بسم الله الرحمن الرحيم

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طاقة الشمال
North Lebanon Alternative Power
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Environment Impact Assessment of Waste to Incineration Power Plant NLAP-IPP in Srar (Akkar/North Lebanon)

Waste incinerator 450 ton/day, 25 MW electricity

تقييم الاثر البيئي لمحطة طاقة كهربائية تعمل على التفكك الحراري للنفايات

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Content

Introduction

This document is the first document concerning the process to get permission from Lebanese Government to operate NLAP-IPP.

الخطوات لإجراء المشروع:

1. طلب إذن من التنظيم المدني على اجراء المشروع في ارض معينة. سيعطي الإذن اذا كانت الارض مصنفة لهذا الغرض

2. لما يوجد الإذن من التنظيم المدني: طلب سماح تقديم تقييم أثر بيئي من وزارة البيئة.

3. كتابة تقييم الأثر البيئي (Environment Impact Assessment - EIA)

The EIA Report includes[1]:

- Description of the Project
- Baseline scenario
- Environmental factors affected
- Effects on the environment
- Assessment of Alternatives
- Mitigation or Compensation Measures
- Monitoring
- Non-Technical Summary
- Quality of the EIA Report

[1] ( ).

1 Laws

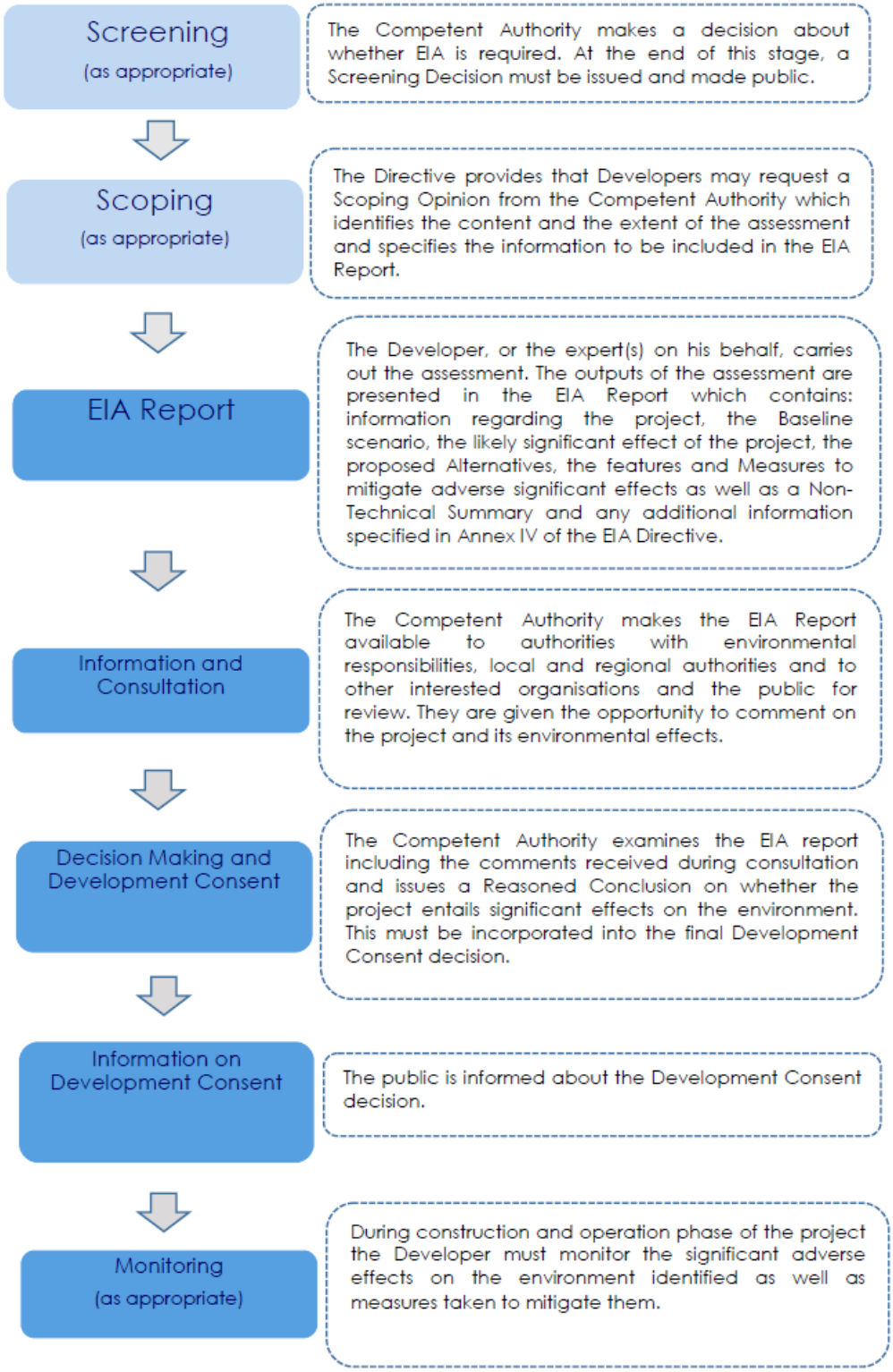
1.1 Description to write an Environment Impact Assessment

http://ec.europa.eu/environment/eia/eia-support.htm

EU Commission guidance documents:

- (2017)
- (2017)
- (2017)

1.1.1 Steps of EIA



1.1.2 The review checklist

SECTION 1 DESCRIPTION OF THE PROJECT				
No.	Review Question	Relevant?	Adequately Addressed?	What further information is needed?
The Objectives and Physical Characteristics of the Project				
1.1	Are the Project's objectives and the need for the Project explained?			
1.2	Is the programme for the Project's implementation described, detailing the estimated length of time (e.g. expected start and finish dates) for construction, operation, and decommissioning? (this should include any phases of different activity within the main phases of the Project, extraction phases for mining operations for example)			
1.3	Have all of the Project's main characteristics been described? (for assistance, see the Checklist in Part C of the Scoping Guidance Document in this series)			
1.4	Has the location of each Project component been identified, using maps, plans, and diagrams as necessary?			
1.5	Is the layout of the site (or sites) occupied by the Project described? (including ground levels, buildings, other physical structures, underground works, coastal works, storage facilities, water features, planting, access corridors, boundaries)			
1.6	For linear Projects, have the route corridor, the vertical, and horizontal alignment and any tunnelling and earthworks been described?			
1.7	Have the activities involved in the construction of the Project (including land-use requirements) all been described?			
1.8	Have the activities involved in the Project's operation (including land-use requirements and demolition works) all been described?			
1.9	Have the activities involved in decommissioning the Project all been described? (e.g. closure, dismantling, demolition, clearance, site restoration, site re-use, etc.)			
1.10	Have any additional services, required for the Project, been described? (e.g. transport access, water, sewerage, waste disposal, electricity, telecoms)			
1.11	Are any developments likely to occur as a consequence of the Project identified? (e.g. new housing, roads, water or sewerage infrastructure, aggregate extraction)			
1.12	Have any existing activities that will alter or cease as a consequence of the Project been identified?			

SECTION 2 DESCRIPTION OF ENVIRONMENTAL FACTORS LIKELY TO BE AFFECTED BY THE PROJECT				
No.	Review Question	Relevant?	Adequately Addressed?	What further information is needed?
Baseline: Aspects of the Environment				
2.1	Have the existing land uses on the land to be occupied by the Project and the surrounding area described and are any people living on or using the land been identified? (including residential, commercial, industrial, agricultural, recreational, and amenity land uses and any buildings, structures or other property)			
2.2	Have the topography, geology and soils of the land to be occupied by the Project and the surrounding area been described?			
2.3	Have any significant features of the topography or geology of the area described and are the conditions and use of soils been described? (including soil quality stability and erosion, agricultural use and agricultural land quality)			
2.4	Has the biodiversity of the land/sea to be affected by the Project and the surrounding area been described and illustrated on appropriate maps?			
2.5	Have the species (including their populations and habitats), and the habitat types that may be affected by the Project been described? (Particular attention should be paid to any species and habitats protected under the Habitats and Birds Directives (Directives 92/43/EEC and 2009/147/EC).			
2.6	Have the Natura 2000 sites that may be affected by the Project been described?			
2.7	Has the water environment of the area been described? (including reference to any River Basin Management Plans/Programme of Measures under the WFD, running and static surface waters, groundwaters, estuaries, coastal waters and the sea and including run off and drainage. N.B. not relevant if water environment will not be affected by the Project)			
2.8	Have the hydrology, water quality, and use of any water resources that may be affected by the Project been described? (including any River Basin Management Plans/Programme of Measures under the WFD, use for water supply, fisheries, angling, bathing, amenity, navigation, effluent disposal)			
2.9	Have local climatic and meteorological conditions in the area been described? (N.B. not relevant if the atmospheric environment will not be affected by the Project)			
2.10	Has existing air quality in the area been described, including, where relevant, limit values set out by Directives 2008/50/EC and 2004/107/EC as well as relevant Programmes adopted under this legislation? (N.B. not relevant if the ambient air will not be affected by the Project)			

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SECTION 3 DESCRIPTION OF THE LIKELY SIGNFICANT EFFECTS OF THE PROJECT				
No.	Review Question	Relevant?	Adequately Addressed?	What further information is needed?
Scoping of Effects				
3.1	Has the process by which the scope of the information for the EIA Report defined been described? (for assistance, see the Scoping Guidance Document in this series)			
3.2	Is it evident that a systematic approach to Scoping has been adopted?			
3.3	Was consultation carried out during Scoping?			
3.4	Have the comments and views of consultees been presented?			
Prediction of Direct Effects				
3.5	Have the direct, primary effects on land uses, people, and property been described and, where appropriate, quantified?			
3.6	Have the direct, primary effects on geological features and characteristics of soils been described and, where appropriate, quantified?			
3.7	Have the direct, primary effects on biodiversity been described and, where appropriate, quantified? (if relevant, are references made to Natura 2000 sites? (Directive 2009/147/EC and Directive 92/43/EEC))			
3.8	Have the direct, primary effects on the hydrology and water quality of water features been described and, where appropriate, quantified?			
3.9	Have the direct, primary effects on uses of the water environment been described and, where appropriate, quantified? (if relevant, are references made for River Basin Management Plans/Programmes of Measures under the WFD (2000/60/EC))			
3.10	Have the direct, primary effects on air quality been described and, where appropriate, quantified? (if relevant, are references made to Air Quality Plans under Directives 2008/50/EC and 2004/107/EC))			
3.11	Have the direct, primary effects on climate change been described and, where appropriate, quantified?			
3.12	Have the direct, primary effects on the acoustic environment (noise or vibration) been described and, where appropriate, quantified? (if relevant, are references made to Action Plans/Programme under the Environmental Noise Directive (2002/49/EU))			
3.13	Have the direct, primary effects on heat, light or electromagnetic radiation been described and, where appropriate, quantified?			

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SECTION 4 CONSIDERATION OF ALTERNATIVES				
No.	Review Question	Relevant?	Adequately Addressed?	What further information is needed?
4.1	Have the different Alternatives suggested during Scoping been considered and assessed, and if not has justification been provided?			
4.2	Have the Developer and practitioners, who are preparing the EIA Report, identified and assessed additional Alternatives (to the ones suggested during Scoping)?			
4.3	Have the process by which the Project was developed been described and are the Alternatives to the design of the Project considered during this process been described? (for assistance, see also the guidance on types of Alternatives which may be relevant in the Scoping Guidance Document in this series)			
4.4	Have the Alternatives to the design considered during this process been described? (for assistance, see also the guidance on types of alternatives which may be relevant in the Scoping Guidance Document in this series)			
4.5	Have the Alternatives to technology been considered during this process? (for assistance, see also the guidance on types of Alternatives which may be relevant in the Scoping Guidance Document in this series)			
4.6	Have the Alternatives to the location considered during this process been described? (for assistance, see also the guidance on types of alternatives which may be relevant in the Scoping Guidance Document in this series)			
4.7	Have the Alternatives to the size considered during this process been described (for assistance, see also the guidance on types of alternatives which may be relevant in the Scoping Guidance Document in this series)			
4.8	Have the Alternatives to the scale considered during this process been described? (for assistance, see also the guidance on types of alternatives which may be relevant in the Scoping Guidance Document in this series)			
4.9	Has the Baseline situation in the 'do-nothing' scenario been described?			
4.10	Are the Alternatives realistic and genuine Alternatives to the Project? (i.e. feasible Project options that meet the objectives)			

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SECTION 5 DESCRIPTION OF MITIGATION				
No.	Review Question	Relevant?	Adequately Addressed?	What further information is needed?
5.1	Where there are significant adverse effects on any aspect of the environment, has the potential for the mitigation of these effects been discussed?			
5.2	Have the measures that the Developer has proposed to implement, in order to mitigate effects, been clearly described and is their effect on the magnitude and significance of impacts clearly explained?			
5.3	Have any proposed mitigation strategy's negative effects been described?			
5.4	If the effect of Mitigation Measures on the magnitude and significance of impacts is uncertain, has this been explained?			
5.5	Is it clear if the Developer has made a binding commitment to implement the mitigation proposed or acknowledged that the Mitigation Measures are just suggestions or recommendations?			
5.6	Do the Mitigation Measures cover both the construction and operational phases of the Project?			
5.7	Have the Developer's reasons for choosing the proposed mitigation been explained?			
5.8	Have the responsibilities for the implementation of mitigation including roles, responsibilities, and resources been clearly defined?			
5.9	Where the mitigation of significant adverse effects is not practicable, or where the Developer has chosen not to propose any mitigation, have the reasons for this been clearly explained?			
5.10	Is it evident that the practitioners developing the EIA Report and the Developer have considered the full range of possible approaches to mitigation, including measures to avoid, prevent or reduce and, where possible, offset impacts by alternative strategies or locations, changes to the Project design and layout, changes to methods and processes, 'end of pipe' treatment, changes to implementation plans and management practices, measures to repair or remedy impacts and measures to compensate impacts?			
Other Questions on Mitigation				

SECTION 6 DESCRIPTION OF MONITORING MEASURES				
No.	Review Question	Relevant?	Adequately Addressed?	What further information is needed?
6.1	Where adverse effects on any aspect of the environment are expected, has the potential for the monitoring of these effects been discussed?			
6.2	Are the measures, which the Developer proposes implementing to monitor effects, clearly described and has their objective been clearly explained?			
6.3	Is it clear whether the Developer has made a binding commitment to implement the proposed monitoring programme or that the Monitoring Measures are just suggestions or recommendations?			
6.4	Have the Developer's reasons for choosing the monitoring programme proposed been explained?			
6.5	Have the responsibilities for the implementation of monitoring, including roles, responsibilities, and resources been clearly defined?			
6.6	Where monitoring of adverse effects is not practicable, or the Developer has chosen not to propose any Monitoring Measures, have the reasons for this been clearly explained?			
6.7	Is it evident that the practitioners developing the EIA Report and the Developer have considered the full range of possible approaches to monitoring, including Monitoring Measures covering all existing environmental legal requirements, Monitoring Measures stemming from other legislation to avoid duplication, monitoring of Mitigation Measures (ensuring expected significant effects are mitigated as planned), Monitoring Measures capable of identifying important unforeseen effects?			
6.8	Have arrangements been proposed to monitor and manage residual impacts?			
Other Questions on Monitoring Measures				

SECTION 7 QUALITY				
No.	Review Question	Relevant?	Adequately Addressed?	What further information is needed?
Quality of presentation				
7.1	Is the EIA Report available in one or more clearly defined documents?			
7.2	Is the document(s) logically organised and clearly structured, so that the reader can locate information easily?			
7.3	Is there a table of contents at the beginning of the document(s)?			
7.4	Is there a clear description of the process that has been followed?			
7.5	Is the presentation comprehensive but concise, avoiding irrelevant data and information?			
7.6	Does the presentation make effective use of tables, figures, maps, photographs, and other graphics?			
7.7	Does the presentation make effective use of annexes or appendices to present detailed data that is not essential to understanding the main text?			
7.8	Are all analyses and conclusions adequately supported with data and evidence?			
7.9	Have all sources of data been properly referenced?			
7.10	Has terminology been used consistently throughout the document(s)?			
7.11	Does it read as a single document, with cross referencing between sections used to help the reader navigate through the document(s)?			
7.12	Is the presentation demonstrably fair and, as far as possible, impartial and objective?			
Non-Technical Summary				
7.13	Does the EIA Report include a Non-Technical Summary?			
7.14	Does the Summary provide a concise but comprehensive description of the Project, its environment, the effects of the Project on the environment, the proposed Mitigation Measures, and proposed monitoring arrangements?			
7.15	Does the Summary highlight any significant uncertainties about the Project and its environmental effects?			
7.16	Does the Summary explain the Development Consent process for the Project and the EIA's role in this process?			
7.17	Does the Summary provide an overview of the approach to the assessment?			

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1.1.3 Example section: Waste Framework Directive

Name used	Formal name
WasteFD	■ Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain directives
Relevant EU guidance:	■ Application of EIA Directive to the rehabilitation of landfills.

The WasteFD establishes a legal framework for the management and treatment of most waste types. The Directive sets out a waste hierarchy that ranges from prevention to disposal. Waste management under the Directive must be implemented without endangering human health and without harming the environment (e.g. without risk to water, air, biodiversity, and without causing nuisance). It also sets out rules for extended producer responsibility, effectively adding to the burdens of manufacturers to manage products returned after use.

Opportunities for synergy

The WasteFD requires the adoption and implementation of Waste Management Plans and Waste Prevention Programmes at the national and local levels. These plans and programmes should analyse the current situation with regards to waste treatment, as well as identify the measures needed to carry out waste management in the context of the WasteFD's objectives. This includes existing and planned waste management installations, which are likely to constitute Projects subject to the EIA Directive. As waste installations should be provided for under Waste Management Plans, they are also subject to the requirements of the SEA Directive (see above).

The EIA Directive may also bear relevance for any Project with regard to the waste produced not only during the construction and operation of the Project, but also, in particular, with regard to the decommissioning and/or rehabilitation of the site.

During the preparation of the EIA Report, the waste produced and returned to the Project location must be taken into consideration in assessing the Project's significant effects on the environment, and would be relevant for the establishment of Alternatives and Mitigation as well as Compensation Measures.

1.2 Incineration of Waste Directive 2000/76/EC2

1.2.1 Summary of Directive 2000/76/EC on the incineration of waste (the WI Directive)

entered into force on 28 December 2000. It repealed former directives on the incineration of hazardous waste (Directive 94/67/EC) and household waste (Directives 89/369/EEC and 89/429/EEC) and replaced them with a single text. The aim of the WI Directive is to prevent or to reduce as far as possible negative effects on the environment caused by the incineration and co-incineration of waste. In particular, it should reduce pollution caused by emissions into the air, soil, surface water and groundwater, and thus lessen the risks which these pose to human health.

This is to be achieved through the application of operational conditions, technical requirements, and emission limit values for incineration and co-incineration plants within the EU.

The WI Directive sets emission limit values and monitoring requirements for pollutants to air such as dust, nitrogen oxides (NOx), Sulphur dioxide (SO_2), hydrogen chloride (HCl), hydrogen fluoride (HF), heavy metals and dioxins and furans. The Directive also sets controls on releases to

[2] http://ec.europa.eu/environment/archives/air/stationary/wid/legislation.htm

water resulting from the treatment of the waste gases. Most types of waste incineration plants fall within the scope of the WI Directive, with some exceptions, such as those treating only biomass (e.g. vegetable waste from agriculture and forestry). Experimental plants with a limited capacity used for research and development of improved incineration processes are also excluded.

The WI Directive makes a distinction between:

a) incineration plants (which are dedicated to the thermal treatment of waste and may or may not recover heat generated by combustion) and

b) co-incineration plants (such as cement or lime kilns, steel plants or power plants whose main purpose is energy generation or the production of material products and in which waste is used as a fuel or is thermally treated for the purpose of disposal).

The WI Directive provides for public consultation, access to information and participation in the permitting procedure.

Transposition into national legislation was necessary by 28 December 2002. From this date on new incinerators have had to comply with the provisions of the WI Directive. The deadline to bring existing plants into compliance was 28 December 2005.

1.2.2 Legislation Summary - Waste incineration 3

The European Union (EU) has introduced measures to prevent or reduce air, water and soil pollution caused by the incineration or co-incineration of waste, as well as the resulting risk to human health. These measures specifically require a permit be obtained for incineration and co-incineration plants, and emission limits for certain pollutants released to air or to water.

1.2.2.1 ACT

Directive of the European Parliament and of the Council of 4 December 2000 on the incineration of waste [**See amending act(s)**].

1.2.2.2 SUMMARY

Incineration of both hazardous and harmless wastes may cause emissions of substances which pollute the air, water and soil and have harmful effects on human health. In order to limit these risks, the European Union (EU) shall impose strict operating conditions and technical requirements on waste incineration plants * and waste co-incineration plants *.

1.2.2.3 Plants

This Directive not only applies to solid or liquid waste incineration plants, but also to co-incineration plants.

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:l28072

Experimental plants which aim to improve the incineration process and which treat less than 50 tons of waste are excluded from the scope of the Directive, as are plants which only treat:

- vegetable waste from agriculture and forestry;
- vegetable waste from food processing, if the heat generated is recovered;
- certain fibrous vegetable waste from pulp paper or paper production if it is co-incinerated at the place of production and the heat generated is recovered;
- certain wood waste;
- cork waste;
- radioactive waste;
- animal carcasses;
- waste resulting from the exploration of oil and gas and incinerated on board off-shore installations.

1.2.2.4 Permits

All incineration or co-incineration plants must have a permit to carry out their activities. The permit will be issued by the competent authority on the condition that the requirements defined in this Directive are complied with. The permit specifies the categories and quantities of waste which may be treated, the plant's incineration or co-incineration capacity and the procedures for sampling and measuring air and water pollutants to be used.

1.2.2.5 Delivery and reception of waste

During delivery and reception of waste, the operator of the incineration plant or co-incineration plant shall take all necessary precautions to prevent or limit negative effects on the environment and risks to people.

Furthermore, prior to accepting hazardous waste at the incineration plant or co-incineration plant, the operator of the plant must have at their disposal the administrative information on the generating process, the physical and chemical composition of the waste, as well as on the hazardous characteristics of the waste.

1.2.2.6 The operating conditions

In order to guarantee complete waste combustion, the Directive requires all plants to keep the incineration or co-incineration gases at a temperature of at least 850°C for at least two seconds. If hazardous waste with a content of more than 1 % of halogenated organic substances, expressed as chlorine, is incinerated, the temperature has to be raised to 1 100 °C for at least two seconds.

The heat generated by the incineration process has to be put to good use as far as possible.

1.2.2.7 Air emissions limit values

The limit values for **incineration plant** emissions to air are set out in Annex V to the Directive. They concern heavy metals, dioxins and furans, carbon monoxide (CO), dust, total organic carbon (TOC), hydrogen chloride (HCl), hydrogen fluoride (HF), Sulfur dioxide (SO_2) and the nitrogen oxides (NO and NO_2).

The determining of limit values for **co-incineration plant** emissions to air is set out in Annex II. In addition, special provisions are laid down relating to cement kilns and combustion plants which co-incinerate waste.

1.2.2.8 Water discharges from the cleaning of exhaust gases

Incineration and co-incineration plants must have a permit which authorizes them to discharge used water caused by exhaust-gas clean-up. This permit will ensure that the emission limit values set out in Annex IV to the Directive are complied with.

1.2.2.9 Residues

Incineration or co-incineration residues must be reduced to a minimum and, as far as possible, recycled. When dry residues are transported, precautions must be taken to prevent their dispersal in the environment. Tests must be carried out to establish the physical and chemical characteristics, and polluting potential, of residues.

1.2.2.10 Monitoring and surveillance

The Directive requires the installation of measurement systems to monitor the parameters of an installation and relevant emissions. Emissions to air and to water must be measured continuously or periodically in accordance with Article 11 and Annex III of the Directive.

1.2.2.11 Access to information and public participation

Applications for new permits must be made accessible to the public so that the latter may comment before the competent authority reaches a decision.

For plants with a nominal capacity of two tonnes or more per hour, the operator must provide the competent authority with an annual report on the functioning and monitoring of the plant, to be made available to the public. A list of plants with a nominal capacity of less than two tonnes per hour must be drawn up by the competent authority and made available to the public.

1.2.2.12 Implementation reports

By 31 December 2008, the Commission must report to Parliament and the Council on the application of the Directive, progress achieved in emission control techniques and experience with waste management. This report has been included in the Communication .

Other reports on the implementation of the Directive will also be produced.

1.2.2.13 Penalties

The Member States must determine the penalties applicable to breaches of the Directive.

1.2.2.14 Content

This Directive aims to integrate into existing legislation technical progress in terms of monitoring emissions from incineration processes and to ensure compliance with the international commitments made by the Community with regard to reducing pollution, specifically concerning the setting of emissions limit values for dioxides, mercury and dust produced by waste

incineration. The Directive is based on an integrated approach: limits relating to water discharges have been introduced alongside value limits set for emissions into air.

1.2.2.15 Key Terms of the Act

- Incineration plant: any stationary or mobile technical unit and equipment dedicated to the thermal treatment of wastes with or without recovery of the combustion heat generated. This includes the incineration by oxidation of waste as well as other thermal treatment processes such as pyrolysis, gasification or plasma processes in so far as the substances resulting from the treatment are subsequently incinerated.
- Co-incineration plant: any stationary or mobile plant whose main purpose is the generation of energy or production of material products and:

References

Act	Entry into force	Deadline for transposition in the Member States	Official Journal
Directive	28.12.2000	28.12.2002	OJ L 332 of 28.12.2000

Amending act	Entry into force	Deadline for transposition in the Member States	Official Journal
Regulation (EC) No	11.12.2008	-	OJ L 311 of 21.11.2008

The successive amendments and corrections to Directive have been incorporated in the original text. This is of documentary value only.

1.2.2.16 RELATED ACTS

of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) [Official Journal L 334 of 17.12.2010].Commission Decision of 20 February 2006 laying down a questionnaire to be used for reporting on the implementation of Directive on the incineration of waste [Official Journal L 121 of 06.05.2006].See also

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1.3 Laws and Guidance Issues Implemented in Srar EIA

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2 Description of the Environment

2.1 Introduction

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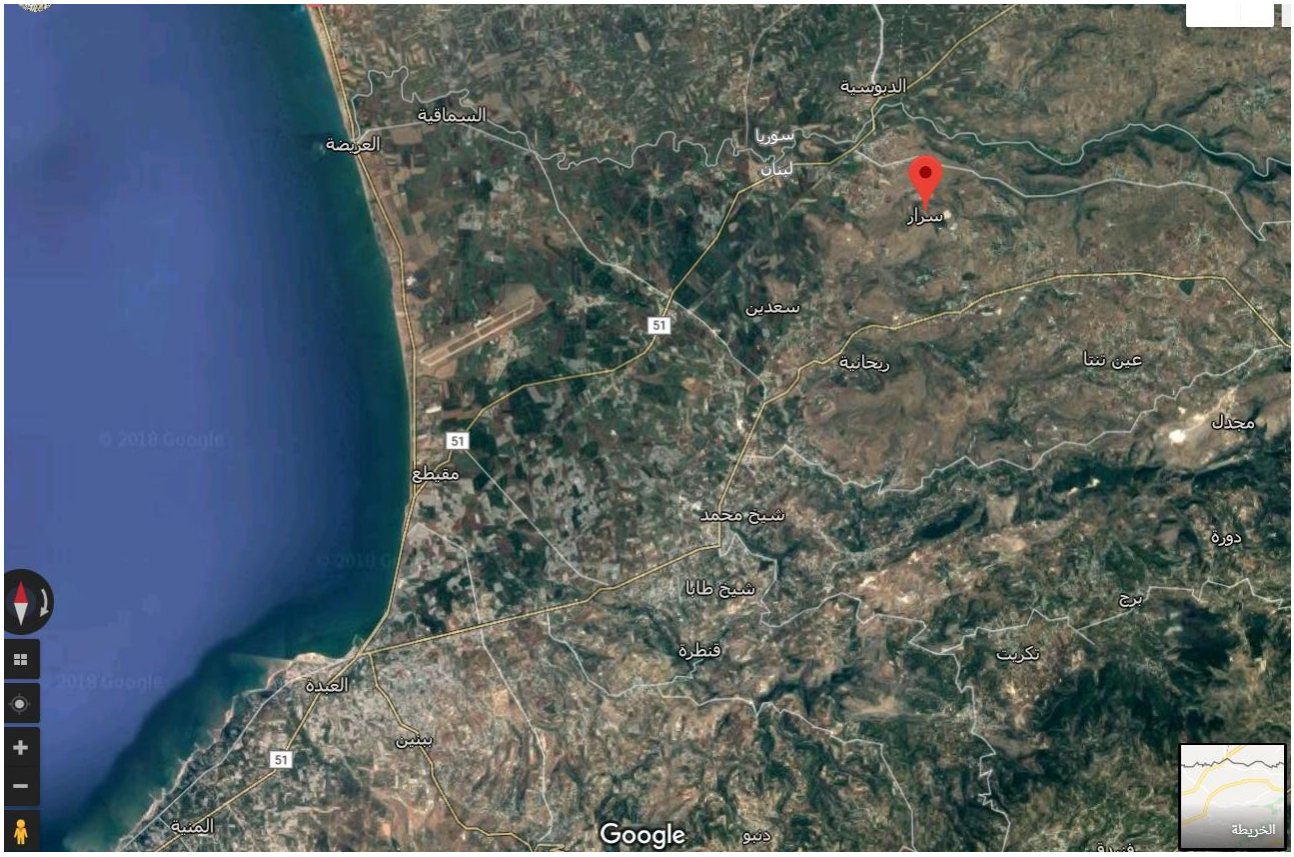
2.2 Description of the Area



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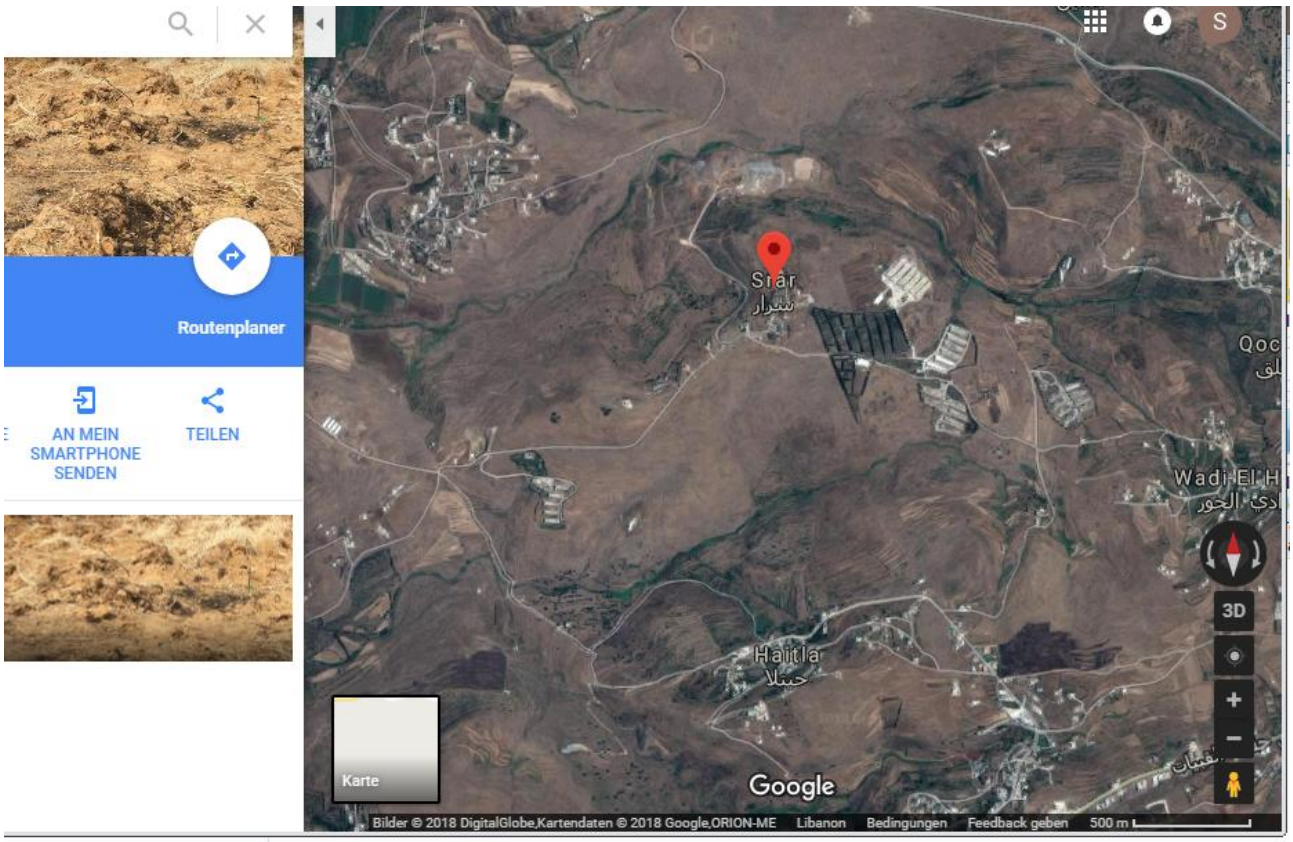


2.3 Environmental Components in Srar

2.3.1 Physical Resources

Description of Existing Environment

A. Physical Environment

Components/ Parameters	☐ Yes	☐ No	Remarks
1. What is the general elevation of the proposed *gasoline station project site*? <100 m 100-300 301-500 501-1,000 1,000-1,500 >1,500 (To determine elevation, refer to the topographic map where the elevation per contour line is indicated)	200m		
2. Slope and Topography of the area *(within 50-meter radius from center of site)* ☐ Terrain is flat or level (0-3% slope) ☐ Gently sloping to undulating (3-8% slope) ☐ Undulating to rolling (8-18% slope) ☐ Rolling to moderately steep (18-30% slope) ☐ Steeply rolling (30-50% slope) ☐ Very steep to mountainous (>50% slope)	☐ errain is flat or level (0-3% slope)		

Do you know of any land sliding occurring or that has occurred in the site? NO Cause of Landslide:				
Has the area experienced any flooding during the wet season?				
Soil type of the area	☐ layey soil	☐ andy loam soil	☐ S andy soil	☐ Other soil types:
Is there an access road going to the project site? If yes, what is its distance to the site _____km.			Type of access road: public road	
Does the site conform to the approved land use of the municipality? Yes				
Are there existing structures or developments around the project site? If yes, please list them			Electricity Water	
Project Activities Affecting the Physical Environment	☐ **es**	☐ **No**		
Cooling water cycle Waste input management Aches management Waste water management Are there any structures on the proposed site? Will there be demolition of existing structures? If yes, what types of structures will be demolished? Types of Structures:				
11. Is there a need to construct an access road going to the site? NO If Yes, what type of access road: [ ] all weathered road, length _____(m) width ____, [ ] concrete, [ ] asphalt				
B. Biological Environment	☐ **es**	☐ **o**		
Are there any trees and other types of vegetation in the *project site*? If yes, please *identify*.		NO		
Are there birds and other forms of wildlife found in the area? Please *identify*.		NO		
Is the site near or within a watershed or forest reservation area? If near, only, how near? _____1km_____				

If within, indicate name of the watershed or forest reservation area		
Are there any reserved forests or protected area within 1,000 m of the proposed site?		NO

What is the present land use in the vicinity (roughly a radius of 500m) of the proposed site?

Coastal / Marine	Residential	Forest	Mangrove	Grassland	Agriculture

Project Activities Affecting the Biological Environment	**Yes**	**No**
Type of vegetation on site		
1. Will there be vegetation clearing?		NO
2. Will clearing activities affect any critical wildlife habitats?		NO
3. Will clearing activities affect any rare, threatened or endangered plant and animal species?		NO
4. Will there be trees to be affected (e.g. cut down; remove) during clearing? If yes, how many and what are these species of trees?		NO
Will the project cause an increase in traffic or disrupt traffic in major routes due to the entry and exit of construction equipment?	YES	
Is the available domestic water supply enough to meet the maximum projected water consumption of the petrol station?		NO

C. Socio-Economic Environment

1. Are there existing settlements in the proposed station? If yes, indicate the number of: (within 50m radius) Yes

Households/Families:3 families ___

Project Activities Affecting the Socio-Cultural and Economic Environment	**Yes**	**No**
Will the project cause or increase traffic in the areas?	Yes	
Are there existing transport services/facilities routing the areas?	yes	
Will the project cause an increase in traffic or disrupt traffic in major routes due to the entry and exit of construction equipment?	yes	
Is there a prevailing water shortage or water supply problem in the area?		No
Are there already existing commercial establishments within the vicinity of the project area?	yes	

2.3.2

2.3.3 Socio-Cultural and Economic Activities

In Srar, that is a sanitary landfill, does not exist a social and cultural activities.

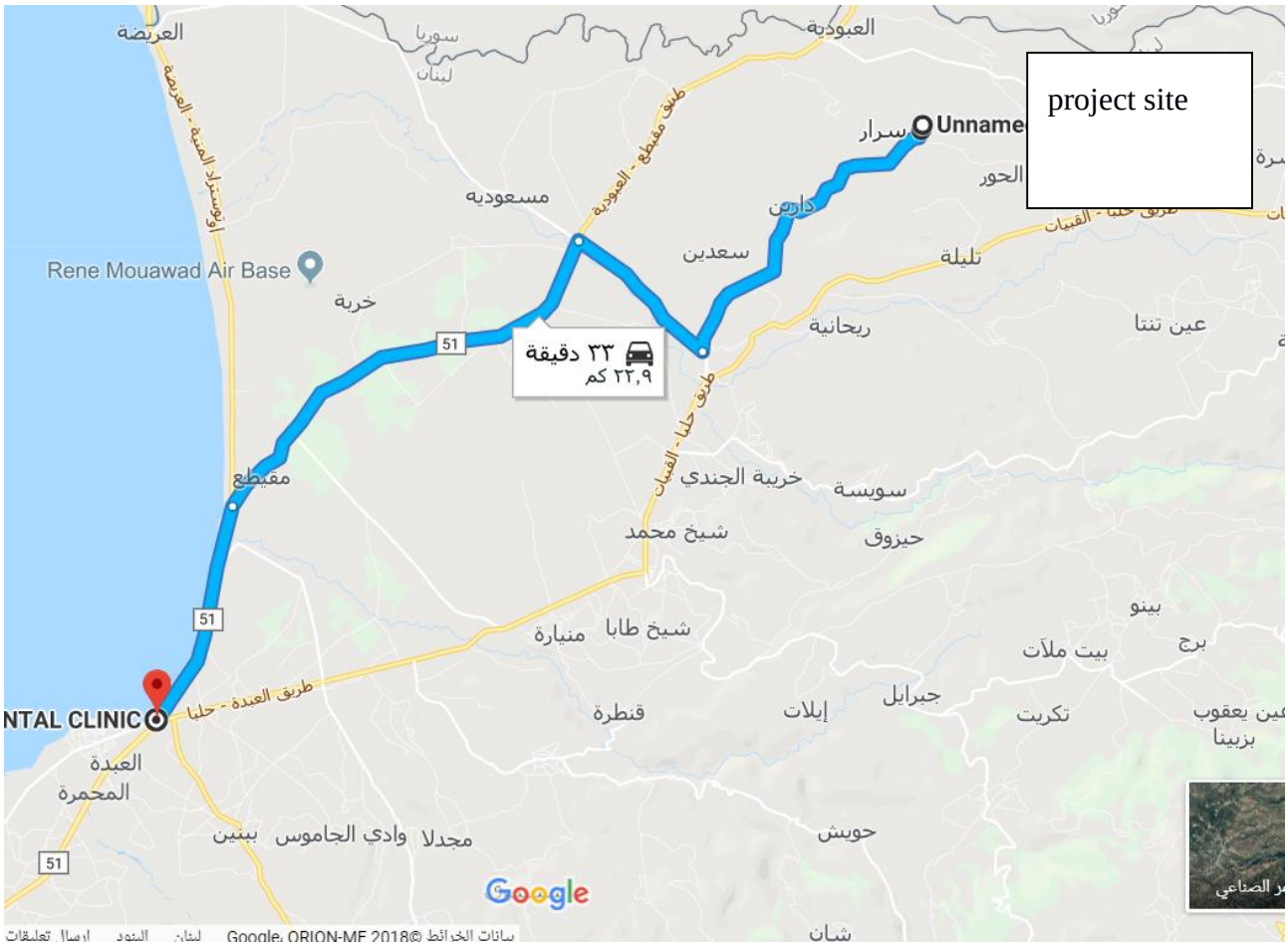
2.3.4 Education and Literacy

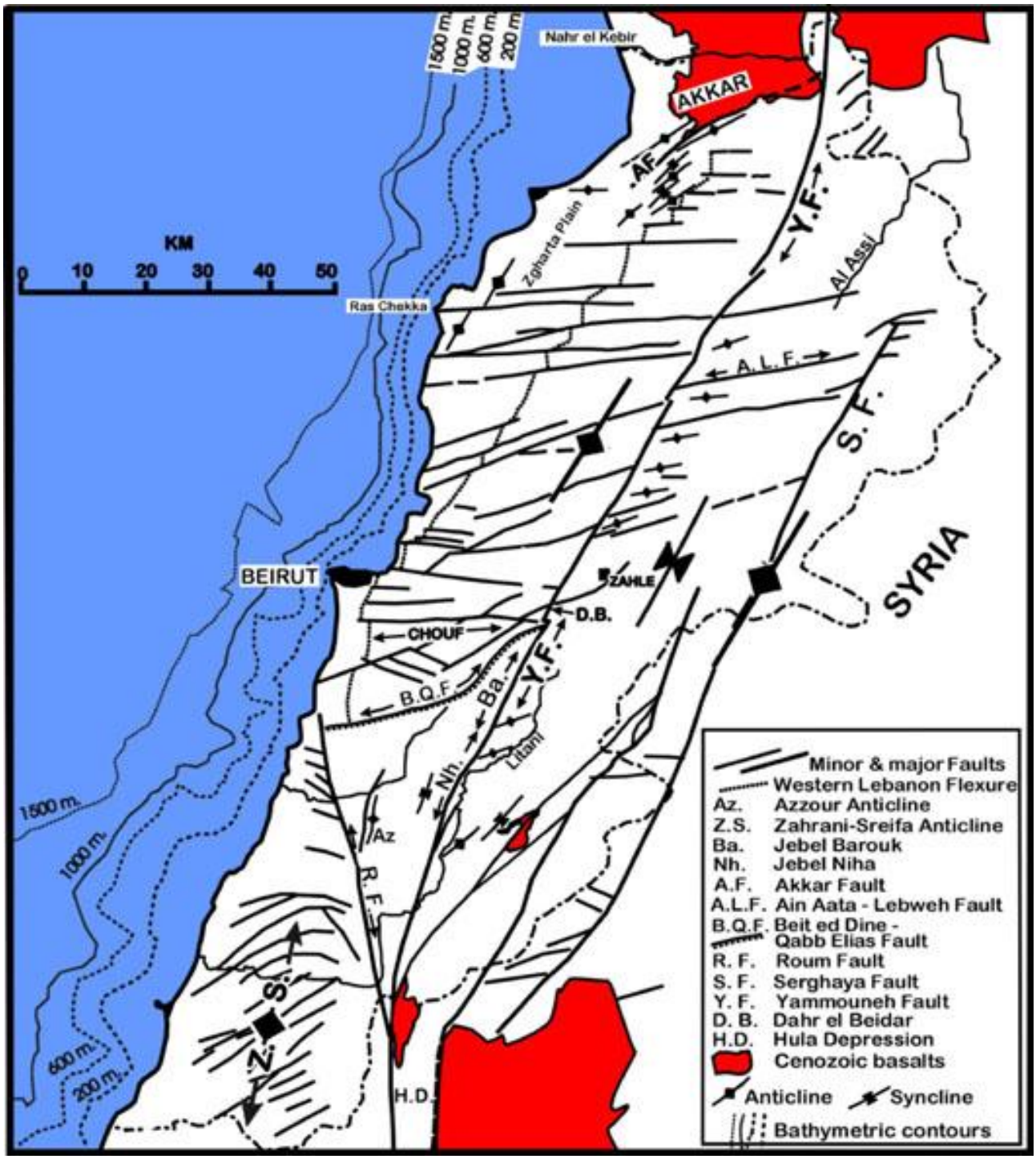
2.3.5 Environment, Archaeological Sites and Cultural Heritage

2.3.6 Cultural Facilities

3 Description of the Project

3.1 Location of the Project





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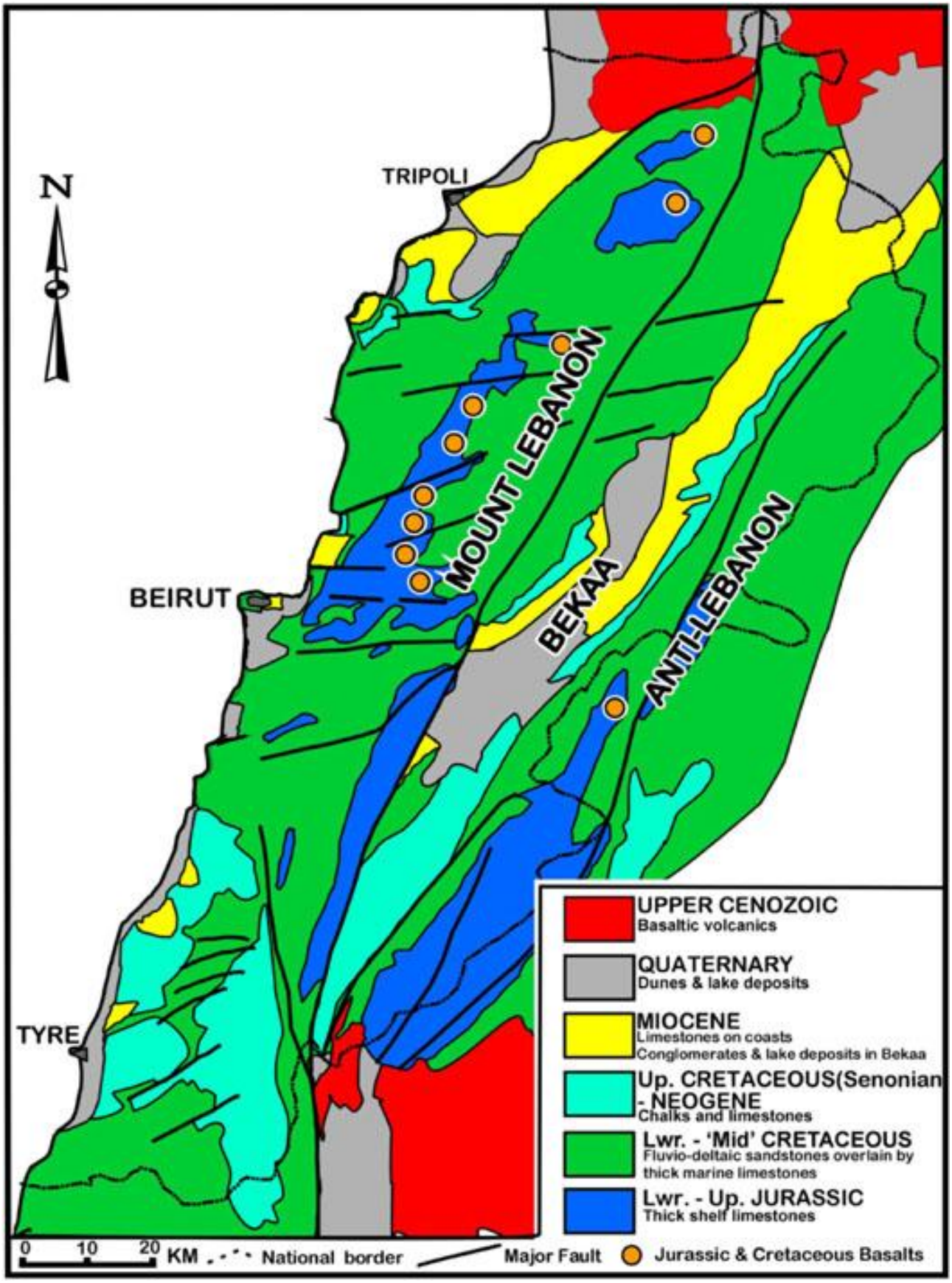

N
TRIPOLI
BEIRUT
TYRE
MOUNT LEBANON
BEKAA
ANTI-LEBANON
UPPER CENOZOIC
Basaltic volcanics
QUATERNARY
Dunes & lake deposits
MIOCENE
Limestones on coasts
Conglomerates & lake deposits in Bekaa
Up. CRETACEOUS(Senonian
- NEOGENE
Chalks and limestones
Lwr. - 'Mid' CRETACEOUS
Fluvio-deltaic sandstones overlain by
thick marine limestones
Lwr. - Up. JURASSIC
Thick shelf limestones
0 10 20 KM
National border
Major Fault
Jurassic & Cretaceous Basalts

3.2 Type of Project (Size and Magnitude of the Project)

In Srar 100 of 130 municipalities of Akkar put their waste. This is 400 t per day. It is planned to build a WtE facility. It is an industrial project composed in particular of an incinerator and a system of turbine plus generator to transform the heat of steam to electricity.

In the following picture we observe the details of the sanitary landfill in srar

WORKS CONTRACT NOTICE

Construction of Solid Waste Management Facilities in Baalbek, Srar-Akkar and Joub Janine in four (4) lots

Location - Lebanon

1. **Publication reference**

   EuropeAid/138647/DH/WKS/LB

2. **Procedure**

   Open

3. **Programme title**

   Upgrading Solid Waste Management capacities in Bekaa and Akkar regions in Lebanon (SWAM)

   Upgrading Solid Waste Management capacities in Lebanon (SWAM II)

4. **Financing**

   Financing agreement No. ENPI/2013/024-977 and No. ENI/2014/025-014

5. **Contracting Authority**

   The Office of the Minister of State for Administrative Reform

CONTRACT SPECIFICATIONS

6. **Description of the contract**

   OMSAR intends to implement the following works:

   - a sanitary landfill in Baalbek, Lebanon with a capacity of 1 million m^3 including lining for Phase A;
   - a steel hangar to house the sorting plant in Baalbek, Lebanon (about 3,400 m^2);
   - a sanitary landfill in Srar, Akkar, North Lebanon with a capacity of 280,000 m^3;
   - a steel hangar to house the sorting plant in Srar, Akkar (about 2,800 m^2);
   - concrete platform for composting and maturation (about 5,000 m^2) part of the Srar, Akkar

3.3 Need of the Project & Project Objective

To solve the both problems waste and shortage of electricity in Akkar. In Srar 100 of 130 municipalities of Akkar put their waste. This is 400 t per day.

3.4 Data Collection and Preparation of Maps

During commissioning and operation emissions data shall be measured and collected.

3.5 Methodologie

After commissioning the plant shall be operated for 8 hours a day. During operation the exact waste volume per day needed to generate the power that will be known insha Allah.

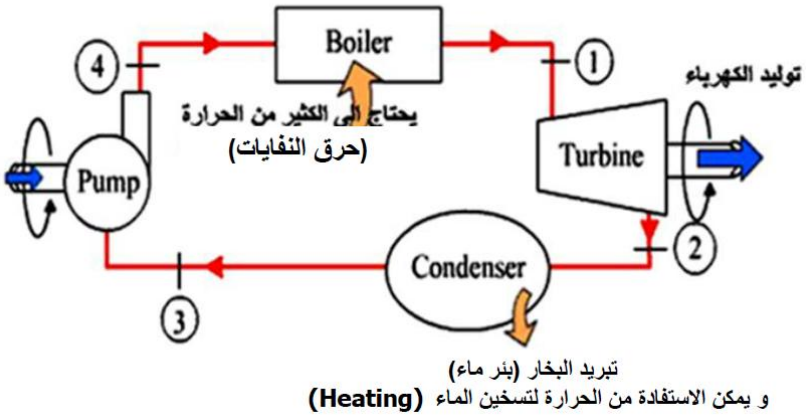
3.6 Description the of the installation

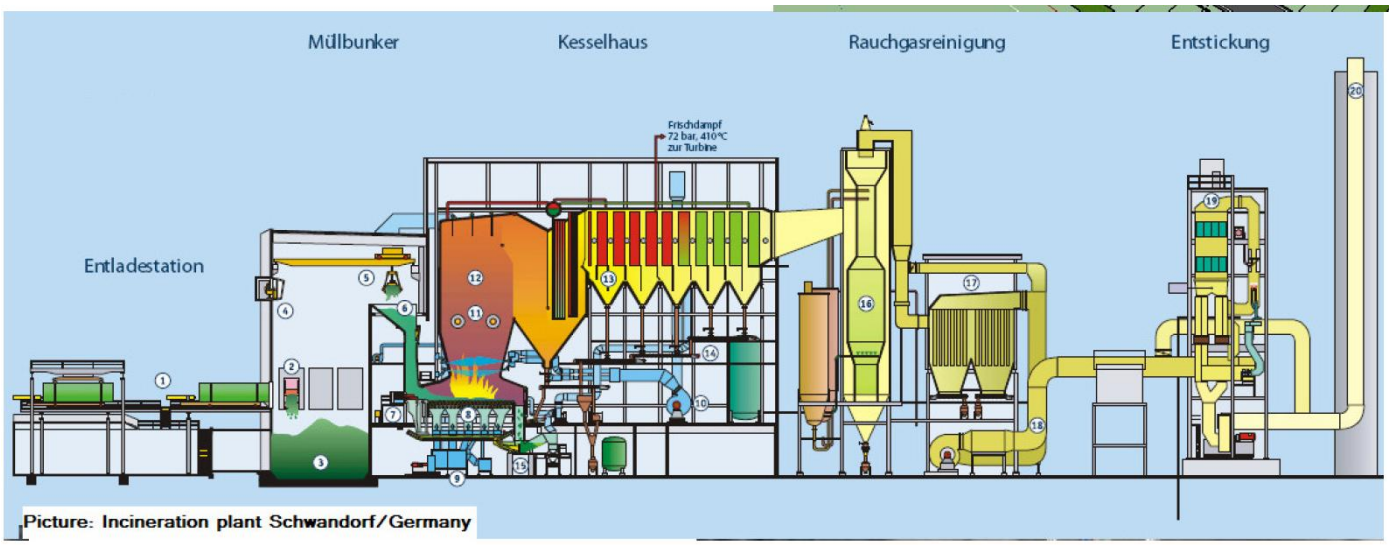
The operation is planned for 16 hours a day. All waste of the partner municipalities of Srar waste facility is treated. The generated electricity shall be offered for public or in cooperation with Lebanese Governmental Electricity Company.

- The plant has the possibility to eliminate about **400 (tons/day)** of camp waste (depending on their type).
- The plant includes a **filtration system** to fulfill the Lebanese and International requirements and norms concerning smoke emissions

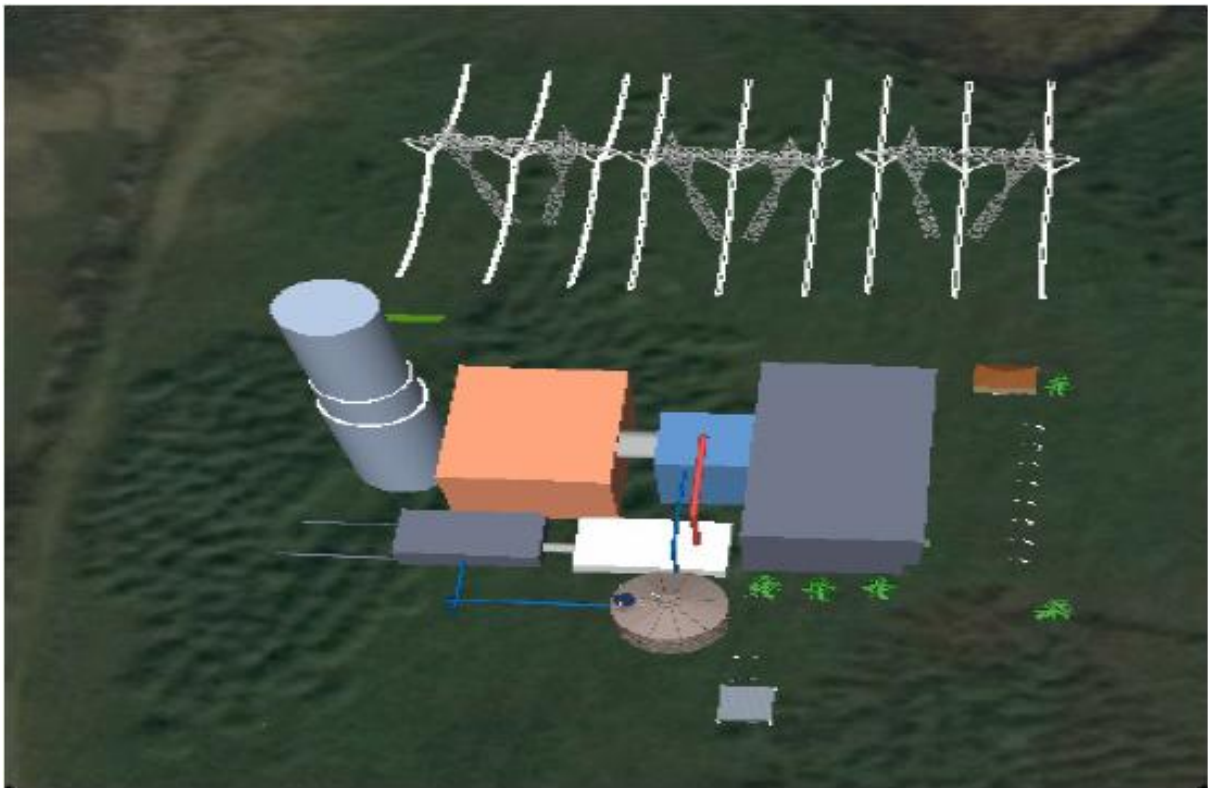
3.6.1 Incineration remnant (Smoke and Ashes) are recycled. Waste water is treated.

Schema of kernel power plant (without waste input treatment and waste material output treatment)

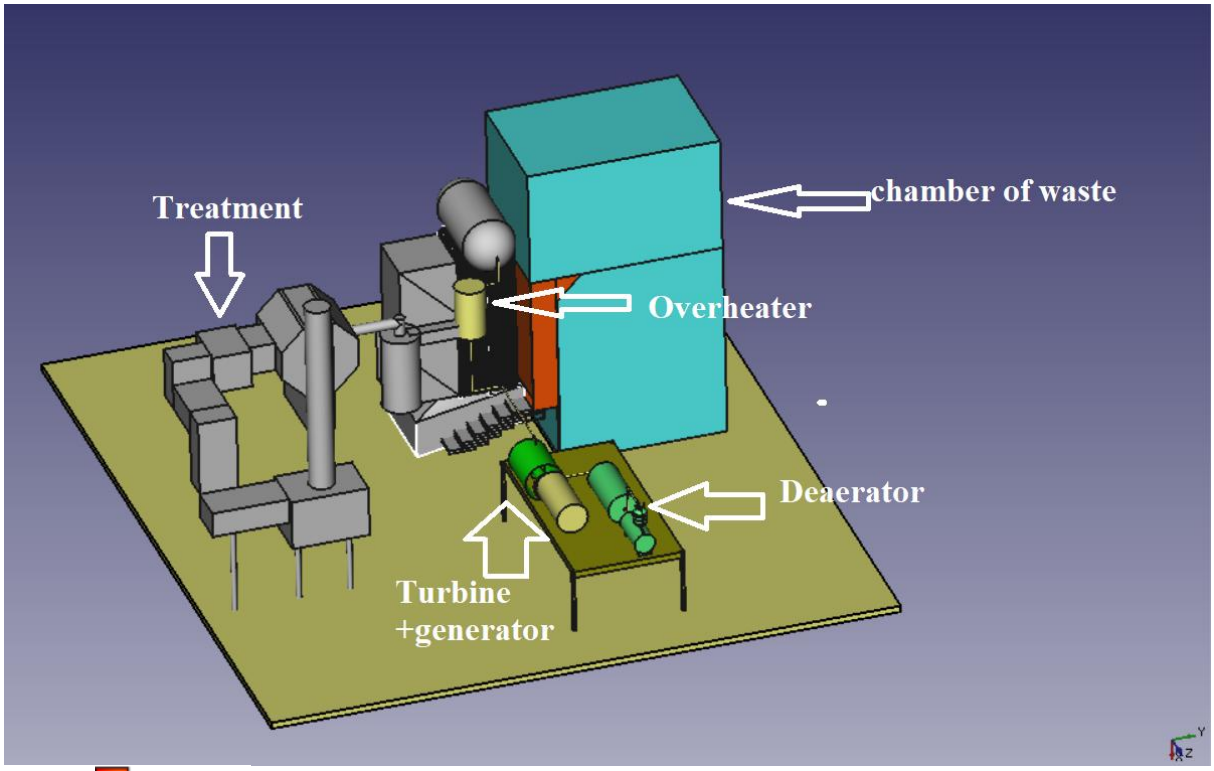




3.6.2 The planned facility



3.6.2.1 Power plant 15 MW



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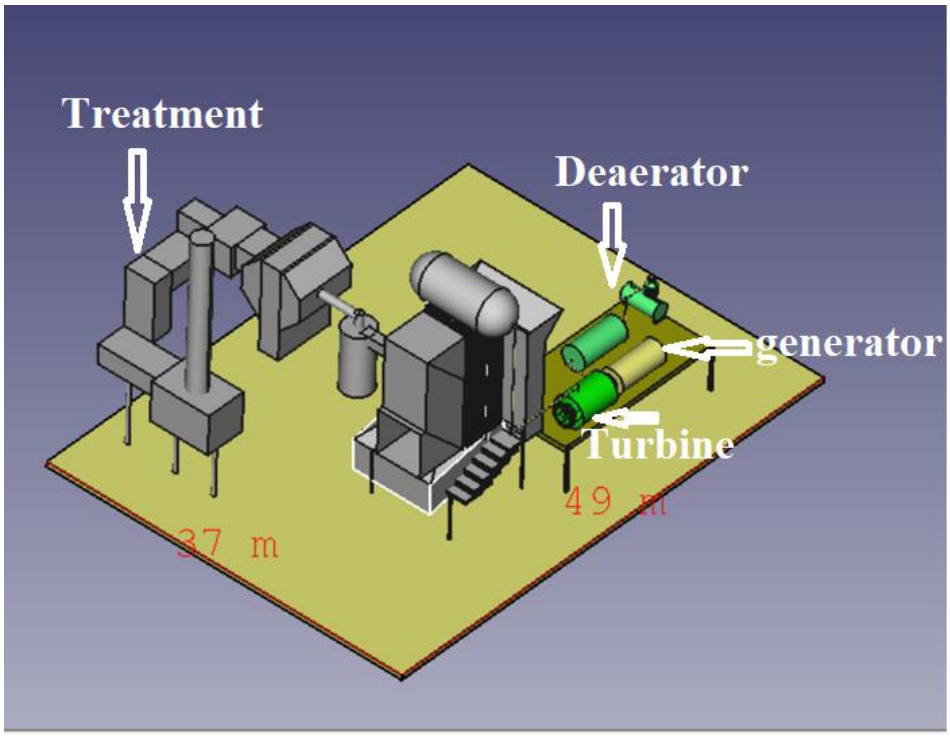
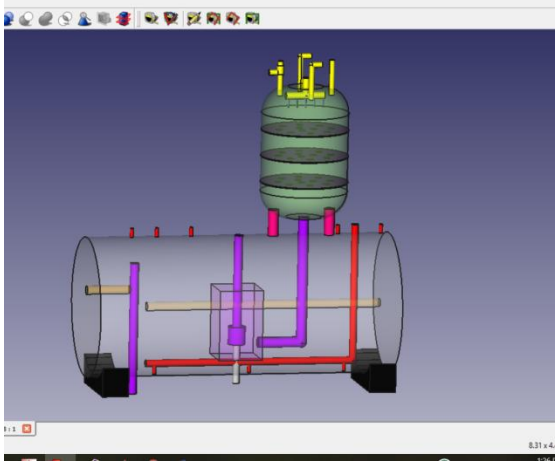
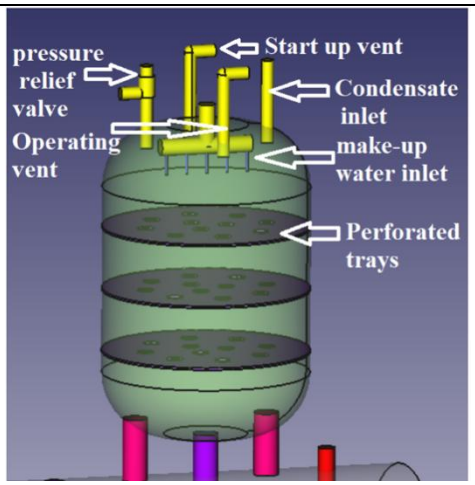
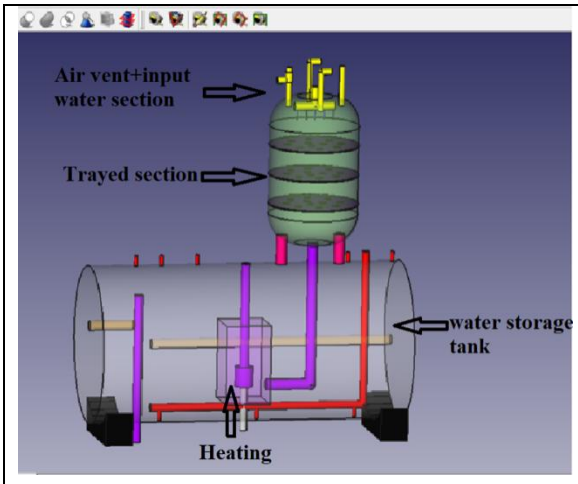
3.6.2.2 Turbine 15 MW



3.6.2.3 Deaerator







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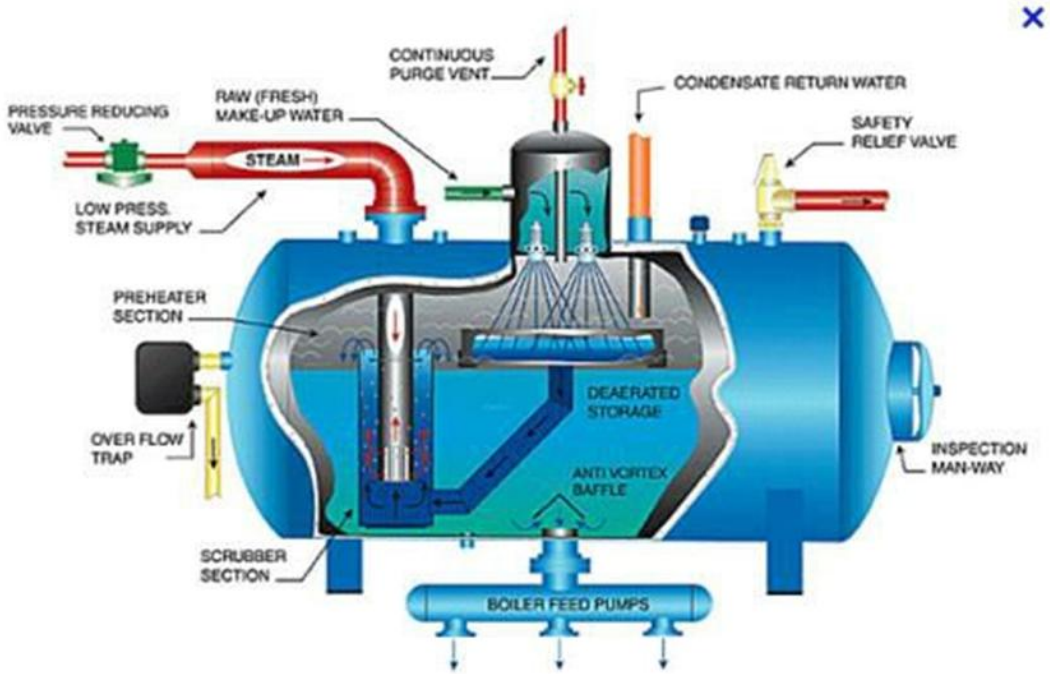


3.6.2.4 Offer from alibaba :Deaerato

Product name	Thermal de-aerator with Water Tank	
Product information		
Unit price	USD 25000/Sets	
Min. order quality	1 Sets	
Payment terms	T/T	
Quotation valid time	2018-12-28	
Product description	Place of Origin:China Type:Tanks Brand Name:LSBiotech Working Pressure:0.2MPa Working Temperature:104 degree Cel. Water Tank:Include. 25 CMB Water Flowrate: 50 ton per hour Arrangment:Horizontal tank Valves & Instruments: without	
Supplier background		
Business type	✓ Trading Company	
Main products	BOILER,BOILER PARTS,BOILER ISLAND	
Product certification		

SHANDONG LONGSHENG BIOTECHNOLOGY CO., LTD.

山 东 龙 升 生 物 科 技 股 份 有 限 公 司

E-2-102, Shidaizongbujidi, No.15 Lanxiang Road,
Tianqiao District, Jinan Shandong 250032, China
Tel:[+86-531-83156209] Fax:[+86-531-58530859]

QUOTATION

CUSTOMER	SHIPMENT	DETAILS	
Mayssa Kamarredine	FOB CHINA	Date	31 January, 2019
Lebanon	CIF xxxx	Quotation No.	LS-Q-20181203
		Valid	3 December, 2018
		Currency	USD

A. PRICE & SCOPE

Item	Type No.	Description	Qty.	Unit Price	Total Price
1	XMC-250	**Deaerator**	10 set	**97,500**	**975,000**
1.1	/	**Deaerator Dome** Capacity 250 tph Working Temperature 104 °C Working Pressure 0.2 MPa (g) Diameter 1,650mm Height 3,550mm	1 pcs	/	/
1.2	/	**Water Tank** Diameter 3,250mm Length 15,850mm Eff. Volume > 125 CBM	1 pcs	/	/
1.3	/	**Steam Balance Main Pipe** DN273 Steam balance pipe system between tanks Length 5 meter Material Mild Steel	1 set	/	/
1.4	/	**Water Balance Main Pipe** DN219 Water balance main pipe system between tanks Length 5 meter Material Mild Steel	1 set	/	/
2	/	**Instrument & Valves (Option)**	10 set	**27,900**	**279,000**

2.1	/	**Level Gauge (on Tank)**	1 set	**16,000**	**16,000**
2.1.1	B43H1.6-G	Local Glass Level Gauge with LED backlight	1 pcs	/	/
2.1.2	LHCF2-F	Magnetic Float Level Gauge with transmitter	1 pcs	/	/
2.1.3	LHPR1.6-S	Double Chamber Balance Container with transmitter	1 pcs	/	/
2.2	/	**Pressure Gauge (on Dome & Tank)**	1 set	**1,800**	**1,800**
2.2.1	Y-150	Local Pressure Gauge	2 pcs	/	/
2.2.2	ST3000	Pressure Transmitter	2 pcs	/	/
2.3	/	**Temperature Gauge (on Dome & Tank)**	1 set	**800**	**800**
2.3.1	WSS511	Local Temperature Gauge	2 pcs	/	/
2.3.2	WRP-431	Temperature Transmitter	2 pcs	/	/
2.4	/	**Valves (on Dome & Tank)**	1 set	**9,300**	**9,300**
2.4.1	J41H-1.6	Direct mounted hand valves on Dome & Tank	1 set	/	/
2.4.2	A48Y-16C	Safety valve on Dome & Tank on Dome & Tank (DN150)	2 pcs	/	/
2.4.3	ZPH-80	DN 80 Vacuum Breaker Valve on Tank	1 pcs	/	/
2.4.4	YLF-100	DN 100 Overflow Valve on Tank	1 pcs	/	/
2.4.5	T947H-1.6	Heating steam control valve with motorized actuator	1 set	/	/
2.4.6	T947H-1.6	Make up water control valve with motorized actuator	1 set	/	/
2.5	/	**Flanges**	1 set	/	free
2.5.1	/	Flanges and counter-flanges for instruments and valves	1 set	/	/
2.5.2	/	Bolt, nut, washer, and gasket	1 set	/	/
3	/	**Packing**	1 set	/ /	free
	TOTAL PRICE (EXW)				**USD1,254,000**

	SAY USD ONE MILLION TWO HUNDRED FIFTY FOUR THOUSAND ONLY.
	Exclusion: 1. All insulation and cladding materials 2. All steel structure, platform, ladder, handrail, and walkway for deaerator dome and tank 3. All support, hanger, and clamp for pipe lines and valves 4. All cables for instruments and control valves 5. Any other instruments or valves which is not specified in above sheet

B. DEAERATOR TECHNICAL DATA

Description	**Value**
Medium	Steam and Water
Medium Property	Non-hazardous
Design Life Time	10 years
Deaerator Capacity (single unit)	250 tph
Working Temperature	104 °C
Design Temperature	230 °C
Working Pressure	0.02 MPa (g)
Design Pressure	0.04 MPa (g)
Dome Dimension	1,650 D x 3,550 H
Tank Capacity	> 125 m^3
Tank Full Volume	130 m^3
Tank Dimension	3,250 D x 15,850 L
Dome Material	SUS 304
Tank Material	Q345R (GB713-2014)
Corrosion Allowance	1.6 mm
Welding Joint Coefficient	0.85/0.85

C. SHIPMENT

Item	Description	Price
1	China Inland - China inland transportation to FOB port - China Custom Clearance - THC	USD16,000
2	Ocean Transportation	to be confirmed later

	- Marine Insurance (ICC(A) term) - Ocean Freight by Loose Cargo Vessel - Ocean Time: est. 60 days	
	TOTAL PRICE (CIF = EXW + 1 + 2)	to be confirmed later

D. PAYMENT TERMS

- 50% of total price as down payment shall be made by T/T after PO signing.
- 50% of total price shall be made through irrevocable L/C against shipment documents.

E. DESIGN AND FABRICATION CODE

1. GB150-2011 《Pressure Vessel》
2. GB713-2014 《Steel Plates for Boilers and Pressure Vessels》 (eqv to ISO9328-2:2011, Steel flat products for pressure purposes - Technical delivery conditions – Part 2: Non-alloy and alloy steels with specified elevated temperature properties, NEQ)
3. TSG R0004-2009 《Stationary Pressure Containers Safety Technology Supervision Regulation》

F. QC

1. 100% PT (Hydraulic Pressure Test) is taken on domes & tanks
2. 100% RT (Radiography Test) is taken on all tube joint welding seams
3. 100% PT (Penetrant Test) is taken on all tube joint welding seams and tank connection welding seams
4. 10% RT (Radiography Test) is taken on tank connection welding seams
5. 2 layers of bottom rust-proof painting and 2 layers of surface painting

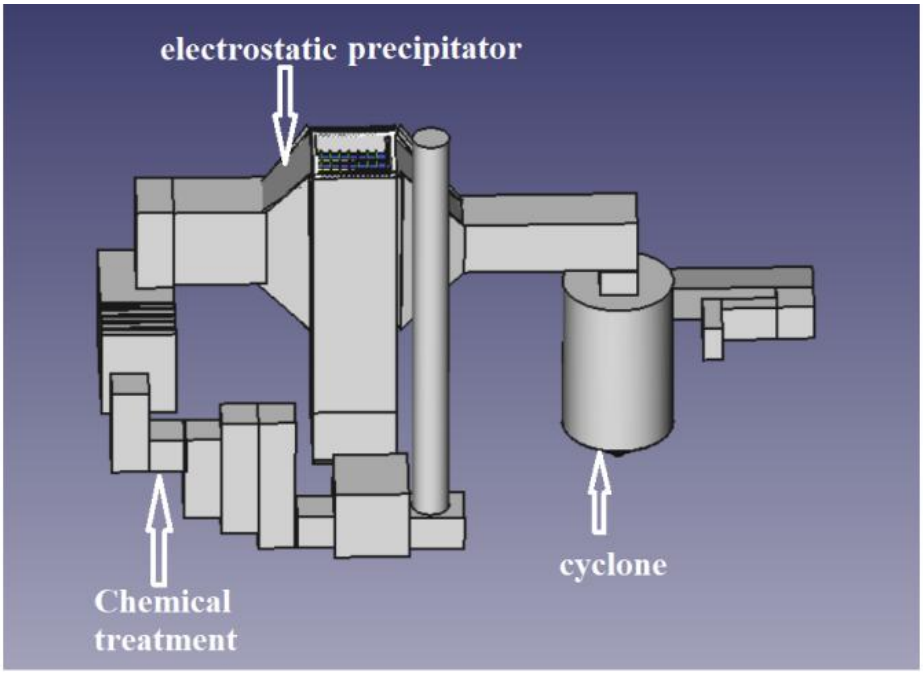
G. DELIVERY SCHEDULE

26 weeks to FOB port on receipt of DP.
Partial shipment could be started from 10th week.

H. ADDITIONAL INFORMATION

Port of Embarkation : TIANJIN / QINGDAO / SHANGHAI, CHINA
Port of Discharge : to be informed

3.6.2.5 Treatment's system



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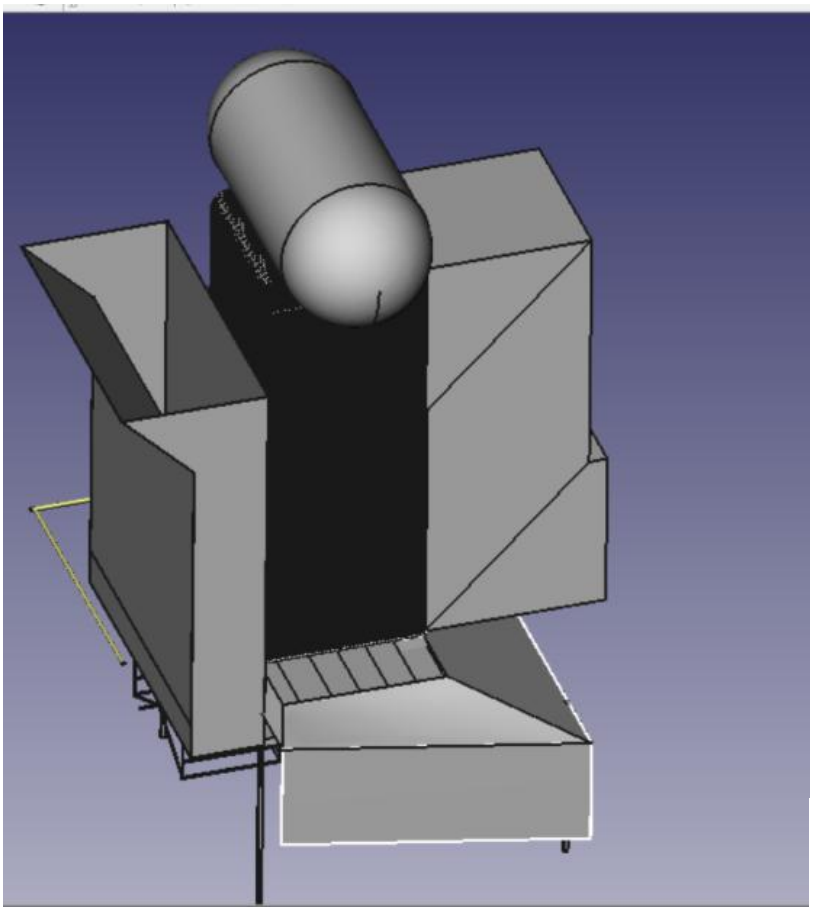
3.6.2.6 Boiler

- 

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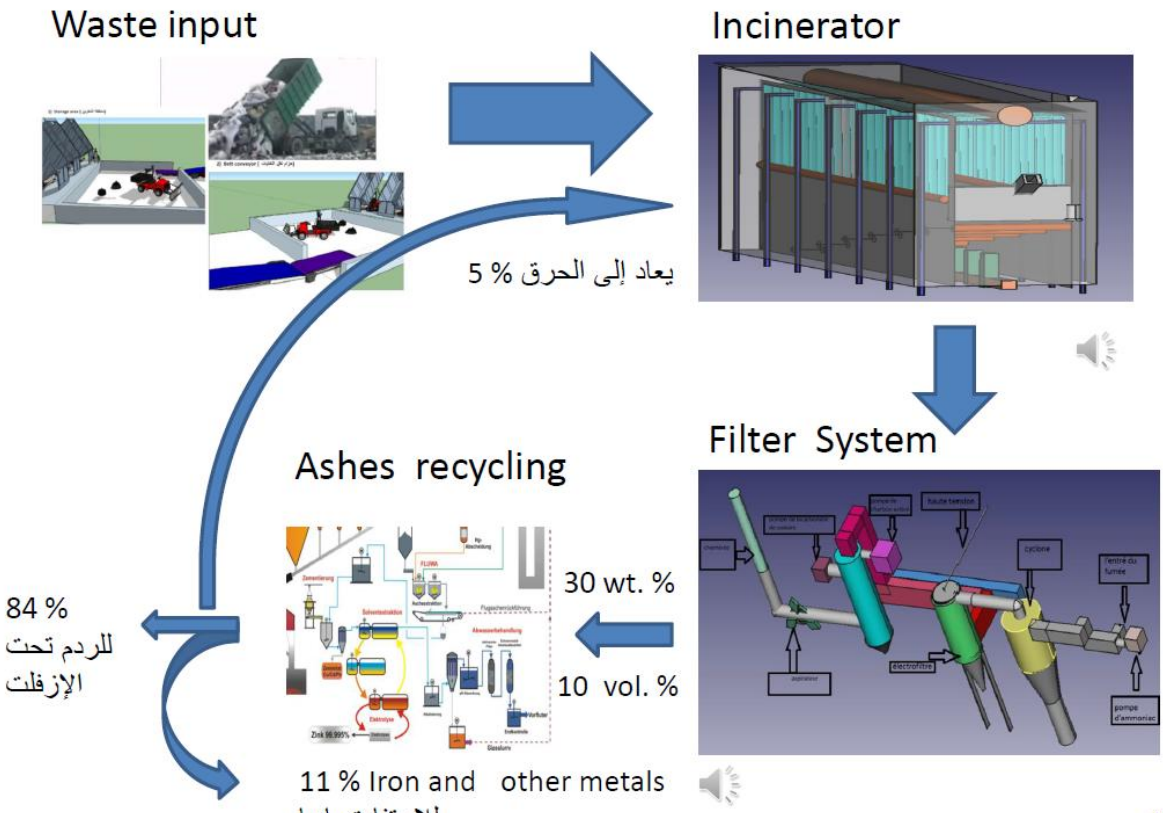
3.6.3 Waste material cycle



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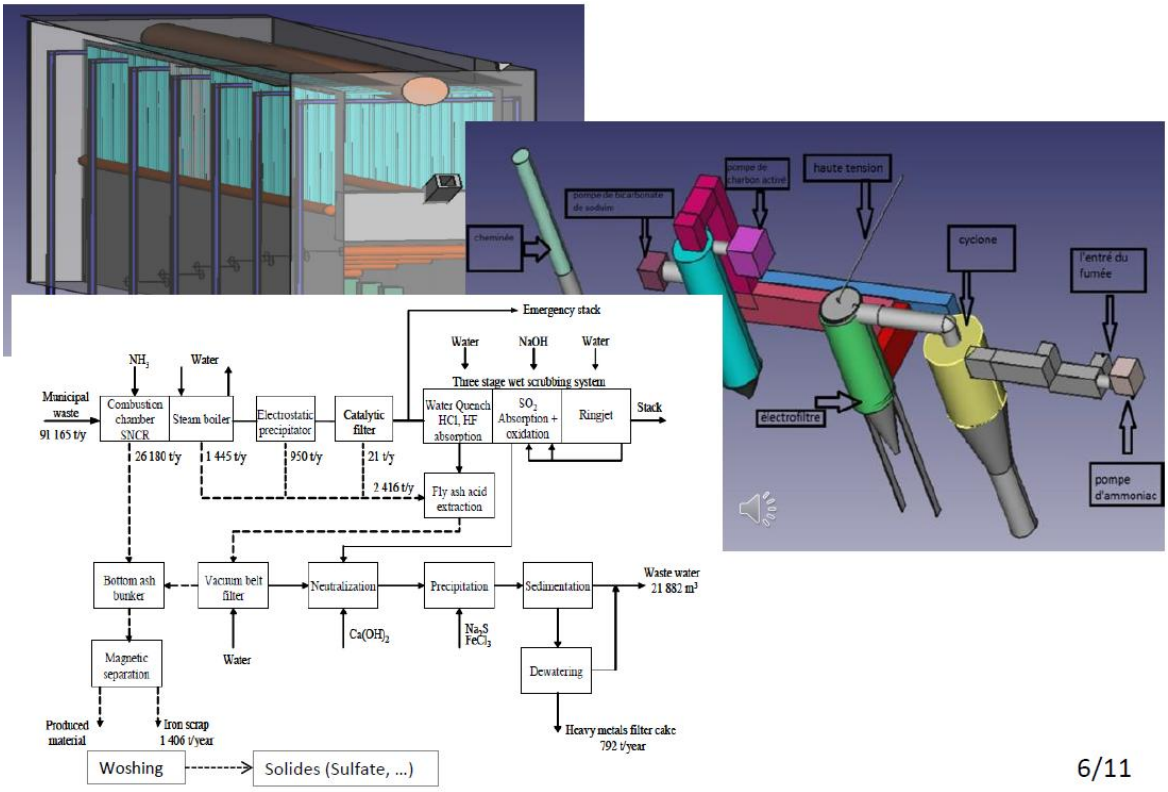
3.6.4 Incinerator (Burning chamber) and filters



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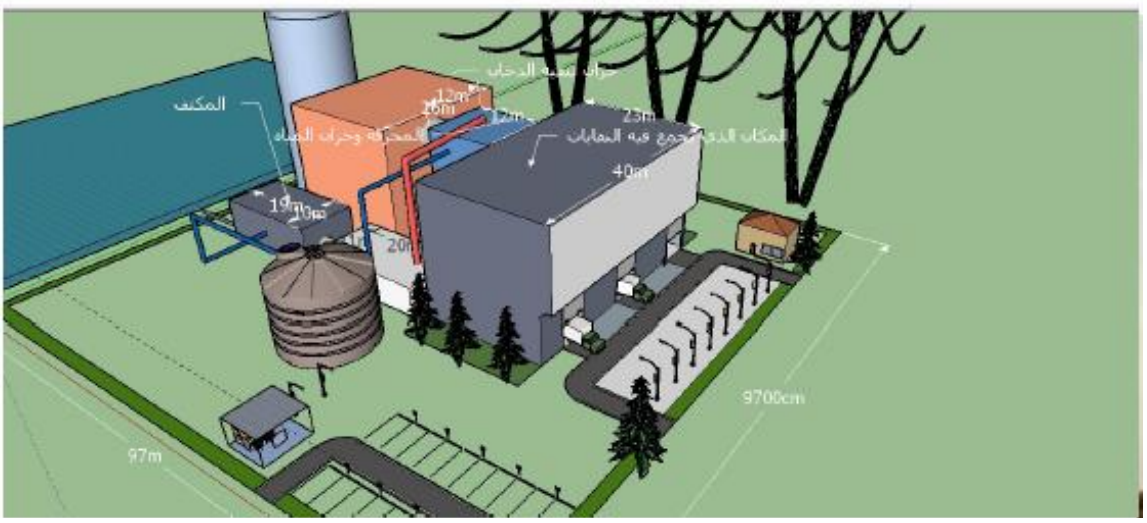
- In Srar, the mass of waste that will be treating is 400 **t**/day.

3.7 Layout Specifications

- مساحة الأرض المطلوبة



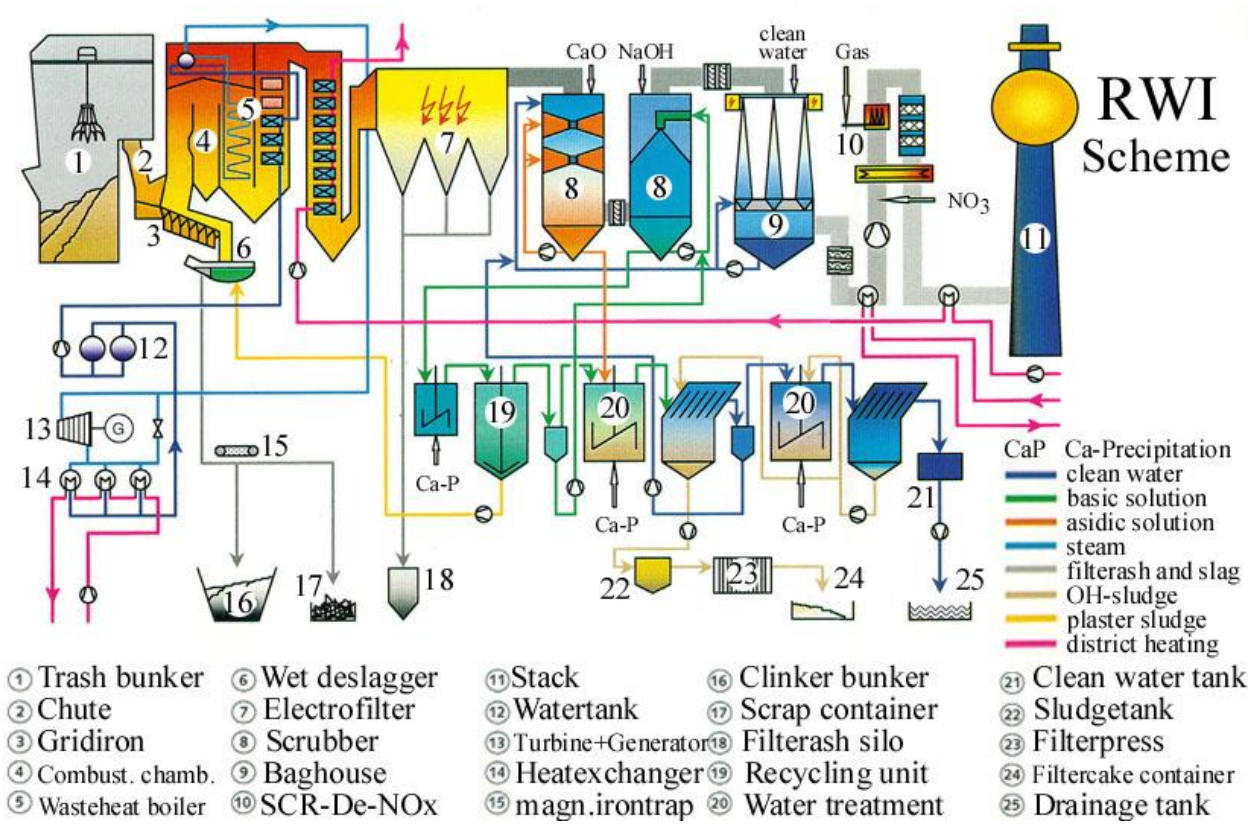
30 m x 30 m = 900 m.square

Mostly steel/stainless steel

3.7.1 Construction Equipment

- Equipment is available at site.

3.7.2 Construction of the sewage collection network



3.7.2.1 Water discharges from the cleaning of exhaust gases

- Incineration and co-incineration plants must have a permit which authorizes them to discharge used water caused by exhaust-gas clean-up. This permit will ensure that the emission limit values set out in **Annex IV** of the Directive we are complying with.
-

3.7.2.2 Residues

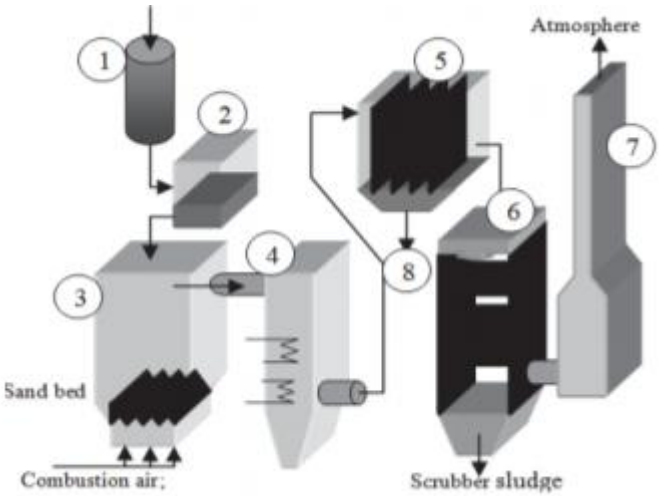
- Incineration or co-incineration residues must be reduced to a minimum and, as far as possible, recycled. When dry residues are transported, precautions must be taken to prevent their dispersal in the environment. Tests must be carried out to establish the physical and chemical characteristics, and polluting potential, of residues.

- **Annex IV announce that the description of project part must include:**
-
- **(d)**
  - **an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and**
  - **subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced**
  - **during the construction and operation phases.**
- **Then we apply to this technique of treatment of water:**

3.7.2.3 THE INCINERATION AND COCOMBUSTION OF THE SLUDGE

a. Sludge incineration Methods for thermal treatment of sewage sludge include:

- - combustion or monoincineration using multiplehearth furnace, fluidized bed, combined MHF-FBC, cyclone furnace, smelting furnace, rotary furnace; - co-combustion with coal in power plants, with coal in FBC power plants, with other fuels, with MSW; - alternative processes such as wet oxidation, pyrolysis, oil from sludge, fuel from sludge, gasification; An important argument in favour of combustion and co-combustion is complete mastery of the basics of processes, including purification techniques resulting products.
- Simple incineration of sludge from wastewater treatment can only be used as a method of destroying them but without producing additional energy due to the lower heating value of sludge. A simple sludge incineration scheme is shown in Figure 1. The sludge with a solid content of about 1-4% is introduced into the mixing and homogenization tank. Next a thickening stage where sludge settles and the supernatant is removed. In this stage the solid content increases to 3-8%. Thickened sludge is then dewatered typically using plate or belt presses. Organic and inorganic additives introduced in this process increase the calorific value of the sludge and reduce the content of inorganic ash. The solid content varies from 18 to 35%.

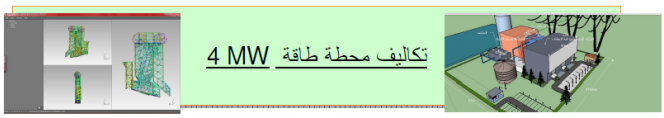


- A simple sludge incineration scheme. 1- sludge mixing tank; 2- belt press, plate press, centrifuge; 3- fluidised bed incinerator; 4- waste heat boiler; 5- electrostatic precipitator; 6-

wet scrubber; 7 - stack; 8 - inorganic incinerated sewage sludge ash. In the combustion chamber the sludge is burned with compressed combustion air introduced with a temperature of 500-600o C. Because fluidized sand layer an overhead freeboard zone at 800–900o C is created. Water is evaporated, volatile metals vaporise and organic compounds are combusted completely to gases. The remaining inorganic material is carried out of the chamber as fine particulates with the exhaust gases. After assigns an important amount of heat in the waste heat boiler ash gases are cleaned in an electrostatic precipitator and crosses the wet scrubber. Remaining particles in the gas generates important quantities of scrubber sludge and then clean gases are discharged to the stack.

3.8 Plan (Project Cost)

- 60 t waste per day is needed for a 2 MW.
- 480 t waste per day is needed to produce 8x2 MW = 16 MW.
- There are two possibilities:
- - 8 blocks of NLAP-2MW devices.
- - 1 block of 15 MW plant; Installation Cost: 7 Mio. $
-
-
-



Installation cost

Time span
12 month (Oct. 2015 – Sept. 2016)

Material

4 MW Turbine&Generator	**1,500,000 $**
Heat exchanger, condensor, Pipes, pumps, …	**500,000 $**
Icineration including incoming silo and filters	**4,000,000 $**

Personal
Project Management & Leadership
5 Engineers

About 50 technicians and workers

Personnel costs: **1,500,000 $**

Total installation cost: *~ 7,500,000 $*

Operational cost per year
20 years (Sept. 2016 – 2036)

Maintance
500,000 $

Personal
(3 Engineers, 3 technicians,20 workers)
400,000 $

Total operational cost per year:
~ 900,000 $

***Income per year (for* 20 years)**
Icineration Material from region
85t x 353 = 30,000 t
Electricity 353x20hx4MW=28,000,000 kWh
Total income per year:
~ 3,000,000 $

Actual Partners and Roles for installation

Germany	TEMO Consulting e.K. **www.temo-ek.de**	-Supplier management
	SIEMENS	Turbine, Generator
	EVT	Incineration chain
	N.N.	Filter system
Lebanon	طاقة الشمال North Lebanon Alternative Power	-Project Management - Vaporizer - Superheater - Condenser -Piping and Integration -Control System

NLAP 1.5 MW Mobile Incineration Plant, total installation costs				
Material Costs (including workers for manufatoring)				
Part	Number of pieces		Total	Supplier
Steam filter	1		$ 1.000,00	
Condensor	1		$ 35.000,00	
condensor cooling	1		$ 1.500,00	
tubes (Stainless)	10m 1 inch		$ 45.000,00	
Generator	1		$ 32.500,00	Jamal&Chaban, Omar M. Mohamad
diesel burner including fuel feed	1		$ 2.000,00	
safety valve 15 bar	1		$ 1.000,00	
pressure sensors	5		$ 15.000,00	
fresh water tank (stainless)	1		$ 2.000,00	
incineration burning chamber (including transportation band)&vaporizer (climbing tubes…)	1		$ 200.000,00	
fume purification (incl. filter for CO, SO2, NH3)	1		$ 50.000,00	Costs All in all $1.555.500
Turbine 1.5 MW	1		$ 857.500,00	
Hardware Control System (Including Instrumentation)			$ 25.000,00	**x 1.3 (with overhead) $2.022.150**
Water antioxidant system			$ 3.000,00	
Sorting House			$ 15.000,00	
mobile platform			$ 30.000,00	
Total Material			**$1.315.500**	
Engineering Staff Costs				
Task	MM	Qualifikation	Salary/MM	Total Salary
Integration with Test Vaporizer				
Integration with Incineration V	30	Eng.	$3.000	$90.000
Integration Turbine Electrics	7	Eng.	$3.000	$21.000
Integration Process Control system	5	Eng.	$3.000	$15.000
Control System	18	Eng.	$3.000	$54.000
Project Management	20	Eng.	$3.000	$60.000
Total Man Power Costs	**80**			**$240.000**

3.9 Infrastructure Services (Proposed Infrastructure/Utilities and layout)

3.9.1 Environmental Aspects

- Not relevant because of filters and internal heavy metal recovery plant.

3.9.2 Power Supply

- No external power supply needed

3.9.3 Water Supply

- 2000 t/ day cooling water, to be taken from local water supply pipe.
- Alternative: Cooling tower.

3.9.4 Sewerage Services

- 1 time per week about 2 tons solid waste remnant has to be taken to final destination.

3.9.5 Solid and Liquid Waste Management

- Heavy Metals recovering plant under development and construction

3.9.6 Proposed Wastewater Treatment Plant

- tbd

4 Screening for with Ministry of Environment

4.1 Screening application for the installation of a power plant unit in Srar in north Lebanon

4.1.1 ملحق رقم 4: نموذج التصنيف لتقييم الأثر البيئي

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1. اسم المشروع:محطة طاقة لتوليد الطتقة الكهربائية عن طريق التفكك الحراري للنفايات

•

2. صاحب المشروع:

❑ الاسم:سمير مراد

❑ العنوان:راسنحاش–البترون

❑ رقم الهاتف:76341526 ❑ رقم الفاكس:

❑ البريد الإلكتروني:
smourad69googlemail.com

•

3. صنف المشروع:

❑ عام ❑ زراعي:

❑ خاص ❑ صناعي (مع تحديد رقم ISIC):

❑ ❑ سياحي (مع التحديد):

• ❑ خدماتي (مع التحديد):

• ❑ غيره:

•

• طبيعة المشروع:

❑ مشروع جديد ❑ مشروع قائم أو حائز على ترخيص أو موافق عليه

• ❑ تعديل

• ❑ إضافة

- ❑ توسيع
- ❑ إعادة تأهيل
- ❑ إقفال
-

4. أهداف المشروع:التخلص من النفايات و توليد الطاقة الكهربائية
5. الكلفة المقدرة للمشروع:

❑ إنشاء:16 مليون دولار6

❑ تجهيز:

6. البرنامج الزمني للمشروع:

- 6 اشهر

•	• البداية	• النهاية
• التخطيط والتصميم		
• الإنشاء		
• التشغيل		

7خريطة تبين موقع المشروع – مقياس 1/20,000 (مرفقة)

1. خريطة مساحة مع إفادة عقارية
2. إفادة ارتفاق وتخطيط والشروط الخاصة للمنطقة
3. الاحداثيات الجغرافية للعقار (GPS coordinates)
4. . مستندات أخرى مرفقة (تصميم المشروع ووصف المشروع وتفاصيل أكثر

4.1.2 Project Information

1. Project Name:power plant incineration
2. Project Owner:
3. Land Ownership:
4. Full Address:
5. Phone:
6. Fax:
7. Email address:
8. Lot number:
9. Petroleum brand: usual
10. Project Cost:
11. Operation:
12. One shift per day?
13. Any days for maintenance: 1
14. Working days: 7
15. Man power operating the process:

• **Position**	• **No. Required**
• Manager	•
• **Total**	•

16. The number of vehicles arriving the site: 2 / week
17. Type of equipment
18. Population size of village: ca
19. Proximity to Waste Generation Center
20. Proximity to Energy Distribution Networks
21. **Project Category**
22. **General Land Classification**

☐	Agricultural	☐	Residential	☐	Tourism
☐	Industrial	☐	Forest Land	☐	Institutional
☐	Commercial	☐	Open Spaces	☐	Others, Pls. Specify:

•

23. **Project Components**

• **Services**			
• **Facility**	• **No. of Unit**	• **Area (m^2)**	• **Capacity**
• Access? Originating from? To?	•		

• Area of the incineration	•	•	•
• Total area of the site	•	•	•
• Shape of the site (Length, width)	•	•	•
• Maximum height of infrastructure	•	•	•
• Type of incineration	•	•	•
• Furnace	•	•	•
• Type of Byproducts	•	•	•
• Ash and clinker removal system	•	•	•
• Energy recovery system	•	•	•
• Air pollution control (APC) system	•	•	•
• Stack height	•	•	•
• Any produced Leachate?	•	•	•
• Source and Composition of municipal wastes to be incinerated	•	•	•
• Fuel Storage Area	•	•	•
• Parking Area	•	•	•
• Office Bldg.	•	•	•
• *Public Toilets*			
• Others, Pls. Specify			
• **Logistics and Principles of Sampling and Analysis of Waste Data**			
• **Design and Layout of the Mass Burning Incineration System**			

•

24. Water Resources and Infrastructure

• Water Supply Source	•	•	• Remarks
• Existing Public Water	•	•	•
• Estimated daily water requirements of the proposed incineration?			

•

• **Deep Well (Underground tanks)**

• Water Source	• No. Wells/Hand and Pump/Tanks	• Location	• Depth (m)	• Discharge • (liter / sec)
• Deep Well w/ Manual Hand Pump	•	•	•	•
• Deep Well w/ Electric or Motor Pump	•	•	•	•

•

• **Stormwater Management System (collector pipe, where to?, site drain) Drainage System**

☐ Rainwater will be collected in storage tank
☐ Rainwater will be collected in Reservoir
☐ Rainwater will be collected in collector pipe, where to?
☐ Rainwater will be connected to public drainage system
☐ Rainwater will be connected to natural outfall / water body

•

- **Drainage System**

- Type of drainage:

a) Major Road:
b) Other road (street):

- **Is there any surface water body (river, canal, stream, lake, wetland) within 1,000m of the proposed site?**

☐ **Yes** ☐ **No**

- **If yes, describe each surface water body close to site**

• Water Source	• Name of Water Body	• Location	• Distance
• 1. Creek	•	•	•
• 2. Spring	•	•	•
• 3. Stream	•	•	•
• 4. River	•	•	•
• 5. Others	•	•	•

25. Power Supply (Source of Power)

☐ Local Electric
☐ Own Generator:
☐ Others, pls. specify

26. Wastewater (Sewage) Disposal System

- Sewage System:

☐ Individual Septic Tank	☐ Communal Septic Tank

- Sewage Design:

☐ 2 chamber septic tank with leaching	☐ 2 chamber septic tank without leaching
☐ 3 chamber septic	☐ 3-chamber septic tank w/o

tank w/ leaching **X**	leaching
□ On site wastewater treatment plant, pls. specify •	

-
- **Sewage Disposal**
- discharge to an existing public sewerage system
- Treatment in individual septic tanks with disposal by absorption field or leaching pit
- Others: (Specify)_____
-
- **Wastewater Treatment Facility**:
- Attach Flowchart on liquid waste management
- Attach lay-out / detailed plan
- Liquid waste facility-main component
- Wastewater treatment facilities (which one? Name is needed)
-

27. Solid Waste Disposal System

- Bottom ash
- Bly ash
- Others, (specify):
- Will there be a waste sorting/segregation system to be employed prior to incineration?
- YES NO
- **Disposal System**
- Burning at open dumpsite in the project site
- Open dumpsite outside of the project site (where?)
- Others, specify:_____
- Location of the waste disposal site:

5 Environmental factors affected

- The environmental impact assessment shall identify, describe, and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:
- population and human health (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air)
- biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
  land, soil, water, air and climate;
  material assets, cultural heritage and the landscape
  the interaction between the factors referred to in points (a) to (d).

- A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydro- morphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

- -A description of the likely significant effects of the project on the environment resulting from, inter alia:

a - the construction and existence of the project, including, where relevant, demolition works;

b - the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;

c -the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

d -the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

e -the accumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

f -the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;

g -the technologies and the substances used.

The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, trans boundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.

6 Significant Effects on the environment

6.1 The concept of significance

- The concept of significance considers whether or not a Project's impact could be determined to be unacceptable in its environmental and social contexts. The assessment of significance relies on informed, expert judgment about what is important, desirable acceptable with regards to changes triggered by the Project in question. common approach used in EIA is the application of a multi-criteria analysis. Common criteria used to evaluate significance include the magnitude of the predicted effect and the sensitivity of the receiving environment:
- _ **Magnitude** considers the characteristics of the change (timing, scale, size, and duration of the impact) which would probably affect the target receptor as a result of the proposed Project;
- _ **Sensitivity** is understood as the sensitivity of the environmental receptor to change, including its capacity to accommodate the changes the Projects may bring about.

6.2 Cumulative effects

- It is important to consider effects not in isolation, but together; that is, cumulatively. They can arise from:
- the interaction between all of the different Projects in the same area;
- the interaction between the various impacts within a single Project

6.3 Example of significant effects

- A description of the likely significant effects of the project on the environment resulting from, inter alia:

(a) the construction and existence of the project, including, where relevant, demolition works;

(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;

(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

(e) the accumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;

(g) the technologies and the substances used.

- The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, trans-boundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.

7 Assessment of Alternatives

Identifying and considering Alternatives can provide a concrete opportunity to adjust the project design in order to minimize environmental impacts and, thus, to minimize the project's significant effects on the environment. Additionally, the proper identification and consideration of alternatives

from the outset can reduce unnecessary delays in the EIA process, the adoption of the EIA decision,

or the implementation of the Project that mentioned in Annex IV point 2.

A description of the reasonable alternatives, those alternatives studied by the developer, which are relevant to the proposed project and its specific characteristics. Annex IV to the Directive gives some examples of the types of Alternatives to be considered and which include:

- project design,
- technology,
- location,
- size ,
- scale,
- the main reasons for selecting the chosen option,
- including a comparison of the environmental effects.
  - This list serves as inspiration for a multitude of other Alternatives. These roughly relate to the
  - categories above. Some such Alternatives are listed below:
  - _ the nature of Project;
  - _ time frames for construction ;
  - _ process by which the Project is constructed;
  - _ equipment used either in the construction or running of the Project;
  - _ site layout (e.g. location of buildings, waste disposal, access roads);
  - _ operating conditions (e.g. working schedule, timing of emissions);
  - _ physical appearance and design of buildings, including the materials to be used;
  - _ means of access, including principal mode of transport to be used to gain access to the Project.
  - In our case, we have 2 options to build this plant::
- - 8 Blocks of NLAP-2MW devices.
- 1 block of 15 MW plant.

8 Mitigation or Compensation Measures

- Annex IV point 7 states that:
- 'A description of the measures envisaged to avoid, prevent, reduce, or if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparing of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover by the construction and operational phases.'

• Type of measure	• How it works
• **Measures to prevent**	• Impact avoidance by: • Changing means or techniques, not undertaking certain Projects or • components that could result in adverse impacts. • changing the site, avoiding areas that are environmentally • sensitive. • putting in place preventative measures to stop adverse effects from occurring
• **Measures to reduce**	• Impact minimization by: • Scaling down or relocating the Project. • Redesign elements of the Project. • Using a different technology. • Taking supplementary measures to reduce the impacts either at the • source or at the receptor (such as noise barriers, waste gas treatment, type of road surface).
• **Measures to offset**	• Offset or compensate for residual adverse impacts that cannot be avoided or further reduced in one area with improvements elsewhere with: • Site remediation / rehabilitation / restoration. • Resettlement-Monetary compensation

8.1 Mitigation and Compensation Measures: In a nutshell

- Mitigation and Compensation Measures should be considered when assessing Alternatives, both with a view to strengthening the feasibility of Projects, and to improving the Project's design.
- Both Mitigation and Compensation Measures may be costly, and may influence the choice of Alternatives
- Mitigation and Compensation Measures may apply to both the construction and operational phases of the Project.
- A description of Mitigation and Compensation Measures for significant adverse effects must be incorporated in the decision to grant Development Consent for a Project (see section 3.2. decisions-making: Reasoned Conclusion and Development Consent' of this Guidance Document).

9 Monitoring

Article 8a also states:

- In accordance with the requirements referred to in paragraph 1(b), Member States shall ensure that the features of the project and/or measures envisaged to avoid, prevent or reduce and, if possible, offset significant adverse effects on the environment are implemented by the developer, and shall determine the procedures regarding the monitoring of significant adverse effects on the environment. The type of parameters to be monitored and the duration of the monitoring shall be proportionate to the nature, location and size of the project and the significance of its effects on the environment. Existing monitoring arrangements resulting from Union legislation other than this Directive and from national legislation may be used if appropriate, with a view to avoiding duplication of monitoring.

- Monitoring Measures for Projects with significant adverse effects must be incorporated in the decision to grant Development Consent for a Project and, as such, should generally be included in the EIA Report. Monitoring Measures may be linked to other legal requirements, such as those stemming from the IED, WFD or the Habitats Directive. Care must be taken to avoid duplication in Monitoring Measures in this regard. Requirements on Monitoring Measures were added to the EIA Directive as part of the 2014 amendments (Article 8a and Annex IV).

- Generally, Monitoring Measures can help to ensure that Projects meet all existing environmental legal requirements, and that impacts are in line with EIA Report Projections. They should also ensure that any Mitigation or Compensation Measures for expected significant effects are carried out as planned.
- Monitoring Measures can also provide insight into the quality of the EIA procedure carried out, and can generate lessons learned and good practices for future EIAs.
- Practitioners should first check which Monitoring Measures are required by other legislation. If these are not sufficient or appropriate for monitoring the expected environmental impacts or proposed Mitigation Measures, then additional measures may be proposed within the EIA Report. Monitoring Measures should always strive to be proportionate to the nature of the environmental impacts in terms of the time, costs, and other resources involved.

- Monitoring Measures should be specific and detailed enough to ensure their implementation, including defining roles, responsibilities, and resources. In some cases, economies of scale can be achieved through the joint monitoring of related Projects. Measures should also be capable of identifying important unforeseen effects.

10 Non-Technical Summary

10.1 The qualities of a good Non-Technical Summary

- The Non-Technical Summary is easily identifiable and is accessible within the EIA Report;
- The Non-Technical Summary provides a concise, but comprehensive description of the Project, its environment, the effects of the Project on the environment, the proposed Mitigation Measures, and the proposed monitoring arrangements;
- The Non-Technical Summary highlights any significant uncertainties about the Project and its environmental effects;
- The Non-Technical Summary explains the Development Consent process for the Project and the role of the EIA in that process;
- The Non-Technical Summary provides an overview of the approach to the assessment;
- The Non-Technical Summary is written in non-technical language, avoiding technical terms, detailed data and scientific discussion;
- The Non-Technical Summary is comprehensible to a lay member of the public.

11 Quality of the EIA Report

11.1 The qualities of a good EIA Report

- A clear structure with a logical sequence that describes, for example, existing Baseline conditions, predicted impacts (nature, extent and magnitude), scope for mitigation, proposed Mitigation/Compensation Measures, significance of unavoidable/residual impacts for each environmental factor;
- A table of contents at the beginning of the document;
- A description of the Development Consent procedure and how EIA fits within it;
- Reads as a single document with appropriate cross-referencing;
- Is concise, comprehensive and objective;
- Is written in an impartial manner without bias;
- Includes a full description and comparison of the Alternatives studied;
- Makes effective use of diagrams, illustrations, photographs and other graphics to support the text;
- Uses consistent terminology with a glossary;
- References all information sources used;
- Has a clear explanation of complex issues;
- Contains a good description of the methods used for the studies of each environmental factor;
- Covers each environmental factor in a way which is proportionate to its importance;
- Provides evidence of effective consultations (if some consultations have already taken place)
- Provides basis for effective consultations to come;
- Makes a commitment to mitigation (with a programme) and to monitoring;
- Contains a Non-Technical Summary which does not contain technical jargon;
- Contains, where relevant, a reference list detailing the sources used for the description and assessments included in the report.annex

12 Annex

12.1 Appendix A: Projects listed in Annex I of Directtive 97/11/EC

APPENDIX A
PROJECTS LISTED IN ANNEX I OF DIRECTIVE 97/11/EC

Article 4(1) of Directive 97/11/EC requires that the following types of projects must be subject to EIA.

Annex I Projects

1. Crude-oil refineries (excluding undertakings manufacturing only lubricants from crude oil) and installations for the gasification and liquefaction of 500 tonnes or more of coal or bituminous shale per day.

2. Thermal power stations and other combustion installations with a heat output of 300 megawatts or more, and nuclear power stations and other nuclear reactors including the dismantling or decommissioning of such power stations or reactors (*) (except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load).

3. (a) Installations for the reprocessing of irradiated nuclear fuel
   (b) Installations designed:
   - for the production or enrichment of nuclear fuel,
   - for the processing of irradiated nuclear fuel or high-level radioactive waste,
   - for the final disposal of irradiated nuclear fuel,
   - solely for the final disposal of radioactive waste,
   - solely for the storage (planned for more than 10 years) of irradiated nuclear fuels or radioactive waste in a different site than the production site.

4. (a) Integrated works for the initial smelting of cast-iron and steel
   (b)Installations for the production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes.

5. Installations for the extraction of asbestos and for the processing and transformation of asbestos and products containing asbestos: for asbestos-cement products, with an annual production of more than 20 000 tonnes of finished products, for friction material, with an annual production of more than 50 tonnes of finished products, and for other uses of asbestos, utilization of more than 200 tonnes per year.

6. Integrated chemical installations, i.e. those installations for the manufacture on an industrial scale of substances using chemical conversion processes, in which several units are juxtaposed and are functionally linked to one another and which are:
   (i) for the production of basic organic chemicals;
   (ii) for the production of basic inorganic chemicals;
   (iii) for the production of phosphorous-, nitrogen- or potassium-based fertilizers (simple or compound fertilizers);
   (iv) for the production of basic plant health products and of biocides;
   (v) for the production of basic pharmaceutical products using a chemical or biological process;
   (vi) for the production of explosives.

7. (a) Construction of lines for long-distance railway traffic and of airports (1) with a basic runway length of 2 100 m or more;
   (b) Construction of motorways and express roads (2);
   (c) Construction of a new road of four or more lanes, or realignment and/or widening of an existing road of two lanes or less so as to provide four or more lanes, where such new road, or realigned and/or widened section of road would be 10 km or more in a continuous length.

8. (a) Inland waterways and ports for inland-waterway traffic which permit the passage of vessels of over 1 350 tonnes;
   (b) Trading ports, piers for loading and unloading connected to land and outside ports (excluding ferry piers) which can take vessels of over 1 350 tonnes.

9. Waste disposal installations for the incineration, chemical treatment as defined in Annex IIA to Directive 75/442/EEC (3) under heading D9, or landfill of hazardous waste (i.e. waste to

which Directive 91/689/EEC (4) applies).

10. Waste disposal installations for the incineration or chemical treatment as defined in Annex IIA to Directive 75/442/EEC under heading D9 of non-hazardous waste with a capacity exceeding 100 tonnes per day.

11. Groundwater abstraction or artificial groundwater recharge schemes where the annual volume of water abstracted or recharged is equivalent to or exceeds 10 million cubic metres.

12. (a) Works for the transfer of water resources between river basins where this transfer aims at preventing possible shortages of water and where the amount of water transferred exceeds 100 million cubic metres/year;
   (b) In all other cases, works for the transfer of water resources between river basins where the multi-annual average flow of the basin of abstraction exceeds 2 000 million cubic metres/year and where the amount of water transferred exceeds 5 % of this flow.
   In both cases transfers of piped drinking water are excluded.

13. Waste water treatment plants with a capacity exceeding 150 000 population equivalent as defined in Article 2 point (6) of Directive 91/271/EEC (5).

14. Extraction of petroleum and natural gas for commercial purposes where the amount extracted exceeds 500 tonnes/day in the case of petroleum and 500 000 m3/day in the case of gas.

15. Dams and other installations designed for the holding back or permanent storage of water, where a new or additional amount of water held back or stored exceeds 10 million cubic metres.

16. Pipelines for the transport of gas, oil or chemicals with a diameter of more than 800 mm and a length of more than 40 km.

17. Installations for the intensive rearing of poultry or pigs with more than:

    (a) 85 000 places for broilers, 60 000 places for hens;
    (b) 3 000 places for production pigs (over 30 kg); or
    (c) 900 places for sows.

18. Industrial plants for the
    (a) production of pulp from timber or similar fibrous materials;
    (b) production of paper and board with a production capacity exceeding 200 tonnes per day.

19. Quarries and open-cast mining where the surface of the site exceeds 25 hectares, or peat extraction, where the surface of the site exceeds 150 hectares.

20. Construction of overhead electrical power lines with a voltage of 220 kV or more and a length of more than 15 km.

21. Installations for storage of petroleum, petrochemical, or chemical products with a capacity of 200 000 tonnes or more.

12.2 Appendix B: Projects listed in Annex II of Directtive 97/11/EC

APPENDIX B
PROJECTS LISTED IN ANNEX II OF DIRECTIVE 97/11/EC

Article 4(2) of Directive 97/11/EC requires that the following types of projects must be subject to EIA if it is determined, either by case-by-case examination or on the basis of thresholds and criteria set by the Member State, that they are likely to have significant effects on the environment.

Annex II Projects

1. Agriculture, silviculture and aquaculture
   (a) Projects for the restructuring of rural land holdings;
   (b) Projects for the use of uncultivated land or semi-natural areas for intensive agricultural purposes;
   (c) Water management projects for agriculture, including irrigation and land drainage projects;
   (d) Initial afforestation and deforestation for the purposes of conversion to another type of land use;
   (e) Intensive livestock installations (projects not included in Annex I);
   (f) Intensive fish farming;
   (g) Reclamation of land from the sea.

2. Extractive industry
   (a) Quarries, open-cast mining and peat extraction (projects not included in Annex I);
   (b) Underground mining;
   (c) Extraction of minerals by marine or fluvial dredging;
   (d) Deep drillings, in particular:
   - geothermal drilling,
   - drilling for the storage of nuclear waste material,
   - drilling for water supplies,

   with the exception of drillings for investigating the stability of the soil;
   (e) Surface industrial installations for the extraction of coal, petroleum, natural gas and ores, as well as bituminous shale.

3. Energy industry
   (a) Industrial installations for the production of electricity, steam and hot water (projects not included in Annex I);
   (b) Industrial installations for carrying gas, steam and hot water; transmission of electrical energy by overhead cables (projects not included in Annex I);
   (c) Surface storage of natural gas;
   (d) Underground storage of combustible gases;
   (e) Surface storage of fossil fuels;
   (f) Industrial briquetting of coal and lignite;
   (g) Installations for the processing and storage of radioactive waste (unless included in Annex I);
   (h) Installations for hydroelectric energy production;
   (i) Installations for the harnessing of wind power for energy production (wind farms).

4. Production and processing of metals
   (a) Installations for the production of pig iron or steel (primary or secondary fusion) including continuous casting;
   (b) Installations for the processing of ferrous metals:

(b) Installations for the processing of ferrous metals:
- (i) hot-rolling mills;
- (ii) smithies with hammers;
- (iii) application of protective fused metal coats;

(c) Ferrous metal foundries;
(d) Installations for the smelting, including the alloyage, of non-ferrous metals, excluding precious metals, including recovered products (refining, foundry casting, etc.);
(e) Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process;
(f) Manufacture and assembly of motor vehicles and manufacture of motor-vehicle engines;
(g) Shipyards;
(h) Installations for the construction and repair of aircraft;
(i) Manufacture of railway equipment;
(j) Swaging by explosives;
(k) Installations for the roasting and sintering of metallic ores.

5. Mineral industry
- (a) Coke ovens (dry coal distillation);
- (b) Installations for the manufacture of cement;
- (c) Installations for the production of asbestos and the manufacture of asbestos-products (projects not included in Annex I);
- (d) Installations for the manufacture of glass including glass fibre;
- (e) Installations for smelting mineral substances including the production of mineral fibres;
- (f) Manufacture of ceramic products by burning, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain.

6. Chemical industry (Projects not included in Annex I)
- (a) Treatment of intermediate products and production of chemicals;
- (b) Production of pesticides and pharmaceutical products, paint and varnishes, elastomers and peroxides;
- (c) Storage facilities for petroleum, petrochemical and chemical products.

7. Food industry
- (a) Manufacture of vegetable and animal oils and fats;
- (b) Packing and canning of animal and vegetable products;
- (c) Manufacture of dairy products;
- (d) Brewing and malting;
- (e) Confectionery and syrup manufacture;
- (f) Installations for the slaughter of animals;
- (g) Industrial starch manufacturing installations;
- (h) Fish-meal and fish-oil factories;
- (i) Sugar factories.

8. Textile, leather, wood and paper industries
   (a) Industrial plants for the production of paper and board (projects not included in Annex I);
   (b) Plants for the pretreatment (operations such as washing, bleaching, mercerization) or dyeing of fibres or textiles;
   (c) Plants for the tanning of hides and skins;
   (d) Cellulose-processing and production installations.

9. Rubber industry - Manufacture and treatment of elastomer-based products.

10. Infrastructure projects
   (a) Industrial estate development projects;
   (b) Urban development projects, including the construction of shopping centres and car parks;
   (c) Construction of railways and intermodal transshipment facilities, and of intermodal terminals (projects not included in Annex I);
   (d) Construction of airfields (projects not included in Annex I);
   (e) Construction of roads, harbours and port installations, including fishing harbours (projects not included in Annex I);
   (f) Inland-waterway construction not included in Annex I, canalisation and flood-relief works;
   (g) Dams and other installations designed to hold water or store it on a long-term basis (projects not included in Annex I);
   (h) Tramways, elevated and underground railways, suspended lines or similar lines of a particular type, used exclusively or mainly for passenger transport;
   (i) Oil and gas pipeline installations (projects not included in Annex I);
   (j) Installations of long-distance aqueducts;
   (k) Coastal work to combat erosion and maritime works capable of altering the coast through the construction, for example, of dykes, moles, jetties and other sea defence works, excluding the maintenance and reconstruction of such works;
   (l) Groundwater abstraction and artificial groundwater recharge schemes not included in Annex I;
   (m) Works for the transfer of water resources between river basins not included in Annex I.

11. Other projects
   (a) Permanent racing and test tracks for motorised vehicles;
   (b) Installations for the disposal of waste (projects not included in Annex I);
   (c) Waste-water treatment plants (projects not included in Annex I);
   (d) Sludge-deposition sites;
   (e) Storage of scrap iron, including scrap vehicles;
   (f) Test benches for engines, turbines or reactors;
   (g) Installations for the manufacture of artificial mineral fibres;
   (h) Installations for the recovery or destruction of explosive substances;
   (i) Knackers' yards.

12. Tourism and leisure
   (a) Ski-runs, ski-lifts and cable-cars and associated developments;

12.3 Appendix C: Projects listed in Annex IV of Directtive 97/11/EC

APPENDIX C
ANNEX III SCREENING SELECTION CRITERIA

Article 4(3) of Directive 97/11/EC requires that Competent Authorities must take into account the selection criteria set out in Annex III of the Directive when making screening decisions on a case-by-case basis and when setting thresholds and criteria for projects requiring EIA.

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1. Characteristics of Projects

The characteristics of projects must be considered having regard, in particular, to:

- the size of the project,
- the cumulation with other projects,
- the use of natural resources,
- the production of waste,
- pollution and nuisances,
- the risk of accidents, having regard in particular to substances or technologies used.

2. Location of Projects

The environmental sensitivity of geographical areas likely to be affected by projects must be considered, having regard, in particular, to:

- the existing land use,
- the relative abundance, quality and regenerative capacity of natural resources in the area,
- the absorption capacity of the natural environment, paying particular attention to the following areas:
  - wetlands;
  - coastal zones;
  - mountain and forest areas;
  - nature reserves and parks;
  - areas classified or protected under Member States' legislation;
  - special protection areas designated by Member States pursuant to Directive 79/409/EEC and 92/43/EEC;
  - areas in which the environmental quality standards laid down in Community legislation have already been exceeded;
  - densely populated areas;
  - landscapes of historical, cultural or archaeological significance.

3. Characteristics of the Potential Impact

The potential significant effects of projects must be considered in relation to criteria set out under 1 and 2 above, and having regard in particular to:

- the extent of the impact (geographical area and size of the affected population),
- the transfrontier nature of the impact,
- the magnitude and complexity of the impact,
- the probability of the impact,
- the duration, frequency and reversibility of the impact.

12.4 Appendix D: Projects listed in Annex IV of Directtive 97/11/EC

APPENDIX D
ENVIRONMENTAL INFORMATION REQUIREMENTS SET OUT IN ANNEX IV OF DIRECTIVE 97/11/EC

Article 5(1) of Directive 97/11/EC requires the Developer to provide to the Competent Authority the information set out below in so much as the information is relevant to the given stage of the consent procedure and to the specific characteristics of the project and of the environmental features likely to be affected, and the developer may reasonably be required to compile the information having regard *inter alia* to current knowledge and methods of assessment.

Environmental Information Requirements for EIA

1. Description of the project, including in particular:
   - a description of the physical characteristics of the whole project and the land-use requirements during the construction and operational phases,
   - a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used,
   - an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed project.

2. An outline of the main alternatives studied by the developer and an indication of the main reasons for this choice, taking into account the environmental effects.

3. A description of the aspects of the environment likely to be significantly affected by the proposed project, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.

4. A description of the likely significant effects of the proposed project on the environment resulting from:
   - the existence of the project,
   - the use of natural resources,
   - the emission of pollutants, the creation of nuisances and the elimination of waste,

   and the description by the developer of the forecasting methods used to assess the effects on the environment.

5. A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.

6. A non-technical summary of the information provided under the above headings.

7. An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.

References

http://ec.europa.eu/environment/eia/eia-support.htm