

#### 4-6 調査実施上の留意点

本格調査実施において必要な留意点を以下にまとめる。

##### (1) 大気汚染に対する基本的考え方

個々の発電会社あるいは地域電力会社が実際の現地発電所の管理運営を行っているが、発電所の電源開発や運転計画も含めすべての決定権は、MOEにある。本格調査時の対象となる2発電所の周開では、発電所に起因する農作物への被害ばかりでなく、健康被害も出ていることから、MOEでも何らかの対策を実施しなければならないという意識が出始めている。しかし、実際には発電所の測定経験が皆無であることから、まず発電所から排出される汚染物質を実際に測定し、定量的に把握し、現状を認識することが重要である。

DOEとしては、発電所周辺に及ぼす影響・被害から生じる損害を算定し、大気汚染対策を導入することによる経済評価をEIAの一手法とする考えに立っているため、本格調査におけるEIAとの整合性を再度確認する必要がある。さらに、世銀からの勧告（重油から天然ガスへの燃料転換）にもあるように、国際的な立場からも環境配慮型の開発が求められていることから、イラン側が何らかの大気汚染対策を導入するような方向性で本格調査を実施していく必要がある。

##### (2) EIAフレームワークの作成

イラン側は、発電所からの環境に及ぼす影響については大気汚染が一番大きく、本格調査で大気汚染に関連した現況調査の重要性を十分認識しているが、水質及び土壌の現況調査を含めたEIAのフレームワークの作成を希望しており、一連の協議の中で何度もDOEからその要望が出された。そこで、本格調査においては、土壌調査の代りに降下ばいじんの測定を行い、発電所からの影響を定量的に把握することとなり、また、水質については、発電所周辺の井戸の水質を調査する提案がなされたが、深井戸でありその影響は考えにくいことから本格調査では行わないこととなった。

以上のように、EIAフレームワークの作成にあたっては、水質及び土壌に対する要望の大きさを踏まえ、イラン側の現状を十分把握し、カウンターパートとの意思疎通を図ることにより、実施可能なものにすることが必要である。

##### (3) 技術移転

本格調査に伴う実測調査はエネルギー省にとって未経験の分野であることから、以下の点について留意する必要がある。

- ① 実測調査の計画策定、機器の選定、実測調査体制の確立、機器の操作、データの整理、評価及びシミュレーションの全段階にわたって、カウンターパートとの協議に十分時間をかけること
- ② 機器は操縦性、維持管理の容易性及びイランでのスペアパーツ、試薬等の入手容易性に十分配慮すること

具体的な技術移転に関しては、セミナー及び On the Job Training (OJT) を通じてイラン側に技術移転を行う予定である。本格調査開始時と終了時に各1回ずつセミナーを開催する予定であるが、調査開始時における技術移転セミナーでは、実測調査の内容や方法、シミュレーションや環境影響評価の内容及び項目等について本格調査のオリエンテーションとして開催し、調査終了時における技術移転セミナーでは、調査結果及びその結果に基づいた低減策について提言し技術移転する。

イラン側は OJT による技術移転に対して大きな期待をしており、積極的に参加する姿勢を示していることから、本格調査団は、イラン側と共同作業を通じて十分な技術移転を行う配慮が求められる。

今回の事前調査において表敬訪問した EPO より、技術移転セミナー参加への要望が出されており、また、調査結果を広く公開する観点から、カウンターパートだけでなく関係機関の参加を要請することが重要と考えられる。

#### (4) 関係機関の協力体制

本格調査のイラン側カウンターパートは MOE-DOE であるが、現在6名とスタッフ数も限られていることから、MOE の関連会社である ICES が本格調査団とともに実測調査を行うことになると考えられる。

今回の事前調査で訪問した発電所側の受入れ態勢は、イラン側の事前の調整が十分に行なわれていたため、発電所側へのインタビューや発電所構内の視察、資料やデータの公表も円滑に行なわれ、発電所側も非常に好意的であった。本格調査においても、イラン側カウンターパートの協力による事前の調整で現地調査が円滑に行なわれると考えられる。

また、DOE 及び本格調査で対象となる2つの発電所とも、英語が理解できる技術者が多いことから、英語による対応が十分可能であると考えられる。

(5) 資機材購送上の留意点

資機材の通関に際しては、DOE が関係機関と事前に調整する旨出されたが、円滑な通関のため購送 1 ヶ月前に資機材の細かい名称、モデル番号、シリアルナンバーを省略せずに提出して欲しい要望が出された。また、資機材の輸送については、通関並びに早期の調査着手のためイラン側は空輸を希望した。

(6) 測定、観測、分析に関する留意点

① 気象と地勢

本格調査対象発電所のある Tabriz 及び Isfahan 両市とも、大陸性気候かつ砂漠気候に近いことから一日の気温差が大きく、そのため一年を通して接地逆転が形成されやすい気象条件となっている。

Isfahan の Islam Abad 発電所の近くには低い山があり、その背後にはすぐ市街地が迫っている。また、Tabriz の Tabriz 発電所に隣接して、石油化学工場が隣接しているなど、シミュレーションを行う際には、現地の状況を十分把握することが必要である。さらに、大気モニタリングステーションの場所の選定にあたっては同様の配慮が必要である。

Tabriz 及び Isfahan 両市の夏の最高気温及び冬の最低気温から、1 年を通して行なわれる環境大気質測定及び気象観測用の機材を保護するため、夏はエアコン、冬はヒータを小屋に設置する必要があると考えられる。

② 電圧の変動

イランの電圧は 220 V、50 Hz であるが、DOE のコメントによれば電圧が上下 20 %、180~260 V の間で変動するため、電圧安定装置が必要であると考えられる。

③ 標準物質の不足

分析で使用する標準物質が不十分であるため、現地で行う分析に必要な標準物質及び試薬に関しては、前もって調達用資機材リストに入れておくことが必要である。

④ 簡易測定 of SO<sub>2</sub> の分析

簡易測定 of SO<sub>2</sub> の分析で必要となるイオンクロマトグラフは、今回の事前調査で訪問した分析機関にはなかった。DOE では、イオンクロマトグラフを購入する予定はあるが、購入時期が流動的であり、一方、カウンターパートはできるかぎり、分析も本格調査団と共同で行い調査団からの技術移転に対し積極的な姿勢を見せていることから、第一次現地調査時に購入時期をよく確認するこ

とが必要である。本格調査に間に合わない場合は、日本に持ち帰り分析することになり、調査団が現地で技術移転を図りながら共同作業を実施する最初の 2 回の実測調査では問題とならないが、後半の実測調査はイラン側だけで行う予定であるため、測定終了後ろ紙を日本に輸送するなどの方法を取る必要が生じる。

⑤ ラジオゾンデに関する規制

ラジオゾンデに関する規制については、事前調査時においても DOE に照会済みであるが、第一次現地調査時に関係機関にもう一度確認する必要がある。

⑥ 測定口の決定

事前調査時に、燃焼パラメータに関する測定口については確認しているものの、口径が 1 インチと不十分なため、新たに測定口を設ける必要があると考えられる。第一次現地調査時に、測定口の位置、足場について、DOE 及び発電所側と十分協議する必要がある。

(7) 省エネルギー

エネルギー消費の合理化と削減に関して様々な方策を講ずるよう第二次 5 ヶ年計画の中で規定していることから、発電所における省エネルギーについてイラン側は非常に高い関心を示しており、協議の中でも何度も言及がなされた。

一方、JICA により「イラン・イスラム共和国エネルギー計画調査」がすでに実施され、また「イラン・イスラム共和国エネルギー最適利用計画」が現在実施されていることから、（これらの調査のイラン側カウンターパートは計画・予算庁 (PBO) である）発電所の省エネルギーに関する技術的助言をする場合には、これらのレポートと整合性をはかり、提言する必要がある。

(8) 情報公開について

今回の事前調査の協議を通じて、写真を含め調査によって得られた情報は公開されるべきことが合意された。しかし、発電所の排出濃度、周辺への着地濃度の測定データ、あるいは排出削減策等は、関係住民、各発電所及び MOE の他の部局、さらに EPO との間で様々な問題を引き起こす可能性があることから、その取扱については十分慎重に行い、公開にあたっては MOE-DOE のイニシアチブの下に行うよう配慮する必要がある。

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters. This section also touches upon the legal implications of failing to maintain such records, which can lead to severe consequences for individuals and organizations alike.

2. The second part of the document delves into the specific requirements for record-keeping, including the types of documents that must be retained and the duration for which they should be kept. It provides a detailed overview of the various categories of records, such as financial statements, contracts, and correspondence, and outlines the best practices for organizing and storing these documents to ensure they are easily accessible when needed.

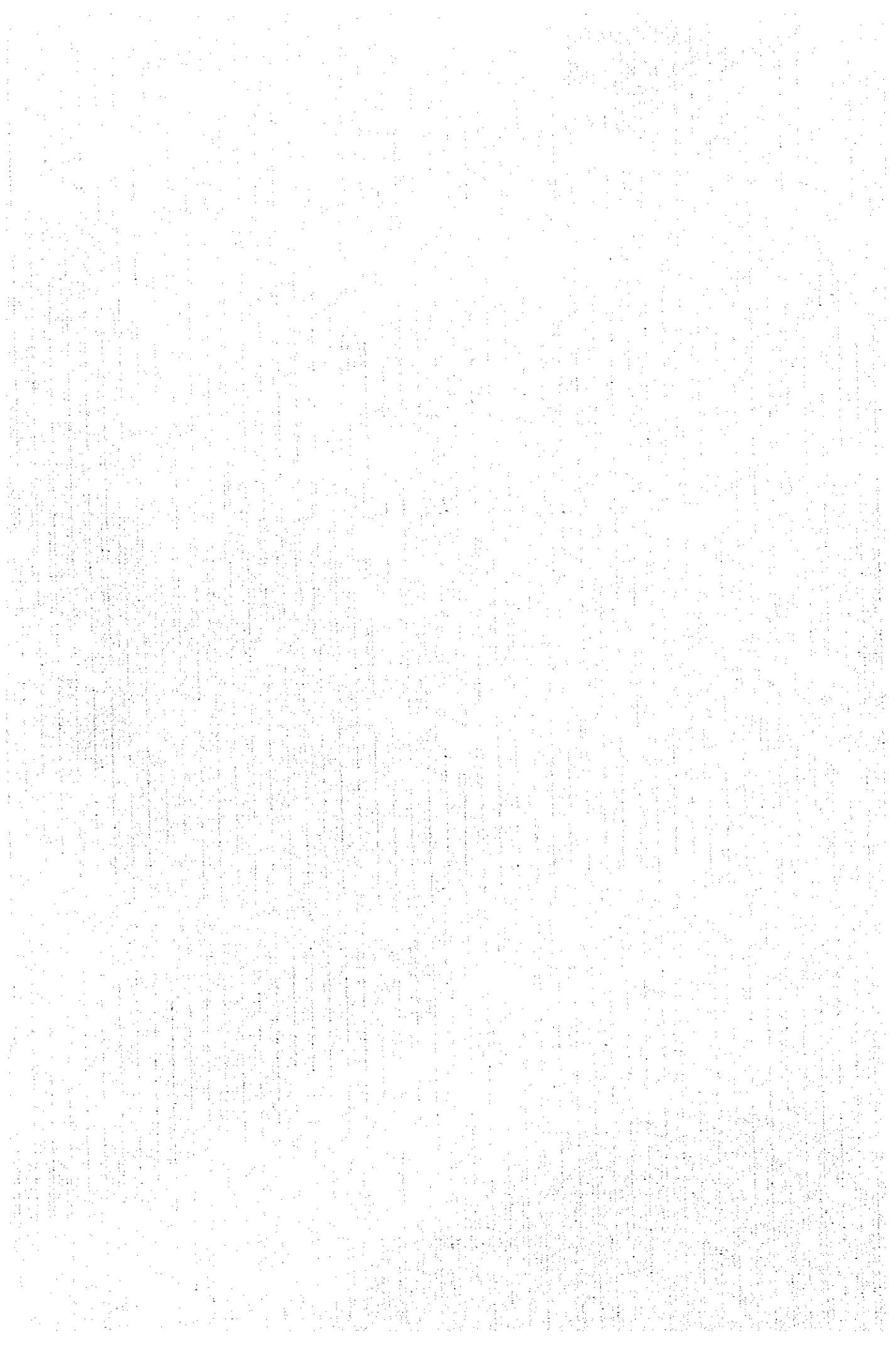
3. The third part of the document addresses the challenges associated with record-keeping, particularly in the context of digital data. It discusses the risks of data loss, corruption, and unauthorized access, and offers strategies to mitigate these risks. This includes the use of secure storage solutions, regular backups, and access controls to protect sensitive information.

4. The fourth part of the document focuses on the role of record-keeping in compliance with various regulations and standards. It highlights the importance of staying up-to-date with the latest legal requirements and industry best practices to avoid penalties and ensure the integrity of the organization's operations. This section also provides guidance on how to conduct regular audits to verify compliance and identify areas for improvement.

5. The fifth and final part of the document concludes by summarizing the key points discussed and reiterating the importance of a proactive approach to record-keeping. It encourages individuals and organizations to take the necessary steps to implement a robust record-keeping system that meets their specific needs and ensures long-term success and compliance.

## 5. 資料

### 5-1 現地調査収集資料



## 5-1 現地調査収集資料

## 事前調査収集資料

番号	資料の名称	版型	ページ数	オリジナルコピーの別数	部数	収集先名称又は発行機関	寄贈・購入(価格)の別	取扱区分	利用表示
1	Environmental studies Program	A5	20	オリジナル	1	エネギ-省環境部	寄贈		
2	Electric Power in Iran 1992	A4	16	オリジナル	1	エネギ-省発電部	寄贈		
3	Electric Power in Iran 1993	A4	32	オリジナル	1	エネギ-省発電部	寄贈		
4	Electric Power in Iran 1994-1995	A4	60	オリジナル	1	エネギ-省発電部	寄贈		
5	Iran's Power Industry Projects Under-Construction	A4	18	オリジナル	1	Tavanir Company Power Organization	寄贈		
6	Iran Center for Energy Studies	A4変	12	オリジナル	1	ICES	寄贈		
7	Tabriz Thermal Power Plant	A4	18	英訳版	1	Tavanir	寄贈		
8	Esfahan (Islam-Abad) Power Plant	A4	15	英訳版	1	Islam-Abad発電所	寄贈		
9	Eshahan発電会社年報(1994-1995)	A4	23	オリジナル	1	Eshahan発電会社	寄贈		
10	Shahid M. Montazery Power Plant	A4	6	オリジナル	1	S.M. Montazery 発電所	寄贈		
11	調査地域の気象	A4	6	コピー	1	気象庁	寄贈		
12	回答書(質問書問2に対する)	A4	4	コピー	1	エネルギー省	寄贈		
13	発電所日報、化学薬品の使用量	A4	2	コピー	1	S.M. Montazery 発電所	寄贈		
14	Iran Water Power Nature	A4変	192	オリジナル	1	エネルギー省	寄贈		



プロ形調査追加収集資料

番号	資料の名称	版型	ページ数	オリジナルコピーの別	部数	収集先名称又は発行機関	寄贈・購入(価格)の別	取扱区分	利用表示
1	Information on Caspian Sea	A4	98	コピー	1	エカバギ-省環境部	寄贈		
2	1:25,000 地形図 (Qazvin, Sari, Rashit, Nazloo, Orumieh, Mahabad, Tabriz)	A1 変	7	オリジナル 一部コピー	1	エカバギ-省発電部	寄贈		
3	水質、水源、気候、国立公園に関する情報	A4	10	オリジナル	1	エカバギ-省発電部	寄贈		
4	General policies, strategies and goals of the second five-year economic, social and cultural development plan of I. R. of Iran	A5 変	119	オリジナル	1	Plan and budget organization	寄贈		
5	第2次社会・経済・文化5ヶ年計画(案)の概要	A4	36	コピー	1	ジエトロテヘラン事務所	寄贈		
6	I. R. Iran Environmental strategy study	A4	96	コピー	1	Ward Bank	寄贈		
7	Macro qualitative objectives, overall policies and strategies set in the second development plan	A4	51	コピー	1	ジエトロテヘラン事務所	寄贈		
8	Low concerning the 2nd five year plan of economic, social and cultural development of I. R. of Iran	A4	48	コピー	1	ジエトロテヘラン事務所	寄贈		

## 5-2 質問書および回答

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## 5.2 質問書および回答

### (1) 質問書

**QUESTIONNAIRE  
ON  
THE STUDY  
ON  
EVALUATION OF ENVIRONMENTAL IMPACT OF THERMAL POWER PLANTS  
IN NORTH AND NORTH-WEST AREA OF THE ISLAMIC REPUBLIC OF IRAN**

Please answer in written English together with supporting data/documents to the following questionnaire by the time of JICA Preparatory Study Team visiting. Please use the updated data as much as possible.

#### 1. Meteorology

In order to understand the dispersion of pollutant into atmosphere, the importance of the meteorological data is well known. Statistical data of the predominant wind direction and mean wind velocity in the Study area are needed in order to make a plan of the framework of the site work prior to the Full-scale Study. Please provide the data of the meteorological observatories within the range of 30 km from each power plant; Neka, Tabriz, Shahid Rajai and Isfahan, and what kind of meteorological data except for the wind direction and velocity are available?

#### 2. Study Area and the Repetition of Question

Study area of ambient air for EIA is thought to be within a radius of approximately 25 to 30 km from each power plant mentioned above. Please answer the questions of 8-2-1, 8-3-1 and 8-6 which were asked in the Questionnaire of the Project Formation Study.

#### 3. Institute for Analysis of Sample

Analysis of the component (heavy metal; V, Pb, Ni and Zn) in the smoke dust and suspended particulate matter, and NO<sub>x</sub>, NO<sub>2</sub> and SO<sub>2</sub> by the simplified measurement of ambient air quality is considered in the Full-scale Study. If these component and parameter are analyzed in I. R. Iran, does the possible institute for the analysis (for example, chemical analysis consultant, institute of university and national institute such as petroleum institute) exist? If so, please list up.

Analyzers to be needed are atomic absorption spectrophotometer (Ni, Zn and Pb), spectrophotometer (V and NO<sub>2</sub>), high sensitive ion chromatograph (SO<sub>4</sub><sup>2-</sup>) and standard equipment for chemical analysis. In case of subcontracting to the local institute, how much does it cost in USD as analysis fee?

4. Reagent for Chemical Analysis

Is it always possible to obtain the reagent and acetylene gas for the analysis of question 3 mentioned above?

5. Upper Layer Observation

Observation by sonde is considered in the Full-scale Study in order to survey temperature distribution, and wind direction and velocity up to a high of 2000 m. Do you have any special regulations for the observation mentioned above (for example, installation of radar reflection board or notice to the air traffic control authorities and air force)?

Helium gas will be used in the observation. Do you have any special regulations to use Helium gas? Is Helium gas available in I. R. Iran? If 300 m<sup>3</sup> of Helium gas is used, how much does it cost to purchase Helium per 1 m<sup>3</sup> in USD?

6. Standard

Do you have any standard for equipment at the procurement of the equipment for the Study (for example, EU, USEPA, DIN and JIS)?

7. Undertaking by Iranian Side

The following undertaking will be borne by the Iranian side, as shown in the Section VII of S/W. Therefore, please make sure the following items once again.

(1) Procedure for customs clearance of equipment and materials

1) Miscellaneous cost for customs clearance in I. R. Iran, in case that equipment and materials are purchased and sent.

- a. Customs, tariff and duty
- b. Value added tax (VAT)
- c. Cost for storage (in case of accumulation of freight)
- d. Customs fee

2) Cost for transportation in I. R. Iran

(2) Transportation of equipment and materials, and the installation

1) Measurement of ambient air quality and meteorological observation

a. Arrangement for the installation site

- Stable power source for the equipment (approximately 30 kVA) and the use of site (permission and the procedure)
- Shelter (container house or shed) for equipment (including air conditioner)

2) Flue gas measurement at the power plant

a. Arrangement for the installation site

- Sampling hole, platform, power source and permission for the entry and measurement

b. Preparation of vehicle for equipment loading (for example, delivery van)

3) Meteorological observation of upper layer

a. Preparation of vehicle for equipment transporting (for example, delivery van)

b. Arrangement for the observation site

(3) Procedure for the permission to obtain data and take them out of I. R. Iran

## (2) 回答

1. 収集資料 11 「調査地域の気象」を参照

2. 収集資料 12 を参照

3. 採取試料の分析機関

分析機関は複数あるが、機関により所有している分析機器のカラムやランプが異なり、体系的な分析をすることは難しい。

分析費用は原子吸光光度計や分光光度計を使用する場合は、1分析項目当たり、1 USDである。

4. 化学分析用の試薬等について

Tehran 大学環境部の場合、主にドイツのMerck 社の試薬を使用しているが、輸入品であるため、入手に時間がかかる。また、体系化された標準物質はなく、一般的な試薬を希釈して検量線を作成している。

5-1. ソンデ観測の条件

以下の条件をもとに気象庁ならびに航空管制当局に申請することにより、許可を得る。

- a) 放球または係留の別
- b) ソンデの周波数
- c) 気球の大きさ

5-2. ヘリウムガスの使用に関する規制ならびに価格

使用に関する規制はない。ヘリウムは輸入品であり、価格は35USD/lである。なお、水素の価格は900,000 Rls/6m<sup>3</sup> (50USD/m<sup>3</sup>)

6. 調査用機材に関する規格

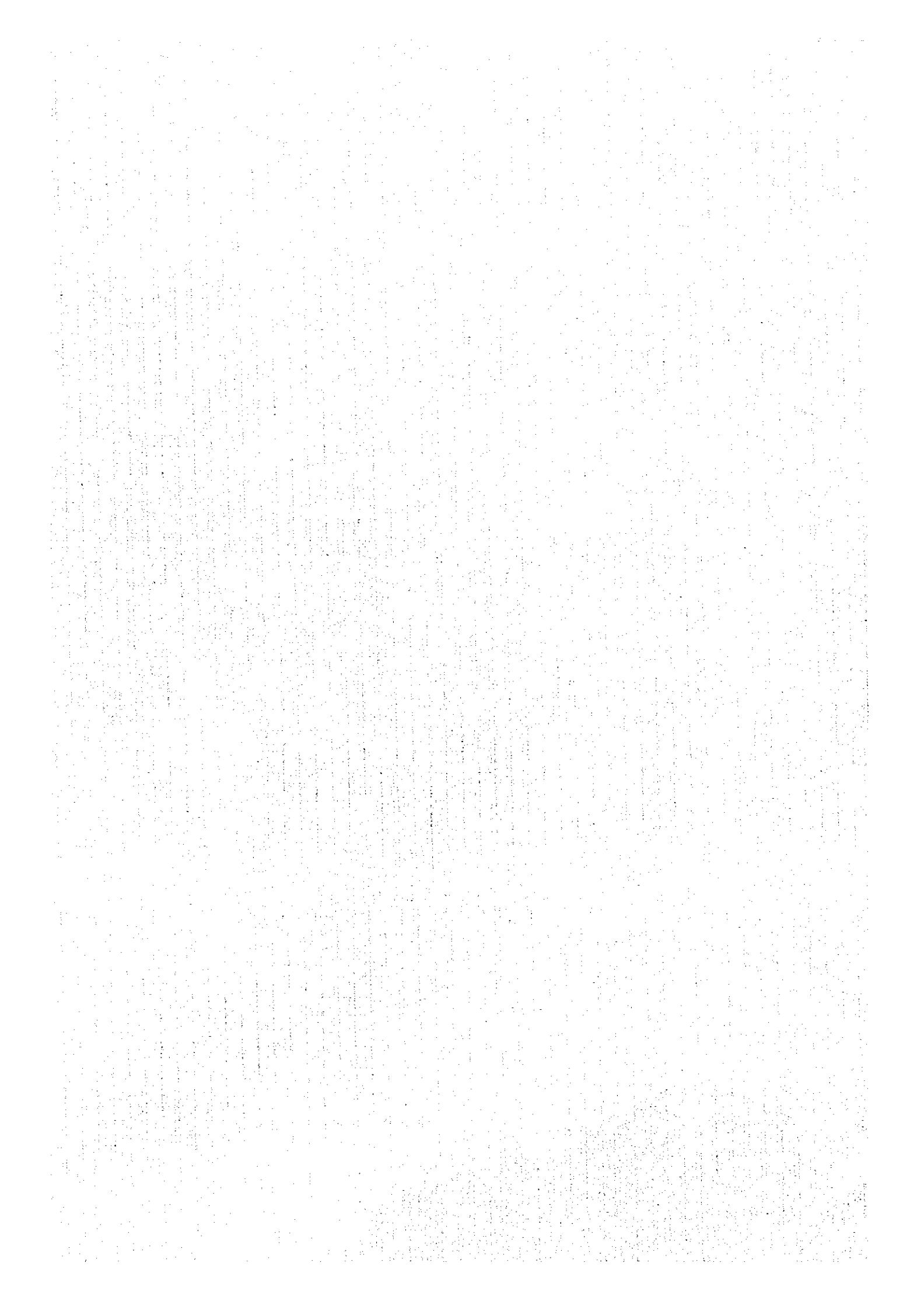
特に基準となる規格はない

7. イラン側便宜供与

質問書に示された、イラン側が提供すべき便宜は、供与することができる。

## 5-3 要請書





**Application for the  
Technical Cooperation (Development Study)  
by the Government of Japan**

**1. Project digest**

**(1) Project Title:** -Evaluation of environmental effects of power plants in north and north-west area of I.R. IRAN

**(2) Location:** -Guilan, Mazandaran and Azerbaijan provinces

**(3) Implementing Agency:**

-Name of the Agency: -Ministry of Energy Deputy Minister for Energy Affairs

-Organization chart: -Attached (see appendix A)

**(4) Justification of the Project**

-Present condition of the sector: -In the past year, lots of changes was adopted in this sector for the attention that has been paid to energy sector at various levels of decision making (for instance, the government's parliament). In short, the present condition of the sector could be listed as the followings:

a) Number of personnels is increased from 5 to 55 staff members within A year. this growth will likely continue.

b) Recently, some solar energy activities have been formed and generally, this sector will serve as focal point of such activities.

More recently, for establishment of a solar energy power plant with 100 mega watts capacity, some meetings has been held with Germans.

- c) The geothermal Sub-Sector has started its activities. presently, this subsector is working on direct transmission of heat from geothermal point sources to some residential places at Azarbaijan state. It is planned to establish a geothermal power plant with global environment facilities (GEF) collaboration.
- d) More recently, department of environment has been established. The goal of above cited department is to evaluate the environment impacts of energy sector and prepare proper mitigation plans.
- e) Energy sector development study is being presently carried out with the help of World Bank.

-Sectoral development policy of the national/local government: -In the 2nd national five year plan of I.R. IRAN more attention has been paid to environmental aspects.

-Problems to be solved in the sector: -Energy and environmental issues

-Purpose (short-term objective) of the project: -Short-Term objectives include an investigation on the present situation of power plants in the three states of Guilan, Mazandran and Azerbaijan. Evaluation of environmental impact of power plants on the ecosystem of the states as well as southern coasts of Caspian Sea.

**-Goal (long-term objective) of the project:** -Long-Term objectives could be classified as the followings:-

- \* Preparation of strategy plan for site selection of power plants
- \* Preparation of mitigation plan for reduction of present adverse effects on environment

**-Prospective beneficiaries**

- \* Sustainable development throughout the country
- \* Preservation of environment at national and regional level.
- \* Health development of the region
- \* Green house gas reduction

**(5) Desirable or scheduled time of the commencement of the Project:** -DEC 1995

**(6) Other relevant Project, if any:** Two projects concerning energy development and air quality control are in hand. The first one looks at the environmental issues generally. The other project objectives are limited and confined to Tehran city only.

## **2. Terms of Reference of the proposed Study**

**(1) Necessity/Justification of the Study:**

- \* So far, such study has not been carried out
- \* It has regional importance

Characteristics of power plants in Guilan, Mazandran and Azarbaïdjan provinces

Power Plant	Type	Capacity (Mega watts)	Location
Shahid-Beheshti	Steam	240	Lushan/Guilan
Shahid-Salmi	Steam	1680	Neka/Mazandaran
Rasht	Gas	44.5	Rasht/Guilan
Guilan *	Gas	814.5	Rasht/Guilan
Sufian	Gas	79	Tabriz/Azarbaïdjan
Shahd-Beheshti	Gas	104.76	Lushan/Guilan
Shahid-Salimi	Gas	290	Neka/Mazandaran
Uromieh	Gas	49.50	Uromieh/Azarbaïdjan
Sefid-Rud	Hydro	87.50	Manjil/Guilan
<b>Total</b>		<b>3389.76</b>	

\* Combined Cycle

(2) Necessity/Justification of the Japanese Technical Cooperation: Japanese have ample experiences in energy sector and environmental issues; therefore, the present proposal could well be benefited by their experts.

(3) Objectives of the Study: -It has been explained earlier

(4) Area to be covered by the Study: Guilan, Mazandaran and Azerbaijan provinces

(5) Scope of the Study: The necessity of any sustainable development (at local, national, regional and international level) list in the environmental protection. Such developments that could harm the human health as well as the ecology of the environment should not be included

in any short and long term objectives. Due to rapid industrialization in Guilan, Mazandaran and Azarbaidjan states, more electricity generations will be required. Considering the fragile ecology of the above cited provinces, such power generations must be environmental friendly.

**(6) Study Schedule:** It will be presented later

**(7) Expected Major Outputs of the Study:**

- \* Effects of power plants on the environments of provinces of Guilan and Mazandran and Azerbaijan
- \* Providing a clear picture for preparation of mitigation plan
- \* Providing useful hints for the preparation of strategy plan
- \* Providing decision makers with appropriate information for the preparation of environment friendly master plan for future developments.
- \* Outlining the required equipment and methodology for pollution control

**(8) Request of the Study to other donor agencies, if any:** -None

**(9) Other relevant information, if any:** Such study has not been carried out so far.

### **3. Facilities and information for the Study Team, etc.**

**(1) Assignment of counterpart personnel of the implementing agency for the Study (number, academic background, etc.):**

- Environmental specialist
  - a) Air pollution

- b) Water pollution
- c) Soil pollution
- d) Hazardous waste
- e) Aquatic
- Hydroelectric specialist
- Thermal specialist
- Energy conservation specialist

Apart from the above qualifications, it is necessary that the outcome and results of this study be comprehended by the related team of Japanese experts.

The estimated staff time is 12 MAN-MONTHS.

**4. Global Issues (Environment, Women In Development, Poverty, etc): -Environment**

**(1) Environmental components (such as pollution control, water supply, sewage, environmental management, forestry, biodiversity) of the Project, if any:**

- Pollution control (Air, Water, Soil, Hazardous Waste)
- Water supply
- Environmental Management
- Forestry
- Biodiversity

**(2) Anticipated environmental impacts (both natural and social) by the Project, if any:**

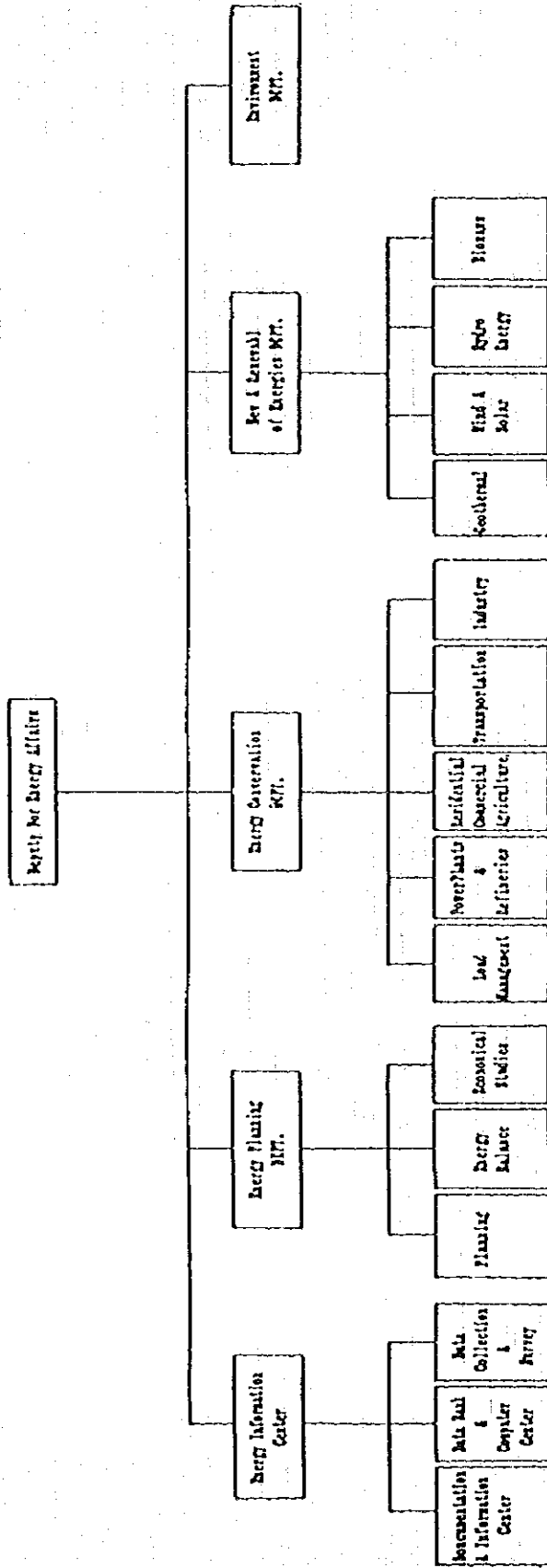
Not only the project does not have any adverse environmental effect, but

it solves many environmental problems.

(3) Women as main beneficiaries or not: -The whole society will be benefited from this project-including women.

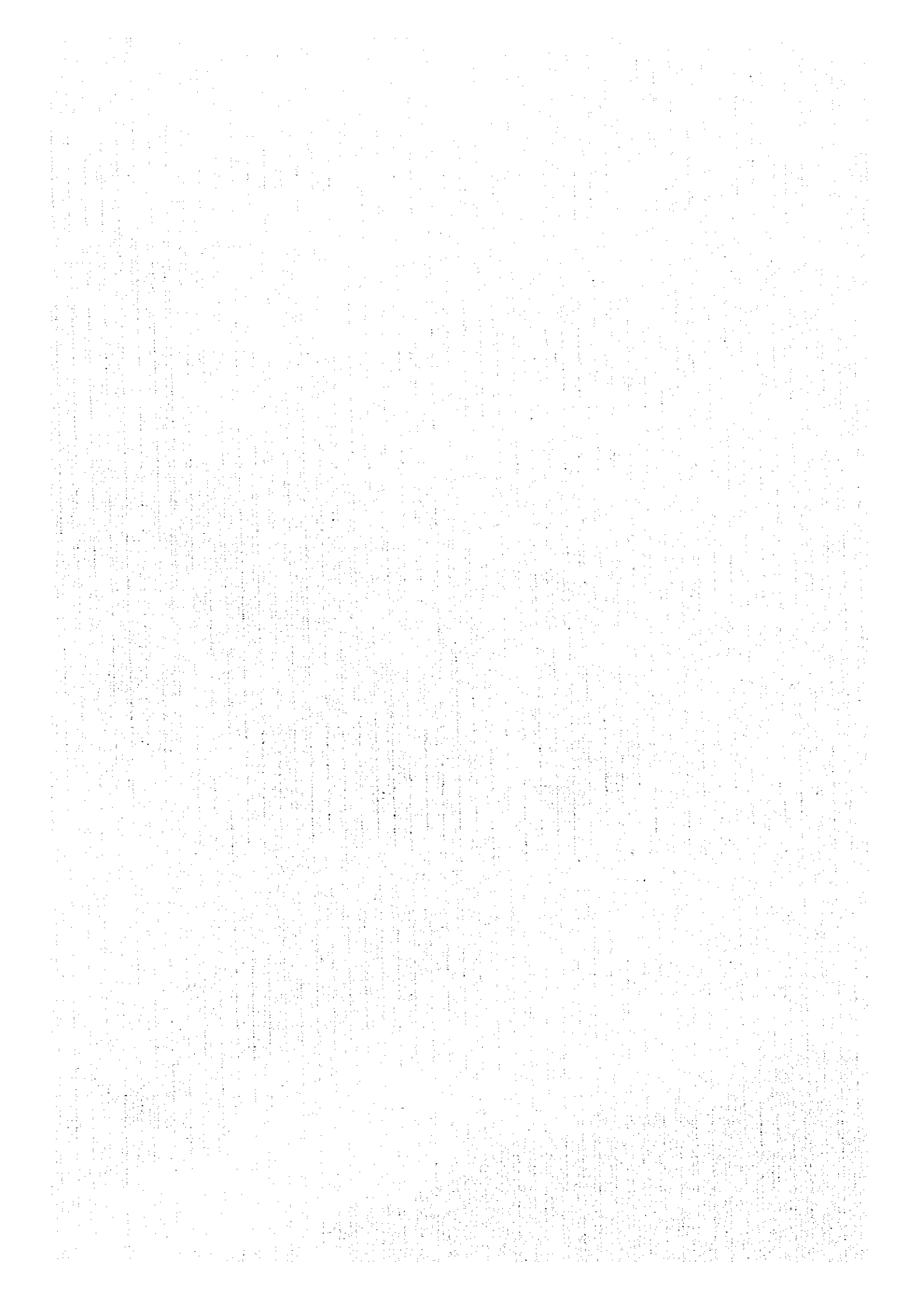






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## 5-4 プロジェクト形成基礎 調査時のM/M



**Minutes of Meetings**  
**for**  
**The Study**  
**on**  
**Evaluation of Environmental Effects of Power Plants**  
**in North and North-West Area of I.R.Iran.**

**Agreed upon Between**  
**The Ministry of Energy**  
**and**  
**The Japan International cooperation Agency**

**Tehran March 16 th., 1996 .**

Abduli Mohammad Ali  
Head of Department of Environment  
Deputy Minister for Energy Affairs  
Ministry of energy, I.R. IRAN



Nobuyuki YAMAURA  
Team Leader  
The Project Formation Team  
Japan International Cooperation  
Agency

The Project Formation team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") of the Government of Japan, headed by Mr. Nobuyuki Yamaura, Leader of the Team, visited Islamic Republic of Iran from March 9 to March 19, 1996 for the purpose of discussing the background and the outline of the development study on evaluation of environmental effects of power plants in north and north-west area of I.R. Iran (hereinafter referred to as "the Study").

The Team had a Series of discussions with Ministry of Energy and Department of Environment (hereinafter referred to as "the Iranian side").

The Salient result of the discussions mutually confirmed are as follows:

### **1. Background of the Study**

In I.R. Iran, the Article 50 of the Constitution describes that the protection of the environment is a public obligation and that all activities which may necessitate pollution or damage to the environment is forbidden. Under this provision Clean Air Act has been established in 1995 and the Department of Environment has set up the framework of Environmental Impact Assessment (EIA) that should be followed by each ministries' wrestle to make it substantial in each sector.

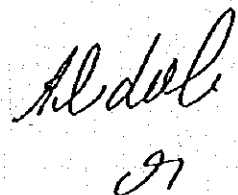
In accordance with these national policy, the Ministry of Energy has set up Environmental department and is to start to asses the Environmental impacts caused by energy sector. Based on these currents, the request for the Study was submitted to the Government of Japan.

### **2. Objective of the study**

The objective of the study is to contribute the activities carried out by the Ministry of energy to asses the environmental impacts caused by the energy sector and to implement the mitigation plan.

### **3. Characteristic of the study**

The study may comprise of these characteristics

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1) To Monitor the present situation of the environmental impacts which considerably appear to be caused by the thermal power plant(s)

2) To formulate and recommend the mitigation plan.

3) To transfer the monitoring technology to Iranian counterpart in the course of the study.

4) To formulate and recommend both the legislative and the administrative framework to improve the environmental situation in power sector.

5) Preparation of Iran's Environmental Impact Assessment framework for Electric Power Projects.

4. Environment Department of the Ministry of Energy shall act as a counterpart agency to the study in relation with other concerned departments of Ministry of energy as well as other ministries and organizations concerned for smooth implementation of the study.

#### 5. Provision of necessary data.

In reply to the questionnaire of JICA, Iranian side will submit the data and information which are indispensable for further consideration by JICA within two months from the date of signing of this Minutes of Meeting, through the Embassy of Japan.

#### Appendix. Major Attendants

*Alidule*  
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# APPENDIX

## Ministry Of Energy

Mr. Hamid Chitchian, Deputy Minister For Energy  
Dr. M. A. Abduli, Head Of Department Of Environment  
Dr. A. R. Karbassi, Environmental Expert

## Department Of Environment

Mr. N. Moharam Nejad, Deputy Director For Research  
Mr. S. Ferdousi, General Director

## Ministry of Foreign Affairs

Mr. Hamid Malakabadi, Deputy Director  
Mr. Saeed Lashkari, Japan Desk

## Team of Japan

Mr. Nobuyuki Yamaura, Leader  
Mr. Itaru Sugiyama, Policy of Environment  
Mr. Susumu Komatsu, Evaluation of Environment

*Abduli*  
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## 5-5 大氣污染防治法

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In the Name of God

A Plan for the Control of Air Pollution

Section One: General

Article 1: In order to implement the 50th Article of the Constitutional Law of the Islamic Republic of Iran, and to cleanse and safeguard the air from pollution, all organizations and institutions, and public and private persons are required to follow the regulations and policies specified in this law.

Article 2: Actions which cause air pollution are forbidden. By air pollution, it is meant the creation and spread of one or more pollutants of solid, liquid, gaseous, light and non-light radiating nature, that when released into the air in certain quantities and for certain time periods, change the quality of the air, making it injurious for humans, other animals, plants, and buildings.

Article 3: The sources of air pollution that fall under the regulations of this law can be classified into three groups:

- A - Motor vehicles
- B - Factories, workshops, and power plants
- C - Business, domestic, and miscellaneous sources

Section 2: Motor Vehicles

Article 4: The use of motor vehicles which emit smoke and other pollutants into the air, above the permitted levels, is forbidden. The permitted level of motor vehicle emissions is determined by the EPO, with the help of the Ministry of Heavy Industry, and approved by the Supreme Council on Environmental Protection Affairs.

**Article 5:** All motor vehicles in use must possess a special license indicating compliance with the permitted levels of air polluting emissions. Owners of motor vehicles are bound, each year, to have their vehicles inspected at the EPO's verification center (established by the Municipality), and to receive a license indicating compliance with the permitted levels of pollution. Those vehicles that do not possess this license will not be allowed to drive on the roads.

**Note 1:** The cost of the inspection of motor vehicles will be collected from the aforementioned vehicle owner, according to rates set by the Ministry of Interior and the EPO, and approved by the Supreme Council on Environmental Protection Affairs.

**Note 2:** The date for the implementation of this Article and its Notes will be at most one year after approval of this law. The EPO and the Municipality, as well as other related organizations, are charged with gathering in the aforementioned time interval, the necessary contingencies for the implementation of this article.

**Article 6:** The Municipalities, the Police Force of the Islamic Republic of Iran, the Ministries and related agencies, are hereby obliged to design and organize the traffic of motor vehicles and the urban transport system, generally, in such a manner as to reduce air pollution, as well as meet the needs of daily urban travel.

**Note 3:** The regulations of this article, which include restrictions on the time and location of urban travel, and recommendations for greater use of public transport, will be passed by the Ministry of Interior (Municipalities), the Police Force of the Islamic Republic of Iran and EPO, and if necessary, together with the related agencies, and in a form approved by the Board of Ministers.

**Article 7:** In emergency situations, when, due to specific atmospheric conditions, air pollution in cities reaches levels deemed dangerous for human and environmental health (as determined by the Ministry of Health and Medical Education), the EPO will, with the help of the Ministry of Interior (Municipalities and Police Force of the Islamic Republic of Iran) place temporary prohibitions and restrictions related to the use of polluting sources, and immediately inform the public of these actions, through the media. With the end of the emergency situation and reduction of air pollution, the EPO will remove these restrictions, and inform the public of the change.

**Article 8:** The production and import of motor vehicles, as well as engines and other parts related to motor ignition, such as carburetors and filters, must comply with the standards of the EPO.

**Article 9:** The Ministry of Heavy Industry is charged with regulating the policies and production plans of units and companies whose function is to produce motor vehicles so that 1) these units do not produce vehicles with engines and parts that are not up to standard, 2) priority is given to the production of vehicles for public transport, and 3) vehicles are produced that are able to use natural gas as well as gasoline.

**Article 10:** Registration of all motor vehicles requires compliance with the standards of Article 8 of this law.

**Article 11:** The standards set in Article 8 and 9 of this law, will be prepared by the EPO with the cooperation of the Ministry of Heavy Industry, the Ministry of Oil, and related research institutions, and approved by the Supreme Council on Environmental Protection Affairs.

### **Section 3: Factoris, Workshops, and Power Plants**

**Article 12:** Establishing new factories and workshops, and changing the location and/or production line of existing factories and workshops, requires compliance with the regulations and criteria of the EPO.

**Article 13:** Ministries of Industry and Heavy Industry, Mines and Metals, Agriculture and Jihad-e-Sazandegi, will, at the time of issuing a permit for the establishment of new factories and workshops, forward a copy to the EPO. The owners of the mentioned permit must comply with Article 12 of this law. The issue of an operation permit requires location approval from the EPO.

**Note 1:** Construction of power plants, refineries, petrochemical factories, defense industry factories, airports, and loading terminals requires compliance with the regulations and standards of the EPO in regards to their location.

**Note 2:** Regulations and standards of Article 12 and 13 will be prepared by the EPO, with the cooperation of ministries mentioned in this article, and will be approved by the Board of Ministries.

**Note 3:** The EPO is charged with publicizing environmental regulations and standards, through related ministries, to the owners of the permits.

**Article 14:** Activities of new factories and workshops that do not comply with the regulations and standards set in Article 12, as well as activities and operations of factories, workshops, and power plants which produce sources of air pollution above the permitted levels, are forbidden.

**Article 15:** The EPO will identify those factories, workshops, and power plants whose pollution is higher than the permitted levels set in the environmental standards, and will communicate this finding, along with the determination of

the type and measure of the pollution, to their owners and other responsible parties. The owners will then be given until a specified time, as determined by the EPO with the help and cooperation of related organizations, to take action in relation to the elimination of the pollution, which may or may not require temporary closure of their work and activities.

**Note 1:** Where the owners or managers of polluting factories and workshops produce plausible explanations as to why they can not reduce their pollution within the specified time, the EPO can, for one time only, grant an extension to the time period.

**Note 2:** The EPO is charged with determining, for every region, clean air standards as well as standards for polluting emissions produced by the factories and workshops of that region, with attention to the quality of the air and ecological conditions of the region, and to submit these standards to applicants and owners of factories and workshops. The permitted levels (environmental health standards) under this Article will be determined by the EPO and approved by the Supreme Council on Environmental Protection Affairs.

**Article 16:** In instances where the owners or other responsible parties of polluting factories, workshops, and power plants do not modify their activities so as to reduce pollution within the allocated period, and with the request of the EPO and the order of the local judge, their activities will be curbed. The above mentioned factories, workshops, and power plants may resume their work only after permission is issued by the EPO and/or through a court order.

**Note:** Where owners and other responsible parties of polluting factories, workshops, and power plants, after receiving the EPO's notice, have not by themselves altered or halted their activities, or, after closure of their factories or



workshops, they resume work without permission from the EPO or a court order, they will be penalized according to this law. Managers of government factories, workshops, and powerplants who ignore the EPO's notice, will have their cases reviewed by special disciplinary committee.

**Article 17:** In an emergency situation or under special atmospheric conditions, the head of the EPO has the power to request the temporary closure of factories and workshops, whose activities pose an immediate danger, until the end of the emergency period. If the EPO meets with a refusal, it can obtain a court order to support its action.

**Article 18:** In cases where a reduction or elimination of pollution resulting from the activities of factories and/or workshops is not possible, and/or their activities pose a danger to the wellbeing of residents in their area, the EPO, with the help of other related ministries and governmental organizations, will determine a plan for the transfer of the mentioned factories and workshops to more appropriate locations. Accordingly, after approval from the Board of Ministries, such a plan can be implemented.

**Article 19:** Factories, power plants, complexes, townships and other production units, must allocate at least 10% of their area to greenery and tree planting. Only through the establishment of such green space, as specified in this article, may these industries continue their operation. Industrial ministries are charged with monitoring compliance with this Article.

**Article 20:** Factories, workshops, power plants, and brick and lime burning furnaces are required to use fuels and combustion systems that reduce the level of air pollution.

**Note:** The Ministry of Oil is charged with placing as a priority, the distribution of gas to industrial units such as factories, workshops, and brick furnaces, located adjacent to large cities.

**Article 21:** The regulations of this Section and those related to the prohibition of industrial units in the vicinity of cities, will be determined by the EPO, with the cooperation of related ministries, and approved by the Board of Ministries.

#### **Section 4: Business, Domestic, and Miscellaneous Sources**

**Article 22:** The spread of any type of air polluting material, above the permitted level, from business, domestic, and miscellaneous sources, into the open air, is forbidden. The type and amount of pollution coming from business, domestic, and miscellaneous sources, and the permitted levels under this Article, will be determined by the EPO and approved by the Supreme Council on Environmental Protection Affairs.

**Article 23:** Sources of pollution, such as public baths, bakeries, hotels, and restaurants, should, in their plans for controlling the spread of smoke, soot, and other pollutants, adopt the use of cleaner fuels, such as natural gas, that cause less air pollution. The Ministry of Oil should put as a priority, the supply of natural gas to businesses and public services.

**Article 24:** In order to prevent environmental pollution, hospitals, clinics, and health centers will be bound, after a date established by the EPO, to use standardized incinerators, and to use such equipment in the proper, recognized manner, as determined by the EPO. Those hospitals, clinics and health centers that are unable to use such standardized equipment, will have their waste collected in a speedy manner by an EPO appointed organization, after submitting the proper fee.

**Article 25:** The burning and storage of city and household waste and any type of refuse, in public areas, is forbidden.

**Article 26:** The Ministry of Housing and Urban Development, and the Ministry of Interior are charged with creating a separate section within their planning documents, for the study of environmental problems. Such plans, which include those for the creation of green areas, road and transportation networks, housing regulations, etc., must comply with the EPO's standards, regulations, and requirements.

**Article 27:** Regulations pertaining to the implementation of Article 26 of this law will be determined by the Ministry of Housing and Urban Development, the Ministry of Interior, and the EPO, and approved by the Board of Ministries.

**Article 28:** The creation of any type of noise pollution above the permitted levels, is forbidden. The regulations for the control of noise pollution will be determined by the EPO and approved by the Board of Ministries.

#### **Section 5: Punishments**

**Article 29:** Individuals who use motor vehicles that pollute above the permitted levels, and those who ignore the regulations of Article 7 of this law, will be sentenced a fine of 5000 to 100,000 Rials, depending on the number of cylinders, the volume of the engine, and the level of pollution of the car, as well as the repetition of the offense. This fine will be in accordance with the regulations set by the EPO and the Ministry of Interior, and approved by the Board of Ministries. In the meantime, the polluting motor vehicle will be banned from travel and use.

**Article 30:** Owners and responsible parties of polluting factories and workshops which act against Articles 14, 16, and 17 of this law, will be sentenced, for their first

offense, a fine of 500,000 to one million Rials. If repeated, they will be sentenced to imprisonment from two to six months and fined 700,000 to two million Rials.

**Note 1:** Owners and responsible parties of these polluting factories and workshops will, in addition to the aforementioned sentences, be required to pay compensation to the EPO as well as the general public, in accordance with a court order.

**Article 31:** Individuals who prevent EPO inspectors from taking samples for the determination of pollution levels, or who give false information to these inspectors, will, in accordance to the gravity of the case, be fined 500,000 to five million Rials. If such an offense is repeated, they will be sentenced to imprisonment of one to three months and fined once again.

**Note :** Should inspectors of the EPO themselves participate with such individuals in providing false information, they will be prosecuted by a special disciplinary committee and receive the maximum sentence, as specified above.

**Article 32:** Owners of businesses and other public buildings who act against Article 25 of this law in the creation of air pollution will be sentenced a fine of 100,000 to 500,000 Rials, and on repetition, 300,000 to two million Rials.

**Article 33:** Individuals responsible for air and noise pollution due to miscellaneous and residential sources, will be sentenced a fine of 30,000 to 300,000 Rials, and on repetition, 100,000 to one million Rials.

#### **Section 6 :Miscellaneous Regulations**

**Article 34:** The Radio and Television Organization of the Islamic Republic of Iran is charged with arranging, with the help of the EPO, programming appropriate.

for the education of the public on the regulations and laws pertaining to the protection of the environment.

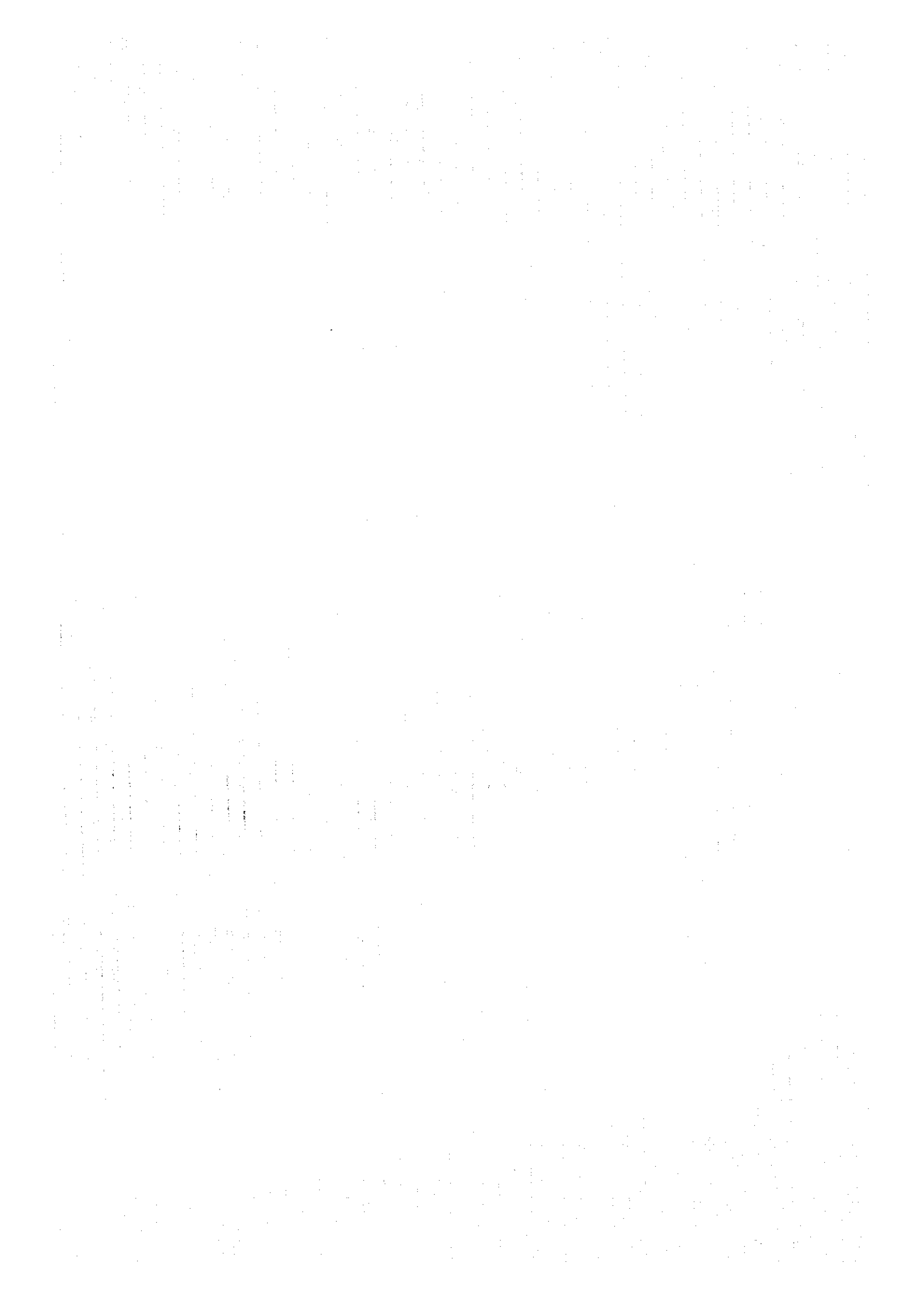
**Article 35:** The revenue generated from the fines specified in this law will be transferred to the government treasury account. Furthermore, every year, 50% of the revenue and a maximum of one billion Rials will be allocated to the EPO for the implementation of this law, and 20% and a maximum of 400 million Rials will be issued to the Police Force.

**Article 36:** The regulations pertaining to this law will be prepared by the EPO (and in some cases, with the cooperation of other relevant organizations) within three months after approval of this law.

**Article 37:** The President and the Chair of the EPO are responsible for the execution of this law, and must report every six months on the status of its implementation to the relevant subcommittee of the Parliament of the Islamic Republic of Iran.

**Article 38:** From the time of the announcement of this law, all other laws contrary to it and related to the control of air pollution, will be cancelled.

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