institutions. The main actor is the Ministry of Energy and Natural Resources (MENR) which is responsible for development of policy, legislating and enforcement of legislation in all areas of the sector. The purpose of the MENR is to help define targets and policies related to energy and natural resources in a way that serves and guarantees the defence of the country, security, welfare, and strengthening of the national economy; and to ensure that energy and natural resources are researched, developed, generated and consumed in a way that is compatible with said targets and policies.

Turkish Electricity Transmission Co. (TEİAŞ), being a state owned enterprise, takes over all the transmission facilities in the country and carries out the planning of load dispatch and operation services. TEİAŞ will contribute to the activities in the energy exchange technical assistance.

Directorate General for Renewable Energy (Former General Directorate of Electrical Power Resources Survey & Development Administration - EIE) is responsible for utilization of new and renewable energy (RE) resources and preparation of pilot projects, providing necessary consultancy for improvement of energy efficiency (EE) and utilization renewable energy, awareness raising regarding EE in industry and buildings, determining RE and EE targets and projections for Turkey. For the improvement of the energy efficiency and utilization of renewable energy in electricity generation, heating/cooling and transportation, the institutional and infrastructural capacity of the Directorate General for Renewable Energy should be improved.

Directorate General for Petroleum Affairs (PIGM), is responsible for determining the strategies and policies regarding petroleum, regulating and monitoring petroleum exploration and operation activities and collecting and archiving the relevant information, granting exploration licenses, examining the applications for the ownership of petroleum rights. For ensuring better operation in the upstream hydrocarbon market and providing non-discriminatory access, necessary institutional needs including particularly the national digitalized petroleum archive is of paramount importance.

Directorate General for Foreign Affairs and EU is responsible for the management, supervision and coordination of the EU relations of the Ministry, including all the attached and related institutions. The development, improvement and enhancement of the projects for the MENR under IPA are under the responsibility of the General Directorate. For renewable energy and energy efficiency, the capacity of the Directorate General should be improved for providing international financing and better involvement of and cooperation with the private sector and coordination of all relevant activities and stakeholders including between relevant operational units of MENR and other parties.

Petroleum Pipeline Corporation (BOTAŞ) is a related institution of MENR. Because of Turkey's increasing need for diversified energy sources, since 1987 BOTAŞ has expanded its original purpose of transporting crude oil through pipelines to cover natural gas transportation and trade activities, therefore becoming a trading company. The institutional capacity of BOTAŞ as a transmission system operator should be improved by technical assistance for the necessary infrastructural needs including in particular the SCADA system.

Turkish Atomic Energy Authority (TAEK) is an institution attached to MENR. The main duties of the TAEK include outlining the national policy, relevant plans and programmes regarding the peaceful utilization of nuclear energy, R&D activities; giving approvals, permissions and licences related with electricity generation from nuclear energy, taking the necessary measures regarding process, transport and storage of the radioactive wastes of the nuclear facilities and radioisotope laboratories, preparing draft legislation on nuclear activities, The institutional capacity of TAEK should be enhanced for fulfilment of duties regarding nuclear safety and licensing operations.

Energy Market Regulatory Authority (EMRA) is the Regulatory Authority in the electricity, gas and petroleum markets. As more incumbents enter into the electricity and gas market, the institutional capacity of EMRA should be enhanced in parallel.

Another key actor is **Ministry of Development** (including the High Planning Council, Money-Credit Coordination Council), which provides consultancy to the government for the development of economic, social and cultural policies; prepares development plans, mid-term programmes, annual programmes, strategies and action plans for macroeconomic, sectoral and regional

development, and manages the consistency of fiscal, monetary, foreign trade and foreign exchange policies with the targets laid down in the development plan and annual programmes.

The **Ministry of Environment and Urbanisation's** (MoEU) main duty is to protect environment and therefore regulate the investments which has an impact on the environment. Another significant power of the ministry concerning the urbanisation is development planning, construction and building regulations. Creating building audit systems, improving energy efficiency in the buildings is also among the ministry's responsibilities. MoEU also chairs the Climate Change Coordination Board which monitors the implementation of Turkey's Action Plan on Climate Change in which energy is an important component. The Coordination Board on Climate Change (CBCC) is the main policy making body on climate change related issues in Turkey. CBCC is responsible for taking the necessary precautions to mitigate the negative effects of climate change, increasing the efficiency of studies conducted in the area of climate change, ensuring the coordination and distribution of responsibilities among public and private sectors, and designing national and international climate change policies by taking into consideration the national circumstances of Turkey.

CBCC was established by the Prime Ministerial Circular No. 2001/2 and was restructured in 2004, following Turkey's accession to the UNFCCC. In 2010 CBCC's remit was expanded with the participation of new members. Under the coordination and chairmanship of the Ministry of Environment and Urbanization, due to its key role in renewable energy and energy efficiency, MENR is also a member of the CBCC.

MENR, as a member of the Coordination Board on Climate Change and carrying out significant tasks in the field of climate change related with energy efficiency, renewable energy and GHG limitation, is a key public institution in the field of climate change. In this context, MENR's SF, with wide range of activities under renewable energy and energy efficiency measures, will contribute to and complement the objective of MoEU's stand alone IPA 2013 project "Capacity Building in the Field of Climate Change in Turkey" whose purpose is to increase national and local capacity to prepare for medium and long term climate action towards climate resilient low-carbon development, which will gradually align with the EU climate policy and legislation.

The EU-Turkey Financial Cooperation – Energy Sector Alignment Strategy gives the list of (IPA-1) capacity building projects already completed or being implemented in the sector and identifies the capacity building needs by defining gaps. These projects have contributed to capacity development in the institutions mentioned above.

2.2.6 Macroeconomic Context and Public Financial Management

Turkey, with a growing population of approximately 75.6 million, is one of the world's 20 largest economies. Since 2001 the country has been undergoing a significant socio-economic transformation and is being reshaped by an economy-wide agenda of policy reform. As a result of the economic reforms, the Turkish economy has experienced an average annual growth rate of 6% over 2002-11. Growth rates for 2011 and 2012 were announced as 8.5% and 2.2% respectively.

Rapid recovery of domestic demand together with weak external demand in post-crisis period led to an expansion in current account deficit. In response, a new policy set has been put into practice towards rebalancing demand components. As a result of these policies, economic slowdown beginning from the last quarter of 2011 has also continued in 2012. Therefore, the contribution of external demand to growth has increased and a sound growth composition has been achieved. In

parallel to these developments, current account balance has improved gradually since last year. Turkey's policies towards rebalancing the domestic and external demand were indicated as important for economic stability in the 2012 Progress Report. On the other hand, it was stated that current account deficit, still maintaining its high levels, leaves Turkey fragile against global financial shocks. However, current account deficit has narrowed beyond the forecasts of Medium Term Programme (MTP) and the Commission in 2012. Moreover, policies taking into account the balance between domestic and external demand will be continued in the medium term. In this framework, it is foreseen that the contribution of net goods and services exports to growth will be neutral and domestic demand will recover relatively in the following period. Therefore, Turkish economy which has achieved soft landing in 2012 is expected to reach a balanced growth path around its potential levels in the medium term.

Fiscal policy has been carried out, considering revenue, expenditure and debt amounts prescribed in the MTP, with an approach that will strengthen macroeconomic stability, promote private sector-led growth process and help fight against current account deficit and inflation. Public expenditure policy has been based on effective and efficient use of allowances by public institutions in line with the policies and priorities and in accordance with the multi-year budgeting, allocated amounts shall not exceed. Public revenue policy has been implemented through formation of an effective, simple and fair tax system to support sustainable development, to increase domestic savings, to promote employment and investments and to contribute mitigation of informality and regional development disparities. Public financial statistics, being an important element of transparency in public financial management, have been published in compliance with international standards. Works have been conducted to establish public financial management information system.

Turkey's energy import dependency has been increasing in parallel with the growing economy and energy demand. Turkey has been experiencing rapid demand growth in all segments of energy sector over the last decade. After a temporary slowdown during the global crisis, energy demand is again growing rapidly, particularly electricity demand, energizing the rebound in economic growth. As a result of high growth rates, Turkey has an average 7-8 % increase in energy demand as the biggest in Europe and second biggest in the world after China. The increase in electricity demand is annually around 7.5 %. From 2002 to 2012 electricity production increased from 129 billion kWh to 241 kWh. Electricity installed power increased from 31,846 MW to 57,225.9 MW between 2002 and beginning of February 2013. The total electricity consumption is estimated to reach to 500 billion kWh by 2023 while it is currently about 220 billion kWh. The installed capacity has surpassed 53 GW and it is expected to double until 2023.

The prices of the natural gas purchased by Turkey are oil-indexed by a formula used to calculate the increases/decreases in the gas prices and a proportional reflection of any immediate increase/decrease is made to the prices every six-month periods where a revision takes place. Therefore, price volatilities that take place at the international oil indexes affect natural gas prices. In 2011, 44.64 % of electricity generated in Turkey was from natural gas and therefore volatility of oil/gas prices indirectly effects electricity prices. Besides pipelines, through terminals Turkey buys spot Liquefied Natural Gas (LNG) which is extremely volatile in price. These effects compose the major distortion in stability in pricing mechanism.

2.2.7 Sector Assessment

In 2011 EU-Turkey Financial Cooperation – Energy Sector Alignment Strategy has been developed and endorsed by the Working Group composed of related public institutions, universities and NGOs. The Working Group established the state of play as regards legislative alignment and implementation, assessed the outcomes of the projects implemented and identified the gaps in terms of alignment with EU *acquis* and implementation mechanisms. This shows the willingness of the beneficiaries to improve their capacity in the energy sector.

In the Energy Sector Alignment Strategy Document it is suggested to initiate unbundling in the natural gas sector in alignment with the EU legislation, to determine the level of harmonization of relevant Turkish legislation with the Third Legislative Package and proposing studies and strategies for full harmonization, to complete all legislative studies regarding nuclear safety and protection from ionizing radiation, including the establishment of a nuclear regulatory authority, to develop necessary administrative capacity for the implementation of harmonized legislation in the field of nuclear safety and radiation protection, and to prepare project proposals under the IPA component regarding renewable energy, nuclear safety and protection from radiation.

Moreover, an IPA 2012 project in cooperation with the World Bank will contribute to further capacity building in the sector, including targeted training of MENR and relevant agencies' staff. The proposed sector intervention will further build on these efforts. Currently, studies are ongoing regarding the development of MENR capacity for sector coordination, monitoring and strategic expenditure.

3 DESCRIPTION

3.1 OVERALL OBJECTIVE OF THE IPA SECTOR SUPPORT

The overall objective of this sector intervention is the achievement of a secure, liberal and transparent Turkish energy market in line with the EU *Acquis* and Europe 2020 energy sustainability targets.

3.2 SPECIFIC OBJECTIVE(S) OF THE IPA SECTOR SUPPORT

The specific objectives of the project are to develop the administrative and technical capacity of relevant institutions to achieve an increasing alignment with the EU *acquis* and the Europe 2020 targets in the areas of (1) energy efficiency (EE), (2) renewable energy (RE), (3) internal energy market, (4) long-term energy planning and modelling and (5) nuclear safety.

The first and second objectives of this intervention are increasing the capacity and better alignment in the EE and RE field. IPA support is needed to help further develop the EE and RE markets by promoting commercial lending facilities, provide a more active donor involvement, improve the policy framework, enhance access to information, create incentives and programs, and develop national level targets, and better track progress and results, in terms of reductions in energy and carbon intensities, by the end of the intervention's implementation.

The third objective of this sector project, development of Turkish gas and electricity sectors relates to the second MIPD objective “further alignment with and implementation of *acquis* on the internal gas and electricity market”. Within this framework, the studies on the harmonization of electricity

and natural gas laws following the adoption of the EU Third Energy Package are ongoing. Within this context, IPA funds and EU experience are crucial, in order to achieve a better functioning internal energy market, especially in terms of third party access, transparency and establishment of a sustainable liberal market. The measure on establishment of an energy exchange will enable liquidity in the market and the studies for the natural gas market will increase the physical performance and quality of the system for better incorporation with the EU market.

The fourth objective of this sector intervention, collection and utilization of the data in long-term planning and modelling through establishment of a data center, is highly related with institution building in internal energy market, especially in terms of transparent market conditions and third party access; and better implementation of liberal market legislation in internal energy market is stated as a priority in MIPD.

The fifth objective of this Sector Fiche is to enhance nuclear safety and regulatory practices in Turkey, in line with EU standards. To achieve this objective the development and enforcement of the regulatory framework (acts, regulations, technical guides, etc), enhancing regulatory capacity in review and assessment of safety documentation and inspection of nuclear facilities and activities, and improving TAEK's self sustainability in drawing up regulatory training programs are to be addressed. IPA funds would help further alignment with the EU acquis.

3.3 RESULTS

Result 1.a. Absorption capacity of the SMEs, real and legal persons, universities and municipalities in EE regarding financing provided by IFIs tripled from 2007-2011 period by the end of this intervention and the EE financing mechanism strengthened.

Result 1.b. Administrative and operational capacity for EE in electricity generation and transmission facilities increased by the end of IPA intervention, compared to current capacity in 2013.

Result 1.c. Administrative and operational capacity for EE in natural gas infrastructures increased by the end of IPA intervention, compared to current capacity in 2013. Preliminary studies for the investment in the area of gas transmission completed as of 2017.

Result 1.d. The awareness regarding EE in residential and industrial sectors increased. More specifically, technical know-how and data regarding waste heat technologies, clean energy applications and efficient lighting technologies, which are at a limited level as of 2013, will be available and improved as of 2017. By the end of IPA intervention, detailed technical information on best available clean energy, efficient lighting and waste heat technologies applied in EU will be available and disseminated via workshops and print reports.

OVI – Result 1:

- Business Development Studies for at least 400 SMEs, real and legal persons, universities and municipalities regarding their EE investment processes realized and funded by 2017.
- Reports and studies needed for EUAS's future efficiency investments completed and preparedness increased by at least 50% by the end of IPA intervention.
- The quantity and the quality of data regarding the current conditions of EUAS's electricity generation facilities doubled by end of intervention, compared to current 2013 levels.

- Number of the personnel trained in EE of power plants and transmission lines increased by 30% by 2017.
- Economic and technical data on the challenges regarding the investments on EE of gas transmission pipelines enhanced by the end of this intervention.
- Technical sufficiency and the accuracy of current gap analysis reports for efficiency investments in gas transmission networks improved by 15% as of 2017, compared to 2013.
- Number of personnel informed about waste heat technologies, clean energy applications and efficient lighting technologies increased by 15% as of 2017 compared to 2013.
- Administrative and operational capacity of MENR on waste heat technologies, clean energy applications and efficient lighting technologies increased by 50% as of 2017 compared to 2013.

Result 2.a. Absorption capacity of the private sector, real and legal persons in RE regarding financing provided by IFIs especially in but not limited to the areas of electricity generation, heating/cooling and transport increased by the end of IPA intervention.

Result 2.b. The projects on the utilization of RE technologies in heating/cooling and transport started to be implemented by real and legal persons, private sector and municipalities by the end of the intervention and awareness increased.

Result 2.c. The necessary field for private sector and municipalities with regard to R&D studies on the utilization of new RE technologies in the market is introduced and RE atlas facilitating the utilization of RE are prepared by the end of the intervention.

Result 2.d. Green certificate system in RE sector is implemented by the end of project implementation.

OVI – Result 2:

- At least 350 small scale projects supported through Business Development Studies regarding RE investments.
- Use of RE, through energy projects supported by technical assistance at the first stage by IPA and by IFI financing at the second stage increased at least 10% by 2020.
- At least 50 projects for RE utilization in heating/cooling and transport realized by 2020.
- R&D investments by real and legal persons, SMEs and municipalities on new RE technologies doubled between 2013 and 2020.
- Green Certificate applications introduced by 2017.

Result 3.a. Legal, structural and administrative basis for properly functioning energy exchange operations are achieved by the end of this IPA intervention.

Result 3.b. Design of the SCADA system (which does not exist by 2013) completed as of 2015 so as to achieve strengthened institutional and physical capacity of transmission system operator in natural gas market.

Result 3.c. Investment program for future infrastructure investments of BOTAŞ as transmission system operator for effective operation of the natural gas transmission system reorganized.

OVI – Result 3:

- Required administrative structure for energy exchange is established and related studies completed (100%) by 2017.
- Study on the identification of the shortcomings in internal market legislation utilized in the preparation of draft legislation on the establishment of the energy exchange by the end of 2015.
- 150 personnel trained and specialized on the energy exchange by 2015.
- Design of SCADA system and Gas Management Tools completed by 2017.

Result 4.a. The data center will be established by the end of the intervention.

Result 4.b. Coordination among different public authorities and private sector regarding the data collection consolidated with the establishment of the data center.

Result 4.c. Long-term energy scenarios, planning and modelling studies prepared following the establishment of the data center.

Result 4.d. Transparency and third party access regarding market data provided.

OVI – Result 4:

- The amount of energy related accessible and reliable data is doubled by means of data center as of 2017, compared to 2013..
- Coordination mechanism within data centre which will coordinate different public and private institutions is established and specified personnel employed as of 2017 (as of 2013, there is no coordination mechanism and no specified personnel regarding energy related data).
- Number of staff and relevant reports regarding energy scenario building and modelling are tripled as of 2017, compared to 2013.
- The number of applications for relevant data made by relevant public and private institutions, SMEs and other stakeholders in the energy markets increased as of 2020.

Result 5. Regulatory organizational structure, framework and capacity for nuclear safety improved. Turkish nuclear legislation harmonized with the EU nuclear acquis by end of IPA intervention.

OVI – Result 5:

- Gap analysis report is prepared to identify the differences between Turkey's existing legislation and requirements under EU nuclear safety and security acquis during the first three months of the interventions.
- Action plan is prepared to fully comply with EU acquis up to five months of the intervention.
- 4 regulations are published at the end of the intervention.
- 10 review and assessment procedure for safety analysis reports are revised by the end of the intervention.
- Existing regulatory inspection documents (especially guidelines) reviewed by end of first year.
- 4 new regulatory inspection documents prepared by the end of the intervention.
- EU inspectors have taken part in at least 5 inspection activities as observers by the end of the intervention.

- National nuclear safety and security regulatory training programme is prepared by the end of the intervention.
- Training courses, 5 workshops, 8 scientific visits, 12 on the job trainings (each of them is four months) are carried out by the end of the intervention.

Result 6. Awareness among all relevant stakeholders including industry, private and buildings sectors, SMEs, real and legal persons, universities and municipalities regarding energy efficiency and renewable energy donor coordination and pilot studies increased.

OVI – Result 6:

- Applications for EE and RE loans delivered by the commercial banks tripled from 2007-2011 period by the end of IPA intervention.

3.4 MEASURES/OPERATIONS³ TO ACHIEVE RESULTS

Measure 1: Energy Efficiency

Measure 2: Renewable Energy

Measure 3: Electricity and Gas Market Development

Measure 4: Long-term energy scenarios, capacity building and establishment of an Energy Electronic Data Centre

Measure 5: Improvement of Nuclear Safety Regulatory Infrastructure

Measure 6: Awareness raising among all relevant Stakeholders

Details for operations are given in Annex 4.

To complement interventions under the IPA 2012 project of MENR, the EE and RE measures are planned to build on the financing mechanisms established under IPA 2012. Moreover, electricity and gas market development measure will deeply enhance and extend the activities completed under IPA 2012 through establishment of the gas trading platform in addition to the activities for energy exchange system for electricity and gas markets. The fourth measure will focus on the establishment of an Energy Electronic Data Center which will collect all energy-related data in one center for consolidation and better coordination of the information and for better long-term scenario building. Under this SF, also a measure is going to be implemented for the improvement of nuclear safety regulatory infrastructure. The implementation will take place with the participation of relevant IFIs (WB and EBRD); please see donor coordination (2.2.2) and sustainability section (3.6.).

³ As defined in Article 6(2) of the IPA Implementing Regulation No 718/2006. IPA Component I programmes are subdivided into sectors (priorities), each of which define a global objective to attain and which shall be implemented through measures, which may be subdivided into operations, or directly through operations. Operations shall comprise a project or a group of projects (implemented by the Commission or the beneficiary country).

Measure 1: Energy Efficiency

This measure aims at improvement of EE practices both in terms of energy consumption and production. It will be implemented under joint management modality with a focus on support to private sector operators and further financed by the IFIs in the future. Building on the IPA 2012 EE component, activities will complement work done by EBRD on the potential for the ESCO market in Turkey; thus reviewing and extending the established mechanism for a properly functioning system by identifying and eliminating the bottlenecks and shortcomings in the current system is envisaged. MENR will promote further coordination among all donors/financial institutions, including but not limited to World Bank, EBRD and EIB, to ensure further financial support to the mechanism in terms of providing credits/loans on a sustainable basis for the private sector establishments to realize their EE projects.

Component 1.1: Energy Efficiency Financing Mechanism

The TA support program established under IPA 2012 with the aim of enhancing the use of EE financing mechanisms established with loans by different IFIs will be strengthened and enhanced. In order to foster and encourage private sector participants to make EE investments in their facilities, the TA support under this IPA 2013 program will include activities such as: analyzing the IFIs' activities in Turkey and creation of a database regarding programs implemented in the previous years, organization of seminars throughout Turkey for SMEs, real and legal persons, universities and municipalities on EE financing mechanisms and outcomes of project applications, supporting SMEs, real and legal persons, universities, municipalities with technical assistance in business development processes for energy efficiency investments funded by IFI loans, realization of projects for municipalities' buildings and providing technical assistance to them for data collection and business development processes, implementation of a pilot project for a sub-sector in industry, implementation of a projection study on EE potential in transport, developing model financing schemes, bidding documents, contracts, measurement and verification protocols to support market development, implementation of medium scale projects, furthering EE service industry, such as ESCO workshops and roundtables and formulation of national association, ensuring awareness campaigns, case study development, information dissemination, construction of a website for training SMEs, real and legal persons, universities, municipalities by video workshops and draft business development forms and processes, broad capacity building across target markets and supporting commercial energy efficiency lending market and EE adoption in industry/buildings by conduction of necessary studies and activities.

Component 1.2: Energy Efficiency in electricity transmission and generation

In order to improve EE in electricity transmission and generation facilities, following activities will be conducted: an EE analysis on EUAS's generation facilities, finding out the needs and feasibility of EUAS's power plants to become energy efficient, assessing needs for central online monitoring and evaluation system for thermal power plants, organization of workshops on EE in electricity generation and transmission facilities, assessment of energy storage systems and frequency regulation systems for security of supply and system flexibility, preparation of feasibility studies and needs assessment reports for EE in transmission networks and generation facilities.

Component 1.3: Energy Efficiency in natural gas transmission

Also, in addition to the electricity transmission, the energy efficiency conditions of natural gas transmission facilities will be analyzed and supported through a needs assessment and a feasibility study for financing possibilities.

Component 1.4: Energy Efficiency in residential and industry sectors

Energy efficiency in residential and industry sectors will be supported through a number of workshops that will be organized with the participation of relevant stakeholders (universities, industry and residential sector representatives) on clean energy applications in a sustainable street market model and on energy efficient lighting technologies and implementation of retrofit systems. In addition to workshops, an analysis of the exemplary EU applications on utilization of waste heat recovery in buildings, ground heat pump systems and combined geothermal and ground heat pump systems will be completed.

Added Value of IFI Coordination:

The WB financed a Renewable Energy and Energy Efficiency Loan of \$500 million. The Clean Technology Fund contributed another \$100 million. The objective of the project is to increase privately owned and operated energy production from indigenous renewable sources, enhance energy efficiency, and thereby help reduce greenhouse gas emissions. Implementation progress has exceeded expectations and additional Bank financing of \$500 million was approved in November 2011. As of third quarter of 2011, World Bank's RE and EE credit lines leveraged more than \$1 billion with the inclusion of other IFIs' financing to the two development banks that had first started working with the WB. A new EE project for the small and medium sized enterprises (SMEs) is under preparation with the Turkish Government and the three participating Turkish banks. The objective is to improve the efficiency of energy use in the SME and building sectors, by scaling-up commercial bank lending for EE investments.

With regard to EBRD, the bank launched a second phase of the Turkey private sector Sustainable Energy Financing facility (TurSEFF) on July 4, 2013 in Istanbul (EBRD Investment volume: EUR 199 million (\$265 million)). The facility will focus on expanding access to energy efficiency and renewable energy financing for small projects on commercial basis. Special focus will be given to SME, residential, ESCO financing and less developed regions. Additionally, EBRD is also considering the launch of a pilot ESCO project in Gaziantep municipality, targeting EE in street lighting and the existing building stock.

Consequently, in the activities of the measure, the WB will focus on the SME and residential sector development with regard to energy efficiency and EBRD will focus on SME, residential, ESCO financing in less developed regions.

Implementation and financing:

This measure will be implemented through WB and EBRD TA contracts. The measure will support IFIs (EBRD, EIB and World Bank) and participating Turkish banks and concerned bilateral agencies that provide funding to these banks.

Total IPA contribution for the component is 14,750,378 EUR, split between the World Bank and the EBRD. Two separate contracts will be implemented by WB and EBRD. The details of the amounts of the contracts are indicated in the budget breakdown. The level of Trust Fund fees for WB and EBRD (incl. direct and indirect costs) will be agreed when respective agreements are to be concluded between the European Commission and the IFIs, following further consultation of Commission services with MENR.

Measure 2: Renewable Energy

This measure will be one of the central ones under this Sector Fiche that will be managed by EBRD with a focus on supporting the private sector operators and shall be further financed by the IFIs in the future. The measure will support participating Turkish banks as well as IFIs (EBRD, EIB and World Bank) and concerned bilateral agencies that provide funding to these banks.

This measure will basically focus on three major sub-fields on renewable energy:

Component 2.1: Financing mechanism for renewable energy investments

This component corresponds to strengthening and enhancing of the financing mechanism, established by Component 2.1 in the 2012 IPA project of MENR, for renewable energy investments that will be made by the private sector. The financing mechanism for RES investments of private sector operators will be enhanced through: development of a Renewable Energy Action Plan, training relevant personnel on the outcomes of the IPA 2012 renewable energy component, supporting private sector, real and legal persons in business development processes with technical assistance (feasibility studies and needs assessment reports), organization of panels, seminars and workshops with the participation of relevant stakeholders (universities, companies, larger industry representatives, municipalities, etc.) on IPA 2012 findings and investment implementations, streamlining studies for EBRD's TURSEFF II extension and the residential and municipal sustainable energy credit lines for financing small scale renewables investments, construction of a website for training private sector, real and legal persons by video workshops and draft business development forms and processes, and reviewing and extending the established mechanism for a properly functioning system by identifying and eliminating the bottlenecks and shortcomings in the current system. For sure, all donors/financial institutions, including but not limited to World Bank, EBRD and EIB, will be coordinated by MENR to ensure further financial support to the mechanism in terms of providing credits/loans on a certain sustainable basis for the private sector establishments to realize their RES projects.

Component 2.2: Renewable energy utilization in heating, cooling and transport

This component aims to improve the use of the renewable energy in heating, cooling and transport. The activities thereof will include: a feasibility study, an action plan and implementation schemes and trainings for a selected municipality with an in-city bus transportation system powered with electricity generated from renewables partly or fully, site visit to an EU state for exemplary implementation, feasibility study for retrofitting projects on designation of a place using 100 % renewable energy (like the one in Feldheim, Germany), organization of seminars for municipalities on renewable energy utilization in heating/cooling and transport, and on outcomes of implementation experiences completed under SF 2013.

Component 2.3: New renewable energy technologies

This component targets extending the knowledge and experience on new renewable energy technologies through: a site visit to an EU state for onsite analysis of utilization of renewables in practical life and regulatory arrangements in this regard, preparation of a Hybrid Renewable Energy Atlas of Turkey by updating and upgrading the existing solar and wind atlases and extending the wind atlas to the Turkish off-shore all around the country including the preparation of a separate geothermal energy atlas. These atlases aim to reflect both energy and exergy iso-lines, and organization of a seminar on "Distributed energy Implementations in EU".

Component 2.4: Green Certificate system:

As regards Green Certificate system, following are planned to be implemented: analysis and preparation of a report on renewable energy sector in terms of added value of the feed-in tariff system and its contribution to the development of the sector, applicability study of Green Certificate System in renewable energy market in Turkey, a training on the application of green certificate system, a draft legislation for the establishment of the system, analysis and modeling of Turkey's carbon emission factor, key to detailed assessment of the demand and supply side energy-related measures, and to lowering carbon market development transaction costs.

Implementation and financing:

This measure will be implemented through EBRD TA contracts. Total IPA contribution for the component is EUR 14,429,378. The details of the contract are indicated in the budget breakdown. The details of the amounts of the contracts are indicated in the budget breakdown. The level of Trust Fund fees for EBRD (incl. direct and indirect costs) will be agreed when respective agreements are to be concluded between the European Commission and the IFIs, following further consultation of Commission services with MENR.

EBRD's RE policy, "Support in the Definition of a Renewable Energy Action Plan for Turkey (REAP) for Turkey", is directly interrelated with the Measure. The proposed assignment would develop a renewable energy action plan for Turkey for the period 2013 to 2023. The purpose of the plan is to assess the overall technical and economic potential for renewables for Turkey, The plan would analyse the development of renewables on a sectoral basis, following the template of the EU member states REAPs, which were submitted to the Commission in 2010.

On added value of IFI coordination activities regarding RE investments, see text under Measure 1.

Measure 3: Electricity and Gas Market Development

Activities made under this measure (Electricity and Gas Market Development) will contribute to TSOs' capacities and Turkish internal energy market, so that it will enable a better ground for the adoption and implementation of the Acquis, namely Third Legislative Package (Directive 2009/72/EC, Directive 2009/73/EC, Regulation (EC) No 713/2009, Regulation (EC) No 714/2009, Regulation (EC) No 715/2009, Regulation (EU) No 994/2010 repealing Directive 2004/67/EC.

In the Electricity Market, in order to establish an independent energy exchange entity for Day ahead, intraday and futures markets operations which will also be utilized as a platform for gas trading, TA is needed for the establishment and for the preparation of related regulations. TA will include, namely, a study on the identification of legislative shortcomings and implementation problems within the process of the establishment of energy exchange, a draft legislation covering structural regulations and administrative structure, organization of trainings for administrative capacity building and knowledge accumulation, studies and workshops regarding consultancy services with a view to implementation of the structure proposed, capacity building, and identification of technical infrastructure needs that shall be completed under this measure in order to ensure a properly functioning energy exchange, a road map for post-trade processes, nomination methods, clearing and over the counter markets, an analysis study on exchange regulation, a roadmap on enhancement of the organizational and administrative capacity and roles of MENRS, EMRA, TEIAS and Capital

Markets Board and Borsa Istanbul regarding exchange trading and monitoring activities, and an EU best practices analysis study on monitoring and market surveillance in the commodity markets.

Another major EU intervention is needed in studies for the improvement of BOTAS Petroleum Pipeline Corporation Gas Transmission Department's institutional and infrastructural capacity. The purpose of this project is to provide more advanced transmission services and gas trading mechanisms that will help to develop Natural Gas Market. In this context, Current SCADA and Simulation Systems which are not sufficient for a modern transmission system to serve the advanced services that are provided in Europe for transparent and reliable operations. The management of the project, including the design of the SCADA system under IPA programming and obtaining EU expertise are of crucial importance for the effective integration of the Turkish natural gas market with the European natural gas market. EU intervention is needed to complete technical assistance studies such as feasibility, needs assessment and determination of terms of references for SCADA in compliance with both the studies regarding the establishment of Turkish energy exchange that will be designed under SF 2013 and the EU practices thereof.

This measure includes the design of SCADA system according to the needs of the liberalizing natural gas sector. The needs assessment and feasibility studies and terms of references should be concluded for the related software and hardware system for effective implementation of the SCADA system. The World Bank has extensive experience in the financing of SCADA systems, including for TEIAS in Turkey.

Implementation and financing:

This measure will be implemented through WB TA contracts. The gas component of the 2012 IPA project will be managed through WB contracting, and the 2013 gas component is a continuation and complementary part of the gas component in 2012 project. Moreover, Gas Sector Development Project of the World Bank amounting to USD 325 million helps increase the reliability and stability of gas supply in Turkey by implementing critically needed gas storage (Tuz Golu Storage Facility) and network infrastructure, and support BOTAS in strengthening its operations as a financially stable and commercially managed corporation. Therefore WB contracting is crucial in this component.

Total IPA contribution for the component is EUR 1,703,654. This measure will be implemented by the WB. The details of the contract are indicated in the budget breakdown. The level of Trust Fund fees for WB (incl. direct and indirect costs) will be agreed when respective agreements are to be concluded between the European Commission and the IFIs, following further consultation of Commission services with MENR.

Measure 4. Long-term energy scenarios, capacity building and establishment of an Energy Electronic Data Centre.

In IPA 2012, within the scope of capacity building (component 1) the statistics and energy planning functions of MENR will be reviewed and gaps and needs will be defined. Based on the findings and recommendations of that study, necessary planning shall be made and forecasting models will be procured and used for long term energy planning. This measure will enable MENR to collect all energy related data in one center, develop long-term energy scenarios and enhance capacity to analyze and utilize the data collected in the Center for modeling and scenario formation.

Component 4.1: Technical Assistance-Service Contract

The data collected will be uniform and unique throughout the country. The establishment of an electronic energy data center will provide to archive all energy-related data for its transfer, collection and dissemination. The data of all sub-sectors of energy including electricity, gas, renewable energy, energy efficiency, nuclear energy and upstream and downstream petroleum market including digitalization of national petroleum archive will be collected and archived in the center. Additionally, electronic data center includes the establishment of a coherent, systematic, digitalized and accessible petroleum archive. This measure will establish a mechanism that could huddle all oil and gas data together and to provide exploration and production companies requesting to invest in Turkey and researchers to access this data in electronic media and other possible ways.

Component 4.2: Supply of the Hardware and Software

As the second step of the measure, the capacity of the Ministry should be built and necessary hardware and software should be provided in order to analyze the data collected and use all the collected data for future projections and modelling purposes.

Supply and institutional capacity building is needed under this measure.

Implementation and financing:

This measure will be implemented through WB TA and supply contracts. The WB has worldwide experience on preparing energy scenario formulation and modelling. Therefore WB participation will contribute substantially to the implementation process.

Total IPA contribution for the Component 4 is EUR 5,298,854. (TA: € 1,553,854 Supply: € 3,745,000) This measure will be implemented by the WB. The details of the contract are indicated in the budget breakdown. The level of Trust Fund fees for WB (incl. direct and indirect costs) will be agreed when respective agreements are to be concluded between the European Commission and the IFIs, following further consultation of Commission services with MENR.

Needs assessment and feasibility study regarding the details of the allocation of this amount will be made through a SEI project.

Measure 5. Improvement of Nuclear Safety Regulatory Infrastructure

This measure corresponds to “Assistance to the Turkish Atomic Energy Authority (TAEK) for enhancing the effectiveness and efficiency of nuclear regulatory infrastructure”.

The measure is expected to fully harmonize the nuclear legislation in line with EU nuclear acquis and focus on gaining EU experience in the fields of development and enforcement of regulatory framework (acts, regulations, technical guides, etc), enhancing regulatory capacity in review and assessment of safety documentation and inspection of nuclear facilities and activities, and improving TAEK’s self-sustainability in drawing up regulatory training programmes. In order to achieve more effective fulfillment of the duties with regard to nuclear safety regulatory and inspection issues, review studies, methodology and evaluation reports, system development, inspection activities, and trainings will be carried out.

Implementation and financing:

This measure will be implemented by CFCU through Twinning contract. The overall duration of the project is envisaged to be 24 months with activities to take place during the 21 months (21 months

and 3 months reporting). Total IPA contribution for the component is EUR 1,807,082 (Total budget EUR 1,902,192; national contribution is EUR 95,109).

Measure 6: Awareness raising among all relevant Stakeholders

In respect of the activities completed and during the implementation process, this visibility measure will ensure the sustainability of the IPA 2012 and 2013 projects and will highlight the activities of the 2013 project as a continuation of 2012 project. The visibility activities will help promote 2013 project outputs through seminars, trainings, further development of the website already constructed under IPA 2012 project, media awareness campaigns, relevant press releases provided for each measure and a final press release for the overall project, which will have an impact of the widening and deepening of the results of the 2012 project. Besides, totally 6 Forums (2 for EE, 2 for RE, and 2 for Nuclear Safety) will take place in Ankara and Istanbul. 5 seminars will be organized for municipalities which took part in energy efficiency studies and activities as well as 3 workshops for SMEs, real and legal persons, universities and municipalities for the promotion of case study developments and dissemination of IPA 2013 project outcomes.

Implementation and financing:

The implementing authorities for this measure will be EBRD and WB. For the EBRD, each credit line implemented has a strong budget components related to awareness raising, sustainable energy local capacity building and marketing. These are integrated within the technical assistance budget related to facility implementation. Moreover, based on the experience acquired from TurSEFF I, there is also a strong level of donor visibility during the implementation of these activities.

This measure will be implemented through EBRD and WB TA contracts.

Total IPA contribution for the component is EUR 1,046,032. The details of the contracts are indicated in the budget breakdown. The level of Trust Fund fees for WB and EBRD (incl. direct and indirect costs) will be agreed when respective agreements are to be concluded between the European Commission and the IFIs, following further consultation of Commission services with MENR.

3.5 OVERVIEW OF PAST OR ONGOING ASSISTANCE, LESSONS LEARNED, MECHANISMS FOR DONOR COORDINATION/SECTOR WORKING GROUP AND/OR POLICY DIALOGUE

In the energy sector, nine projects of different beneficiaries (EMRA, TEIAS, MoPWS, İllerBank, BOTAS, EİE) have been completed under EU - Turkey Financial Program of 2002-2007 and IPA 2007-2013. Past EU support has so far mainly focused on electricity networks, natural gas transportation, energy efficiency and regulatory authorities. So far Turkish public institutions have received more than € 10 million from the pre-accession programmes for a series of 10 energy projects that were signed after 2005. In addition, there are three projects amounting € 6.5 million in the pipeline to be used in electricity and energy efficiency fields from 2009, 2010 and 2011 programming years respectively.

Lessons learned:

As a result of IPA projects under the first MIPD objective (**energy efficiency**); the legislative and institutional framework in accordance with the EU rules and best practices for better design and

implementation of EE programme has been established (Energy Efficiency Law Official Gazette: 2 May 2007, no. 5627). Education programmes for specified target groups were developed and implemented in order to increase the consciousness on EE in the buildings and public attention was attracted by publishing well prepared materials and documents. And it has been also learned that EE should be promoted under sustainable development and better environment

The second objective is further **alignment** with and implementation of *acquis* on the **internal gas and electricity market**. With IPA projects under this MIPD priority; harmonization level of the natural gas and electricity market with the *acquis* was screened, gaps were determined and proposals for the necessary settings were developed. Energy Market Regulatory Authority's capacity has been increased in order to ensure proper implementation of the legislation. Knowledge and skills of BOTAŞ transmission staff are brought to the level necessary for *acquis* implementation and policy development in natural gas sector. The conditions for the functioning of cross border electricity trade in Turkey by removing administrative and legislative obstacles were achieved. In respect of the lessons learned under the implementation previous projects of electricity sector, Turkish electricity sector has made great progress in improving its technical infrastructure in terms of the stabilization of the frequencies and rehabilitation of the frequency control performance of Turkish Power System.

In addition to the above mentioned issues, the establishment of the coordination between different stakeholders from the very beginning in the project is very important for the success of the project. The participation of all the members of the steering committee, all the relevant departments of the steering committee members and relevant stakeholders possesses due importance. The steering committee meetings should be organized timely for the success of the project and for the incorporation of the all relevant stakeholders to the project activities and also for the visibility of the project activities and timely submission of reports are very important in this regard.

To conclude from the previous IPA experience, it has been learned that further efforts are required for a better functioning free market economy, particularly regarding natural gas trade and exchange, the skill sets required for such information gathering and dissemination activities are currently lacking in MENR and require external assistance, especially as the target audience and implementation of EE investments are shifting from public sector to private sector and general public. The staff capacity for awareness raising is estimated to be insufficient to meet the conditions which are characterized by a continuous growth of the needs and potentials for reasonable improvements in energy efficiency.

Donor Coordination:

The 2013 project as a continuation and complementary to the 2012 IPA project, will enhance for the pre-established financing mechanism for financial involvement of the IFI's as donors in the EE and RE projects. Through the IPA 2013 intervention, small and medium size projects (TA will be provided to the private sector to help them get credits from the IFI's) will be able to be applied in the fields of EE and RE which will provide a spill-over effect and will provide a much bigger market enabling the incorporation of the other donors to the system.

1. Energy Projects of the World Bank Group

Development Policy Loans (DPLs): The primary vehicle for the World Bank's policy-based support for Turkey's energy sector reforms are DPLs, currently the US\$2.1 billion Environmental

Sustainability and Energy Sector Development Policy Loan (ESES DPL) program. The ESES DPL program aims to contribute to the following main objectives: (a) enhance energy security by promoting private sector clean technology investments and operations; (b) integrate principles of environmental sustainability, (c) improve the effectiveness and efficiency of environmental management processes. These measures are supported by the Bank under a series of three DPLs – DPL1 (US\$800 million, 2009); DPL2 (US\$700 million, 2010); and DPL3 (US\$600 million, 2012) whose social monitoring aspect will continue till June 2015. Among many strategies and reform activities supported by ESES DPL program, there are National Climate Change Strategy (2010) and Action Plan (2011), Amendment of the Renewable Energy Law (2011) and Energy Efficiency Strategy (2012), New Electricity Market Law (March 2013) and an amendment to the Gas Market Law (under preparation, for approval in late 2013). In the second half of the Country Partnership Strategy (2013-2015) that is currently being discussed with the Government, it is highly likely that a new energy DPL will take place.

Renewable Energy and Energy Efficiency: Building on the first WB-supported Renewable Energy Project (US\$200 million, 2004) that had been successfully completed, in 2009, World Bank financed a Renewable Energy and Energy Efficiency Loan of US\$500 million with the contribution of the Clean Technology Fund (CTF) with an additional US\$100 million. The objective of the project is to increase privately owned and operated energy production from indigenous renewable sources, enhance EE, and thereby help reduce greenhouse gas emissions. Implementation progress has exceeded expectations, thus additional Bank financing of US\$500 million was approved in November 2011 and has been effective since beginning of 2012. Overall, the \$100 million of CTF financing leveraged \$1.53 billion. As of June 2012, 969 MW of renewable energy capacity had been installed, and 17 EE projects completed for a total GHG emission reduction of 3.2 million tCO₂e. Total disbursements of the financial intermediaries that are the Industrial Development Bank of Turkey (TSKB) and Development Bank of Turkey (TKB) reached to 40% of the additional financing and will continue financing renewable energy or EE projects till the loan closing that is December 31, 2016.

A new energy efficiency project for the small and medium sized enterprises (SMEs) had been prepared with the Turkish Government and the three participating Turkish banks (VakifBank, HalkBank, and ZiraatBank), at an amount of US\$201 million and was approved in March 2013. The objective of the SME EE project is to improve the efficiency of energy use in the SME and building sectors, by scaling-up commercial bank lending for EE investments.

Gas Sector: US\$325 million Gas Sector Development Project of the World Bank aims to increase the reliability and stability of the gas supply in Turkey by putting into place critically needed gas storage and network infrastructure, and supporting BOTAŞ in strengthening its operations as a financially stable and commercially managed corporation. The project has the following components: (i) an underground gas storage facility, in an underground salt formation close to Tuz Gölü; the facility, upon completion, would have a storage capacity of nearly 1 billion cubic meters of working gas; (ii) network expansion—the project finances the Erzincan compressor station for BOTAŞ, and this station is required to help transmit the increasing volumes of gas expected to be imported from existing and new sources; and (iii) technical advisory support for owner's engineer as well as environment monitoring. The Government and BOTAS intend to request an additional financing from the World Bank for this project.

Electricity Transmission and Distribution: The World Bank has supported investments by TEDAŞ (rehabilitation of distribution) and TEİAŞ (transmission) under several credit lines. The

Bank's on-going ECSEE APL6 project and the recently completed ECSEE APL2 and APL3 projects are financed under the Bank's regional US\$1 billion adaptable program lending (APL) facility.

A US\$350 Million Project for Renewable Energy Integration by TEIAS: This project is expected to be approved by early 2014 at the latest and aims to directly support the integration of some 1,500-2,000 MW wind power generation and support TEIAS in the deployment of SmartGrid technologies to help deal with the large-scale integration of intermittent renewable energy into the Turkish power system and electricity market.

A US\$300 Sustainable Cities Project: This new project aims to support the implementation of Sustainable Cities Action Plans of selected Turkish cities through Iller Bankasi. This project will help participating cities identify, prepare and finance bankable investment projects that would support their efforts to achieve specific sustainability targets; and expand the investment options for municipal financing (beyond water, wastewater and solid waste) to include urban transport, urban transformation, and EE investments.

Partnership for Carbon Market Readiness (PMR): Turkey joined the World Bank PMR in April 2011 and Turkey's proposal for the US\$3 million PMR implementation grant was approved by the PMR Partnership Assembly on May 27, 2013. PMR implementation grant is built on two pillars: (i) Implementation of the existing Turkish greenhouse gas monitoring, reporting and verification (MRV) regulation. Specifically, the PMR grant will support piloting the whole MRV procedure in the electricity sector in order to "test run" the scheme and build capacity for the regulated period (starting from 2015); (ii) Analytical work and stakeholder engagement aimed at an informed decision making process on the use of market based instruments. In the electricity sector, the work will focus on studying the implications and design of an Emission Trading Scheme for the sector.

In addition to the World Bank's intensive and comprehensive on-going and planned energy projects in Turkey to support the energy reform agenda of the Government, in the second half of the Country Partnership Strategy, there might be some more new energy projects of the WB depending on the discussions with and priorities of the Turkish Government.

2. Energy Projects by the European Bank for Reconstruction and Development (EBRD)

After starting operations in 2009, the EBRD has invested over EUR 2.5 billion, 50% of which has been dedicated to sustainable energy projects. Leveraging the USD 50 million concessional funding of the Clean Technology Fund and with the support of EU IPA funds for the technical assistance, the Bank launched **the Turkey private sector Sustainable Energy Financing Facility (TurSEFF)**, a USD 285 million facility aimed at financing small-scale EE and RE. The funds have been almost fully disbursed and the EBRD is currently preparing the launch of the second phase of that facility.

Leveraging the above banking relationships and in collaboration with EIB, the EBRD launched in 2011 **the Mid-size Sustainable Energy Financing Facility (MidSEFF)**, a EUR 1 billion facility aimed at scaling up RE and EE investments of projects with investment costs below EUR 50 million. The EU also supported the TA necessary for the implementation of that facility.

For direct lending, the EBRD has provided EUR 145 million in loans for the two **largest wind farms** in Turkey (Bares WEPP – 142 MW and Rotor WEPP – 135 MW), as well as contributing to the privatization of the **Sakarya distribution company (SEDAS)**.

Additionally, EBRD has provided EUR 50 million to the Bursa municipality for the upgrade of the **metropolitan light railway** transport system. The Bank has also financed up to EUR 10 million for the upgrade of **the bus fleet to CNG** in the Gaziantep municipality. Leveraging on this relationship, the Bank is also considering the launch of a pilot ESCO project in that municipality, targeting EE in street lighting and the existing building stock.

The EBRD plans to launch a second phase of the Turkey private sector Sustainable Energy Financing facility (TurSEFF) during 1Q2013 (EBRD Investment volume: EUR 150 million). The facility will focus on expanding access to EE and RE financing for small projects on commercial basis. Special focus will be given to SME, residential, ESCO financing and less developed regions.

As for the first phase, the new Facility will disburse funds through 3 – 6 local commercial banks. The local banks and project sponsors will benefit from a comprehensive technical assistance programme to support awareness rising, capacity building and project preparation, implementation and monitoring.

EBRD's Support in the development of a portfolio of sectoral National Appropriate Mitigation Actions (NAMAs): The proposed assignment would focus on the development of Sectoral NAMAs for a number of energy related subsectors in the Turkish economy. The aim would be to identify, on a sectoral basis, the potential for investment, the potential volume of abatement, and the requirement for support in technical assistance and investment support to realise these potentials.

The present study would take into account domestic, international, and carbon market funding, where available. The project team would work on the basis of the latest decisions relating to NAMAs, taken by COP17 in Durban and Turkey's position in the negotiations and would be expected to produce a portfolio of NAMAs in the priority sectors to be defined in co-operation with the Ministry.

EBRD's RE policy: Support in the Definition of a Renewable Energy Action Plan for Turkey (REAP) for Turkey: The proposed assignment would develop a renewable energy action plan for Turkey for the period 2013 to 2023. The purpose of the plan is to assess the overall technical and economic potential for renewables for Turkey, and to propose high-level policy measures to improve the economic potential, taking into account policies already adopted by the government, and policies which are well advanced in planning. The plan would analyse the development of renewables on a sectoral basis, following the template of the EU member states REAPs, which were submitted to the Commission in 2010.

Finally, in January 2013, the Bank will be launching a **glass recycling pilot project** scheme in collaboration with 4 municipalities and several relevant private sector stakeholders in the container glass value chain. The expected outcome of this pilot project will be the significant increase the collection of glass packaging waste, decreasing the amount of material going into landfills. For the 4 municipalities, the pilot project is expected to collect at least 100,000 tonnes of glass waste per

year, yielding energy savings of 4 million Sm³ of natural gas and a reduction of 35,000 tonnes of CO₂ emissions.

3. Energy Projects of Other IFIs and Bilateral Donors and International Organizations

In addition to the World Bank Group and EBRD, other international financial institutions (IFIs), the European Investment Bank (EIB), and the French and German bilateral agencies, Agence Française de Développement (AFD) and Kreditanstalt für Wiederaufbau (KfW Development Bank), are major external public sources of financing for the energy sector in Turkey. UNDP and bilateral donors including JICA and USDTA provide technical assistance support.

UNDP (United Nations Development Programme) has projects on energy efficiency and renewable energy, which are supported by the Global Environmental Fund (GEF) in collaboration with the Ministry of Energy and Natural Resources and Ministry of Environment and Urbanization.

“The Improvement of the Energy Efficiency in Buildings” project envisages the enhancement of the institutional and administrative capacities of the Ministry of Energy and Natural Resources and Ministry of Environment and Urbanization on the improvement of the energy efficiency in buildings and decreasing the greenhouse gas emissions thereof. The project will be implemented between 2011 and 2015 and has a budget of USD 17.58 million.

“Improvement of the Energy Efficiency in Industry” Project envisages the enhancement of the industry to establish an energy management system including taking measures for energy efficiency and utilization of energy efficient technologies. The implementation period of the project is 2011-2016, with a budget of USD 35,058,400. For the ongoing projects with IFI’s and international organizations, the lessons learned will be able to be concluded after the completion of the projects.

“Small and Medium Enterprise Energy Efficiency Project” has been approved by GEF and WB. For the SME sector, the Project would seek to identify and target key, energy-intensive subsectors as well as SME commercial. Further TA is planned to support the policy dialogue, enabling environment and broader market development. The duration of the Project is 60 months and total cost is USD 252.5 million.

According to the Mapping Study which is conducted in 2011 (Horizontal Support to Coordination with International Financial Institutions in the Western Balkans and Turkey – Review of EC, IFI and Bilateral Donor Coordination in Turkey), there is substantial donor interest in the areas of energy efficiency and promoting the use of renewable energy. The study indicates some challenges regarding EE and RE sectors. The study states that one of the main challenges is that energy efficiency projects face many barriers in Turkey, due to their relatively small sizes, high transaction costs, perceived risks by the investor community and lack of awareness among the end users (public sector, private sector and households). Secondly, it is indicated that the public sector holds some of the greatest potential for energy efficiency but borrowing constraints reduce the attractiveness for external financiers. And thirdly, it is stated that the interest of private sector investors in renewable energy investments has been increasing and there is a demand for favourable financing.

3.6 SUSTAINABILITY

The sustainability of the results of the sector support will be ensured by the improved administrative structure, notably the MENR will gain expertise in the coordination, supervision and monitoring of the IFI financing in the energy sector and through the capacity development technical assistance provided by the EU. The capacity building component of the 2012 Project will enhance the capacity of the MENR in this respect and through the IPA 2013 sector intervention, the pilot studies will further enhance the MENR capacity in supervision and coordination in practical terms. In addition, the trainings provided to the SMEs, real and legal persons, participating banks, universities and municipalities will contribute to the smooth operation of the system. Within this context, activities in the electricity and natural gas markets will be monitored through the newly established monitoring, supervision and coordination system in MENR through the regular input of the timely data, which is provided by IPA 2012 and 2013 projects.

For EE and RE the sector intervention will further contribute to the awareness raising among key stakeholders such as SME's, ESCO's, partner banks, NGOs, residential sector, municipalities, universities and the public sector who are participating in seminars and workshops organized under this programme. As continuation of the IPA 2012 project, this sector intervention will also further boost the establishment of a legal and administrative mechanism for international financing. Through the TA support, the IFIs' credit lines, private sector investment and involvement will increase in the sector. The sustainability of the trainings will be provided by the training of trainers' programmes and creation of a special web-site open to public that will incorporate all the necessary training material and video-records of the trainings. The feasibility studies for the energy efficiency of the electricity and gas transmission networks will provide the basis and initial steps for the efficiency of the sectors and investments within this context.

For the natural gas sector, the 2013 project envisages the enhancement of the institutional capacity of BOTAŞ as a transmission system operator which will contribute to the effective and non-discriminatory operation of the natural gas transmission system in line with EU norms and principles and will provide the an effective integration of the Turkish transmission system with the European transmission network. The conducted feasibility studies will form basis for further investments by BOTAŞ that will contribute to the physical quality of the network for better incorporation with the EU network.

For nuclear energy, which Turkey does not have any experience yet; the project will help the development and enforcement of the regulatory framework (acts, regulations, technical guides, etc) fully in line with that of EU acquis and implementations, enhancing regulatory capacity in review and assessment of safety documentation and inspection of nuclear facilities and activities. Once the administrative capacity of TAEK is improved, it will create a sustainable regulatory framework in nuclear sector.

The establishment of a data center including national petroleum archive will contribute to the collection of reliable and uniform data for the energy sector, its utilization for analyses/scenarios and transparency of the upstream petroleum activities with regard to the exploration of hydrocarbons. Once the system is established it will be a continuous mechanism for providing non-discriminatory access to all types of data in energy sector and continuous modeling, analysis and scenario formation will be guaranteed.

3.7 ASSUMPTIONS AND PRECONDITIONS⁴

The assumptions made for proper implementation of the projects are below:

- Ministries and related, attached affiliated institutions gave high level support for the measures under this sector intervention.
- Ministries and all relevant stakeholders assigned adequate number of personnel for the measures under this sector intervention.
- Appropriate staff participated in the trainings.
- Required data made available by related stakeholders.
- Further projects are developed and implemented by all the relevant institutions which will increase the overall impact.
- The preliminary studies concluded under measures of this sector intervention are utilized for necessary investments in forthcoming years.
- Utilization of international financing increased regarding EE and RE.
- Relevant analyses for the needs completed for providing effective, transparent and non-discriminatory operation of the natural gas transmission system.
- For nuclear energy, relevant studies has been started to be prepared for the safety of the installations.

4 IMPLEMENTATION ISSUES

The 2013 IPA project will be implemented by CFCU, WB and EBRD through decentralized and joint management implementing modalities.

The energy efficiency measure will be implemented by WB and EBRD (Under two separate contracts; 1.A and 1.B).

The renewable energy measure will be implemented by EBRD.

Natural gas and electricity market and data centre measures (Measures 3 and 4) will be implemented by WB.

The nuclear measure will be implemented by CFCU.

⁴ Assumptions are external factors that have the potential to influence (or even determine) the success of a project but lie outside the control of the implementation managers. Such factors are sometimes referred to as risks or assumptions but the Commission requires that all risks shall be expressed as assumptions. Pre-conditions are requirements that must be met before the sector support can start.

Lastly, the measure regarding awareness raising activities will be implemented by EBRD. EBRD and WB will conclude necessary agreements regarding the joint management model, while the CFCU will operate under decentralized management model.

The justifications for the implementing authorities are mentioned in the Measures Section.

4.1 INDICATIVE BUDGET

PROJECT TITLE			SOURCES OF FUNDING										
			TOTAL EXPENDITURE	IPA CONTRIBUTION		NATIONAL CONTRIBUTION					PRIVATE CONTRIBUTION		
IB	INV	EUR	EUR	-2%	Total	-2%	Central	Regional/Local	IFIs	EUR	-2%		
-1	-1	(a)=(b)+(c)+(d)	(b)		EUR		EUR	EUR	EUR	(d)			
					(c)=(x)+(y)+(z)		(x)	(y)	(z)				
Measure 1: Energy Efficiency													
	x		9,400,378	9,400,378		0		0	0	0	0		
	x		5,350,000	5,350,000		0		0	0	0	0		
Measure 2: Renewable Energy													
	x		14,429,378	14,429,378		0		0	0	0	0		
Measure 3: Electricity and Gas Market Development													
	x		1,703,654	1,703,654		0		0	0	0	0		
Measure 4: Long Term Energy Scenarios, Capacity Building and Establishment of an Energy Electronic Data Center													
	x		1,553,854	1,553,854		0		0	0	0	0		
		x	3,745,000	3,745,000		0		0	0	0	0		
Measure 5: Improvement of Nuclear Safety Regulatory Infrastructure													
	x		1,902,192	1,807,082		95,110		95,110	0	0	0		
Measure 6: Creation of Awareness in Industry, Private Sector, SMEs and Among All Relevant Stakeholders													
			523,016	523,016									
	x		523,016	523,016		0		0	0	0	0		
.....													
TOTAL IB			35,385,488	35,290,378									
TOTAL INV			3,745,000	3,745,000									
TOTAL PROJECT			39,130,488	39,035,378		95,110		95,110					

Annex — Template of the Sector fiche for IPA national programmes / component I – centralised and decentralised management

4.2 INDICATIVE IMPLEMENTATION SCHEDULE (PERIODS BROKEN DOWN PER QUARTER)

Operations	Start of Tendering/ Call(s) for proposals	Signature of contract(s)	Activity Completion
Operation 1 (Measure 1)	Q2 2014	Q4 2014	Q4 2016
Operation 2 (Measure 2)	Q2 2014	Q4 2014	Q4 2016
Operation 3 (Measure 3)	Q2 2014	Q4 2014	Q4 2015
Operation 4.1 (Measure 4, Component 4.1)	Q2 2014	Q4 2014	Q4 2016
Operation 4.2 (Measure 4, Component 4.2)	Q2 2014	Q4 2014	Q4 2016
Operation 5 (Measure 5)	Q2 2014	Q4 2014	Q4 2016
Operation 6 (Measure 6)	Q2 2015	Q4 2015	Q1 2017

For the preparation of the technical specifications and terms of reference documents for the 2013 project, SEI funds will be used.

4.3 CROSS CUTTING ISSUES

4.3.1 *Equal Opportunities and non-discrimination*

Equal opportunities will be provided to both genders during the implementation of the project. Participation of both women and men in the sector intervention's activities will be actively promoted and whenever possible monitored so that related progress can be assessed.

4.3.2 *Environment and climate change*

The outputs and outcomes of the sector intervention will provide leverage for financing the renewable and energy efficiency projects and private investments through IFI credit lines. Therefore the impact of the IPA project on environment and climate change will have a broader and cumulative impact, increasing the sustainability. The cooperation between MENR and MoEU in the scope of Coordination Board on Climate Change is mentioned in details under the section 2.2.5.

4.3.3 *Minorities and vulnerable groups*

The renewable energy and energy efficiency measures will have an impact on the increase of the electricity supply. As a consequence, the public service obligations in terms of access to energy services by the vulnerable groups will be enhanced.

The project has no relation with the minorities. The project perceives all Turkish citizens as target groups.

4.3.4 *Civil Society/Stakeholders involvement*

Civil society organizations, municipalities and universities have roles on the implementation of the measures of this sector intervention particularly on energy efficiency, renewable energy and awareness raising activities.

The municipalities are directly related with the planned activities of the sector fiche. In energy efficiency and utilization of renewable energy in heating, cooling and transport, the municipalities possess great role.

All of the stakeholders' comments are evaluated and incorporated into this SF, particularly on activities. The views and contributions of the NGO's, universities and municipalities are taken (the views are demanded by formal letters by the MENR and responses are taken again by formal letters) for the energy efficiency, renewable energy, electricity and natural gas market components. The inclusion of all the relevant stakeholders are envisaged in the activities.

4.4 SECTOR MONITORING, EVALUATION AND AUDIT

The MEUA will monitor project implementation mainly through the Steering Committee procedures and monitoring and evaluation reports. After its completion, the MEUA will also evaluate the project. Since its finance is ensured by the Instrument for Pre-accession Instrument (IPA) the project will be a part of the general monitoring framework laid down by the IPA Framework Agreement between the EU and Turkey, notably the Joint IPA Monitoring Committee and the relevant Sectoral Monitoring Sub-Committee.

ANNEXES

Documents to be annexed to the Sector fiche

- 1. Log frame**
- 2. Description of Institutional Framework**
- 3. Political, legal and institutional framework:**
- 4. Details per EU funded operation(*) where applicable:**
- 5. Possible visibility activities**
- 6. Project Monitoring Report Template**

ANNEX 1: Logical framework matrix for sector support in standard format

LOG FRAME PLANNING MATRIX FOR Sector Fiche		Sector support name and number	
		Contracting period expires: 2017	
		Execution period expires: 2019	
		Total budget	: € 39,130,488
		IPA budget:	: € 39,035,378
National sector or sub sector objective	Objectively verifiable indicators (OVI)	Sources of verification	What is the percentage proportion or expected quantitative or qualitative contribution of the sector support funded by IPA to this OVI?
Enhancement of Turkish Energy Sector in line with EU energy strategies	Implementation of and alignment with EU energy strategies increased	European Commission Progress Reports Interim Evaluation Reports of the projects Final Reports of the projects Line Ministries Annual Reports International Energy Agency Reports and Statistics World Energy Council Reports	
Sector support objective within the MIPD sector	Objectively verifiable indicators (OVI)	Sources of Verification	Successful continuation of the reform in the energy sector
1. Increased capacity and better alignment in the energy efficiency field.	1. Promoted energy efficiency and renewable energies	European Commission Progress Reports Interim Evaluation Reports of the projects	Ministries and related, attached affiliated institutions gave high level support for the projects
2. Further alignment with and implementation of	2. Increased alignment and implementation of	Final Reports of the projects	

<p>acquis on the internal gas and electricity market.</p> <p>3. To bring nuclear safety in line with EU standards.</p>	<p>acquis on the internal gas and electricity market, cross border exchanges in electricity, and gas transmission</p> <p>3.Supported nuclear safety, in particular through the safe management of spent fuel and radioactive waste</p>	<p>Line Ministries Annual Reports</p> <p>International Energy Agency Reports and Statistics</p> <p>World Energy Council Reports</p>	<p>Utilization of international financing increased regarding energy efficiency and renewable energy.</p> <p>Relevant analyses for the needs completed for providing effective, transparent and non-discriminatory operation of the natural gas transmission system.</p>
Results of the sector support	Objectively verifiable indicators (OVI)	Sources of Verification	Assumptions
<p>Result 1.a. Absorption capacity of the SMEs, real and legal persons, universities and municipalities in EE regarding financing provided by IFIs tripled from 2007-2011 period by the end of this intervention and the EE financing mechanism strengthened.</p> <p>Result 1.b. Administrative and operational capacity for EE in electricity generation and transmission facilities increased by the end of IPA intervention, compared to current capacity in 2013.</p> <p>Result 1.c. Administrative and operational capacity for EE in natural gas infrastructures increased by the end of IPA intervention, compared to current capacity in 2013. Preliminary studies for the investment in the area of gas transmission completed as of 2017.</p> <p>Result 1.d. The awareness regarding EE in residential and industrial sectors increased.</p>	<ul style="list-style-type: none"> - Result 1: - Business Development Studies for at least 400 SMEs, real and legal persons, universities and municipalities regarding their EE investment processes realized and funded by IFIs by 2017. - Reports and studies needed for EUAS's future efficiency investments completed and preparedness increased by at least 50% by the end of IPA intervention. - The quantity and the quality of data regarding the current conditions of EUAS's electricity generation facilities doubled by the end of IPA intervention, compared to current data collected so far. - Number of the personnel trained in EE of power plants and transmission lines increased by 30%, by 2017. - Economic and technical data on the challenges regarding the investments on EE of gas transmission pipelines 	<p>Participant Lists of training activities</p> <p>TURKSTAT statistics</p> <p>MoEU statistics</p> <p>MENR Annual Progress Reports</p> <p>Monitoring and Interim Evaluation Reports of Projects</p> <p>Final Reports of the projects</p> <p>Prepared Action plans, Manuals, Technical Guides</p> <p>Published regulations and other regulatory documents</p> <p>TAEK Reports</p>	<p>Ministries assigned adequate number of personnel for the projects</p> <p>Appropriate staff participated in the trainings</p> <p>Required data made available by related stakeholders.</p> <p>The preliminary studies concluded in this project are utilized for necessary investments in the forthcoming years.</p> <p>For nuclear energy, relevant studies has been started to be prepared for the safety of the installations.</p> <p>Further projects are developed and implemented by all the relevant institutions which will increase the</p>

<p>More specifically, technical know-how and data regarding waste heat technologies, clean energy applications and efficient lighting technologies, which are at a limited level as of 2013, will be available and improved as of 2017. By the end of IPA intervention, detailed technical information on best available clean energy, efficient lighting and waste heat technologies applied in EU will be available and disseminated via workshops and print reports.</p> <p>Result 2.a. Absorption capacity of the private sector, real and legal persons in RE regarding financing provided by IFIs especially in but not limited to the areas of electricity generation, heating/cooling and transport increased by the end of IPA intervention.</p> <p>Result 2.b. The projects on the utilization of RE technologies in heating/cooling and transport started to be implemented by real and legal persons, private sector and municipalities by the end of the intervention and awareness increased.</p> <p>Result 2.c. The necessary field for private sector and municipalities with regard to R&D studies on the utilization of new RE technologies in the market is introduced and</p>	<p>enhanced by the end of this intervention.</p> <ul style="list-style-type: none"> - Technical sufficiency and the accuracy of current gap analysis reports for efficiency investments in gas transmission networks improved by %15 as of 2017, compared to 2013. - Number of personnel informed about waste heat technologies, clean energy applications and efficient lighting technologies increased by 15% as of 2017 compared to 2013. - Administrative and operational capacity of MENR on waste heat technologies, clean energy applications and efficient lighting technologies increased by 50% as of 2017 compared to 2013. <p>- Result 2:</p> <ul style="list-style-type: none"> - At least 350 small scale projects supported through Business Development Studies regarding renewable energy investments. - Use of RE by real and legal persons through energy projects financed by IFIs increased at least 10% by 2020. - At least 50 projects for RES utilization in heating/cooling and transport realized by 2020. - R&D investments of private sector and municipalities on new RE technologies doubled between 2013 and 2020. - Green Certificate applications introduced by 2017. 		<p>overall effect.</p>
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<p>RE atlas facilitating the utilization of RE are prepared by the end of the intervention.</p> <p>Result 2.d. Green certificate system in RE sector is implemented by the end of project implementation.</p> <p>Result 3.a. Legal, structural and administrative basis for properly functioning energy exchange operations are achieved, by the end of this IPA intervention</p> <p>Result 3.b. Design of the SCADA system (which does not exist by 2013) completed as of 2015 so as to achieve strengthened institutional and physical capacity of transmission system operator in natural gas market.</p> <p>Result 3.c. Investment program for future infrastructure investments of BOTAS as transmission system operator for effective operation of the natural gas transmission system reorganized.</p> <p>Result 4.a. The data center will be established by the end of the intervention.</p> <p>Result 4.b. Coordination among different public authorities and private sector regarding the data collection consolidated with the establishment of the data center.</p> <p>Result 4.c. Long-term energy scenarios, planning and modelling studies prepared</p>	<ul style="list-style-type: none"> - Result 3: - Required administrative structure for energy exchange is established and related studies completed (%100) by 2017. - Study on the identification of the shortcomings in internal market legislation utilized in the preparation of draft legislation on the establishment of the energy exchange by the end of 2015. - 150 personnel trained and specialized on the energy exchange in the year of 2015. - Design of SCADA system and Gas Management Tools completed by 2017. <ul style="list-style-type: none"> - Result 4: - The amount of energy related accessible and reliable data is doubled as of 2017, compared to 2013; by means of data center. - Coordination mechanism within data centre which will coordinate different 		
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<p>following the establishment of the data center.</p> <p>Result 4.d. Transparency and third party access regarding market data provided with the adoption of draft legislation prepared within the scope of intervention.</p> <p>Result 5. Regulatory organizational structure, framework and capacity for nuclear safety improved. Turkish nuclear legislation harmonized with the EU nuclear acquis by end of IPA intervention.</p>	<p>public and private institutions is established and specified personnel employed as of 2017 (As of 2013, there is no coordination mechanism and no specified personnel regarding energy related data).</p> <ul style="list-style-type: none"> - Number of staff and relevant reports regarding energy scenario building and modelling are tripled as of 2017, compared to 2013. - The number of applications for relevant data made by relevant public and private institutions, SMEs and other stakeholders in the energy markets increased as of 2020. <p>- Result 5:</p> <ul style="list-style-type: none"> - Gap analysis report is prepared for the main differences between Turkey existing legislation and its implementation with EU nuclear safety and security acquis up to first three months of the project - Action plan is prepared in order to fully comply with EU acquis up to five months of the project. - 4 regulations are published at the end of the project. - 10 review and assessment procedure for safety analysis report are revised by the end of the project. - Existing regulatory inspection documents 		
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<p>Result 6. Awareness among all relevant stakeholders including industry, private and buildings sectors, SMEs, real and legal persons, universities and municipalities regarding energy efficiency and renewable energy donor coordination and pilot studies increased.</p>	<p>especially guidelines are reviewed by the end of first year.</p> <ul style="list-style-type: none"> - 4 new regulatory inspection documents are prepared by the end of the project. - EU inspectors are take part in at least 5 inspection activities as an observer by the end of the project - National nuclear safety and security regulatory training programme is prepared by the end of the project. - 8 workshops, 8 study visits, 10 internships (each of them is four months) are carried out by the end of the project <p>- Result 6:</p> <ul style="list-style-type: none"> - Applications for EE and RES loans delivered by the commercial banks tripled by the end of IPA intervention. 		
Measures to achieve results	Means / operations	Costs	Assumptions
<p>Measure 1: Energy Efficiency</p> <p>Measure 2: Renewable Energy</p> <p>Measure 3: Electricity and Gas Market Development</p> <p>Measure 4. Long-term energy scenarios,</p>	<p>1) TA</p> <p>2) TA</p> <p>3) TA</p> <p>4) TA and Supply</p>	<p>Measure 1: € 14,750,378 Contract1: € 9,400,378 Contract2: € 5,350,000</p> <p>Measure 2: € 14,429,378</p> <p>Measure 3: € 1,703,654</p> <p>Measure 4: € 5,298,854</p>	<p>Ministries assigned adequate number of personnel for the projects</p> <p>Appropriate staff participated in the trainings</p> <p>Required data made available by related stakeholders.</p>

<p>capacity building and establishment of an Energy Electronic Data Centre.</p> <p>Measure 5. Improvement of Nuclear Safety Regulatory Infrastructure</p> <p>Measure 6: Awareness raising among all relevant Stakeholders</p>	<p>5) TW</p> <p>6) TA</p>	<p>TA: € 1,553,854 Supply: € 3,745,000</p> <p>Measure 5: € 1.902.192 (IPA Contribution: € 1.807.082) (National Contribution: € 95.109)</p> <p>Measure 6: € 1,046,032</p>	<p>The preliminary studies concluded in this project are utilized for necessary investments in the forthcoming years.</p> <p>For nuclear energy, relevant studies has been started to be prepared for the safety of the installations.</p> <p>Further projects are developed and implemented by all the relevant institutions which will increase the overall effect.</p>
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