DIRECCIÓN GENERAL DE ENERGÍA
Despacho del Subdirector

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SDGE-132-2012
Guatemala, 24 de Julio de 2012

Ingeniero
Felipe Robles
Asesor en Estadísticas y Mercados Energéticos
Presente

Ingeniero Robles:

Por medio de la presente le saludo y hago de su conocimiento que la Dirección General de Energía a la cual represento, está conforme con el informe que comprende las actividades realizadas en el mes de julio del año dos mil doce que usted prestó a esta Dirección.

De igual manera le informo que el trabajo realizado estuvo apegado a las condiciones del Contrato Administrativo celebrado entre usted y el Ministerio de Energía y Minas y se extiende la presente para continuar con el proceso correspondiente.

Agradeciendo su atención y servicio, me despido reiterando nuestra conformidad con el trabajo realizado.

Atentamente,

Ing. Marco Fabio Gudiel Sandoval
Sub-Director General de Energía

DIRECCIÓN GENERAL DE ENERGÍA
DESPACHO DEL SUB-DIRECTOR
GUATEMALA, C. A.

MATRIZ ENERGÉTICA DEL PAÍS

MEM

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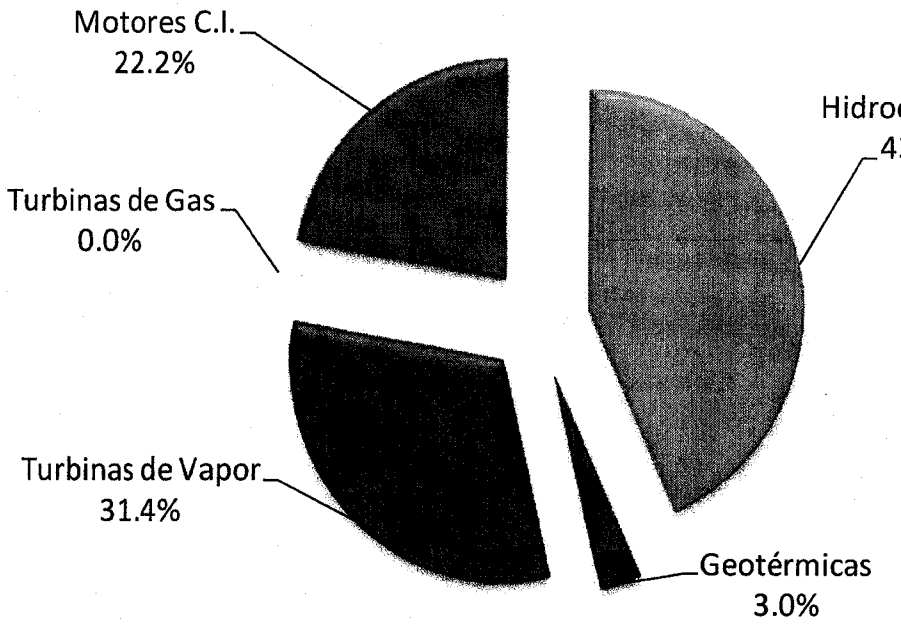
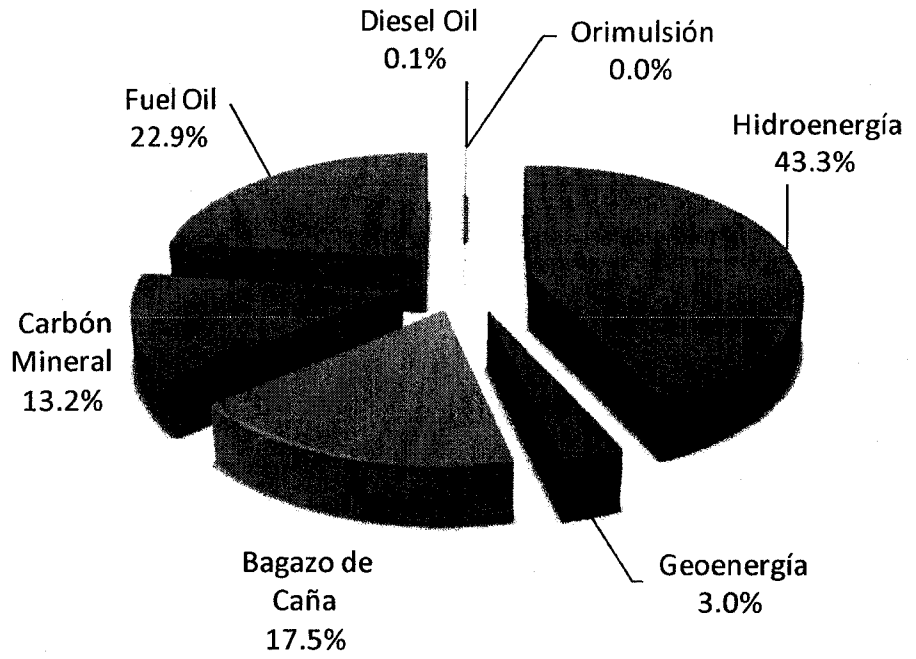
Generación de Energía Eléctrica por tipo de central año 2010



Tipo de Central	GWh	%
Hidroeléctricas	3,849.1	43.3
Geotérmicas	271.0	3.0
Turbinas de Vapor	2,795.8	31.4
Turbinas de Gas	3.6	0.04
Motores C.I.	1,973.4	22.2
Total	8,893.0	100.0

GENERACIÓN DE ENERGÍA ELÉCTRICA POR TIPO DE COMBUSTIBLE AÑO 2010

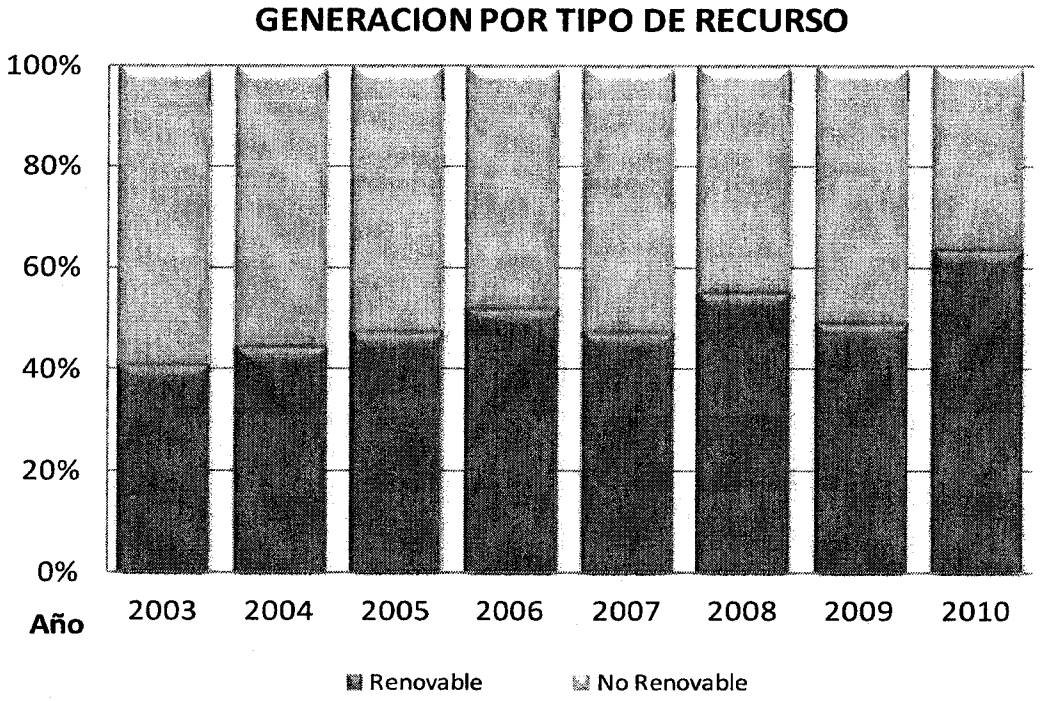
Generación x tipo de combustible 2010



Energético	GWh	%
Hidroenergía	3,849.1	43.3
Geoenergía	271.0	3.0
Bagazo de Caña	1,558.1	17.5
Carbón Mineral	1,169.9	13.2
Fuel Oil	2,039.3	22.9
Diesel Oil	5.6	0.1
Orimulsión	0.0	0.0
Total	8,893.0	100.0

GENERACIÓN DE ENERGÍA ELÉCTRICA POR TIPO DE RECURSO EN GWH

Tipo de energético	2003	2004	2005	2006	2007	2008	2009	2010
Renovable	2,988.4	3,444.4	3,821.4	4,242.9	4,170.1	4,830.5	4,442.4	5,678.2
No Renovable	4,295.7	4,246.9	4,227.3	3,922.3	4,586.1	3,886.8	4,603.6	3,214.8
Totales	7,284.1	7,691.4	8,048.7	8,165.1	8,756.2	8,717.4	9,046.0	8,893.0



Año	2008			2009			2010		
Central Generadora	Generación (GWh)	Tipo de combustible TN o Gal	Consumo de combustible	Generacion (GWh)	Tipo de combustible TN o Gal	Consumo de combustible	Generación (GWh)	Tipo de combustible TN o Gal	Consumo de combustible
San José	1107.91	Carbon TN	439,218	642.7	Carbon TN	257,392	1,030.1	Carbon TN	416,067.0
Tampa	12.45	Diesel Gal	919,917	27.3	Diesel Gal	2,010,995	2.12	Diesel Gal	161,716
Arizona	782.57	Bunker Gal	43,791,834	1073.32	Bunker Gal	60,062,489	658.88	Bunker Gal	36,365,619
Magdalema	2.34	Bunker Gal	277,368	85.31	Bunker Gal	9,014,339	10.08	Bunker Gal	1,816,053
	176.58	Bagazo TN	611,741	230.15	Bagazo TN	797,326	305.37	Bagazo TN	1,439,064

IAEA
International Atomic Energy Agency

Technical Cooperation (TC) Programme

Regional project concept

Name of the region: Latin America	**Regional/ Cooperative Agreement** *(if applicable)*:	**Project concept priority number within the Regional/Cooperative Agreement Programme Note** *(if applicable)*:	**Project concept priority number within the Regional Programme Note:**

Field of activity:
15

Title:
The title should be as concise as possible and should summarize the objective of the project.
Support for Strategic Planning to Meet Future Energy Needs in Central America and the Caribbean

Problem statement:
Provide a summary of the issue to be addressed by the project. This should be the result of a situation analysis to identify the problem, and its cause and effect.
The options for meeting future energy needs for most of the countries in Central America and the Caribbean will be seriously affected by resource availability, supply security concerns, actions for mitigating/adapting to climate change, and availability of cleaner energy technologies. This sub region is relatively poor in energy resources but individual countries have very different situations. There is also large potential for cooperation and pooling of resources for mutual benefits of the small economies and islands of Central America and the Caribbean. Through previous technical cooperation activities various electricity generation options were evaluated but comprehensive energy strategies and plans for Member States in Central America and the Caribbean have not been fully realized. Furthermore, assessment of different options in the sub regional for contiguous and integrated plans has not been assessed. Therefore, there is a need to expand the scope of energy studies to address the above mentioned issues in more detail and with a longer term perspective, particularly in the sub regional setting, to ensure sustainable energy supplies for continued social and economic progress in Central America and the Caribbean.

Objective:
State succinctly what the project is intended to achieve. Please state only one objective.
To support Member States in Central America and the Caribbean in elaborating sustainable energy strategies with emphasis on evaluating the role of cleaner energy technologies (renewable, nuclear and cleaner fossil fuels technologies) and assessing their potential contribution to future energy needs (including water supply).

End users:
Who will use/benefit from the results of the project?(e.g. decision makers, service users, patients, farmers).
National institutions of Member States in Central America and the Caribbean responsible for energy supply and development of the economic, social and environmental sectors based upon the successful development of sustainable energy supply strategies and national plans. In particular, national planning and statistical authorities and decision makers formulating future policies and strategic plans for development of the energy and water sectors.

Past and present regional efforts in addressing the need:
Summarize any past and present regional efforts (including programmes/projects by other regional or international partners) to address the issue to which the project will contribute. Explain any specific gaps that the project will address. Why is a regional approach the most effective mechanism in this case?
RLA/0/040 'Building Capacity for the Development of Sustainable Energy which included activities to develop an integrated model for the energy supply system in the Mesoamerican Region using MESSAGE, and to determine the optimal Energy Supply Strategy for the energy integration of Nicaragua, Cuba, Dominican Republic, El Salvador, Guatemala, Costa Rica, Panama, Mexico, Belize, Haiti and Jamaica

Role of nuclear technology:
Indicate the specific nuclear technique that would be used, and outline why it is appropriate for addressing the issue. Is the technique the only one available to solve the problem? Does the technique have a comparative advantage to non-nuclear techniques? Does the technique complement non-nuclear techniques?
The project will identify the potential of cleaner energy technologies (renewable, nuclear and cleaner fossil fuels technologies) and assess their contribution in meeting future energy needs in the participating countries. The project will also estimate the indicators of sustainable energy development and evaluate whether the developed energy plans are

electricity supply that can be deployed on a large scale to avoid GHG emissions. Its future role in the sub regional and national response actions is very important.

Role of the IAEA:

What specific role would the IAEA be expected to play in the project?

The IAEA will provide information and analytical tools as well as capacity building (training of loacal experts) for conducting national and sub regional studies for assessing the role of various energy options, including nuclear power, under different economic and social circumstances. The national studies will be collated and integrated into sub regional assessment.

Participating Member States:

List the Member States expected to participate in the project.

Cuba, Belize, Dominican Republic, El Salvador, Guatemala, Honduras, Costa Rica, Mexico, Nicaragua, Panama, Haiti and Jamaica

National and regional counterpart institutions / stakeholders involved in the project:

List all national and regional institutions and stakeholders expected to participate in the project. Please enter first the main counterpart institution and the Designated Team Member (DTM). This person will be the regional technical coordinator for the project.

Energy planning authorities, social policy making units, environmental management departments, research institutions working on energy and development planning.

Link to regional strategies or equivalent:

Is this project directly linked to a priority area identified in the relevant regional strategy? If yes, provide the reference. ARCAL Strategic Profile, Need E10; Shortage of energy supply and demand scenarios and analysis.

If not, explain why this concept is being presented for consideration.

Partnership:

List all external institutions and partners (other UN or international organisations, donors, etc.) expected to participate in the project, specifying the contribution of each.

The Latin American Energy Organization (OLADE), to provide training, regional expertise and data and foster technical and data networks

Physical infrastructure and human resources:

What physical infrastructure and human resources are available to support the project? For example, existing laboratories, suitable buildings, staff that will be directly involved in this project.

List any regional resource centres that would play a major role in the implementation of the project.

A team of 2-3 energy/planning/statistical professionals would be required in each participating country.

Financial resources required and source of funding:

Provide an estimate of the total cost of the project and the expected funding provided by each stakeholder (Government cost-sharing, other partners and IAEA).

Assuming about 12 countries will participate, the project would require Euro 300 000 for the 2 year period.

Duration of the project:

Indicate a realistic starting date for the project and the number of years required to complete the project. Projects should not exceed four years.

2 years

Safety regulatory infrastructure:

Indicate whether or not the safety regulatory infrastructure in the Member States that are expected to participate in this project is adequate to ensure that the project will be implemented in a safe manner. If not, specify the gaps and indicate how they will be addressed.

n/a

Resumen de la Solicitud de Ismael:
El deseo es hacer proyectos subregionales para Centro América y El Caribe, pero se le pasó la fecha límite para presentar conceptos, por lo que desea que la solicitud venga de afuera para que lo tomen en cuenta. Ismael necesita saber si estamos interesados y de estar interesados hablar con los oficiales de enlace para que se presente como un proyecto regional.

Concepto de proyecto regional:

Región: Latino América

Titulo: Apoyo para la planeación estratégica para encontrar necesidades futuras de energía en Centro América y el Caribe.

Problema: Las opciones para encontrar futuras necesidades para la mayoría de los países de Centro América y el Caribe estarán seriamente afectadas por la disponibilidad de recursos y la disponibilidad de tecnología de energía limpia. La subregión es relativamente pobre en recursos de energía pero individualmente cada país tiene situaciones diferentes.

Objetivo: Apoyar a los Miembros de los países de Centro América y el Caribe en elaborar estrategias de energía sostenible con énfasis en evaluación del papel que juegan las técnicas de energía limpia (renovable, nuclear y técnicas de combustibles fósiles limpios) y evaluar su contribución potencial en las futuras necesidades de energía.

Países participantes: Cuba, Belize, Republica Doninicana, El Salvador, Guatemala, Honduras, Costa Rica, Mexico, Nicaragua, Panamá, Haití y Jamaica.

Cooperacion: La Organización Latinoamericana de Energia (OLADE), proveerá entrenamiento, experiencia regional y datos.

Infraestructura y recurso humano: Un grupo de 2 a 3 profesionales (energía, planificación, estadísticas) de cada país.

Recursos Financieros requeridos: Asumiendo que los 12 países participarán, el proyecto requerirá 300,000 Euros para un periodo de 2 años.

Estimado Ismael

Gusto de saludarte, Guatemala está interesada en el proyecto debido a las necesidades futuras de Energía y pensamos que es indispensable el uso de una tecnología limpia y con los recursos propios de nuestro país, por lo que apoyamos el proyecto.

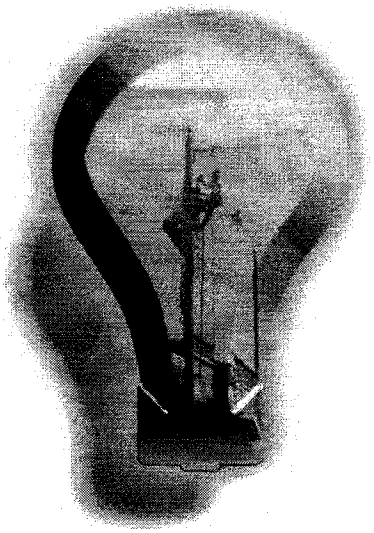
Saludos

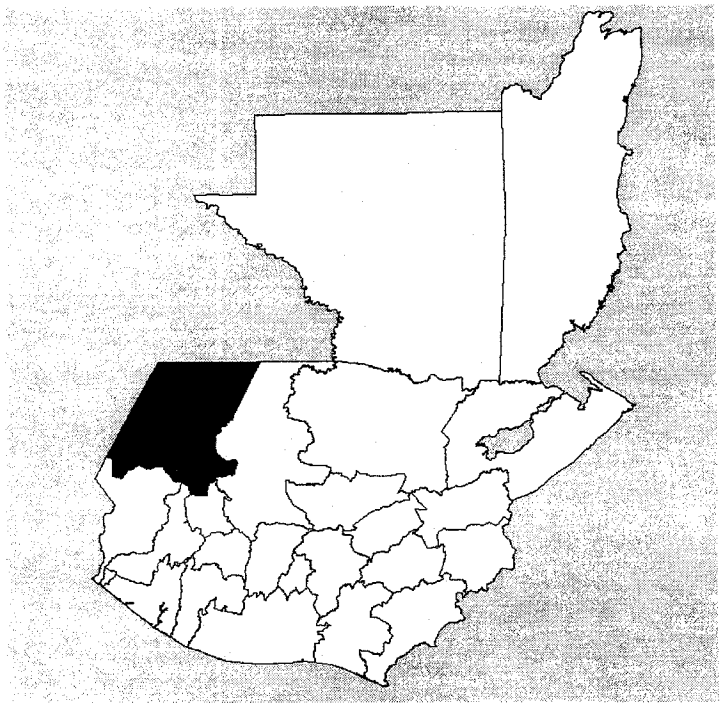
Ing. Felipe Robles
Ministerio de Energía y Minas Guatemala

Gobierno de Guatemala

Ministerio de Energía y Minas

ÍNDICE DE COBERTURA ELÉCTRICA DEPARTAMENTO DE HUEHUETENANGO 2011





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COBERTURA ELÉCTRICA 2011
HUEGUETENANGO

Numero	Municipio	Hogares	Usuarios	INDICE
1	AGUACATAN	9,060	8,693	96.0%
2	BARILLAS	17,373	9,477	54.6%
3	CHIANTLA	15,086	11,141	73.8%
4	COLOTENANGO	4,658	3,574	76.7%
5	CONCEPCION HUISTA	4,173	3,941	94.4%
6	CUILCO	9,749	9,197	94.3%
7	HUEHUETENANGO	31,439	30,632	97.4%
8	JACALTENANGO	8,681	8,105	93.4%
9	LA DEMOCRACIA	11,223	10,681	95.2%
10	LA LIBERTAD	6,327	5,484	86.7%
11	MALACATANCITO	3,740	3,567	95.4%
12	NENTON	5,965	4,328	72.6%
13	SAN ANTONIO HUISTA	3,106	2,758	88.8%
14	SAN GASPAR IXCHIL	1,131	658	58.2%
15	SAN ILDEFONSO IXTAHUACAN	6,642	4,691	70.6%
16	SAN JUAN ATITAN	2,977	2,407	80.9%
17	SAN JUAN IXCOY	3,941	3,707	94.1%
18	SAN MATEO IXTATAN	5,725	4,421	77.2%
19	SAN MIGUEL ACATAN	4,059	3,251	80.1%
20	SAN PEDRO NECTA	5,532	4,965	89.8%
21	SAN RAFAEL LA INDEPENDENCIA	2,286	2,107	92.2%
22	SAN RAFAEL PETZAL	1,418	1,238	87.3%
23	SAN SEBASTIAN COATAN	4,517	4,328	95.8%
24	SAN SEBASTIAN HUEHUETENANGO	4,344	3,201	73.7%
25	SANTA ANA HUISTA	1,985	1,871	94.3%
26	SANTA BARBARA	3,189	2,387	74.9%
27	SANTA EULALIA	5,604	5,334	95.2%
28	SANTIAGO CHIMALTENANGO	1,504	1,064	70.7%
29	SOLOMA	9,051	8,536	94.3%
30	TECTITAN	1,570	1,248	79.5%
31	UNION CANTIL	3,189	2,374	74.4%
32	TODOS SANTOS CUCHUMATAN	5,859	5,591	95.4%
	HUEHUETENANGO	**205,103**	**174,957**	**85.3%**

MAPA DE COBERTURA ELÉCTRICA 2011
HUEGUETENANGO