



Topic: Tools for assessing the benefits of mitigation and adaptation to enhancing resilience and emissions reductions that ecosystem-based adaptation provides.

Title of Work:

WATER HYACINTH: VALUE CHAIN IN LOCAL AND REGIONAL DEVELOPMENT.

**EXECUTING ORGANIZATION
COMMUNITY GROWTH OF REGIONAL EMPLOYMENT, A.C.**

Acronym: CRECER

Representante: José Carlos Vargas Soto

January 2017

C O N T E N T

I. DESCRIPTION OF THE TOOLS

- a) Background.
- b) Problems in Water Bodies.
- c) Water Hyacinth.
- d) Mechanical or Manual Extraction.

II. PARTNER INSTITUTIONS.

III. KEY RESULTS.

- a) Creative and Innovative Impulse.
- b) Valuing your biological function.
- c) Avoid Traditional Practices.
- d) Promote the extraction by mechanical or manual means.
- e) Implementing conditioning and processing works to obtain absorbent fiber.
- f) Impact to meet spills of oil and oil spills.
- g) Environmental and Social Management.

IV. NEXT ACTIONS.

- a) Proposed amendments to the Internal Regulations of the National Water Commission.
- b) Challenges.

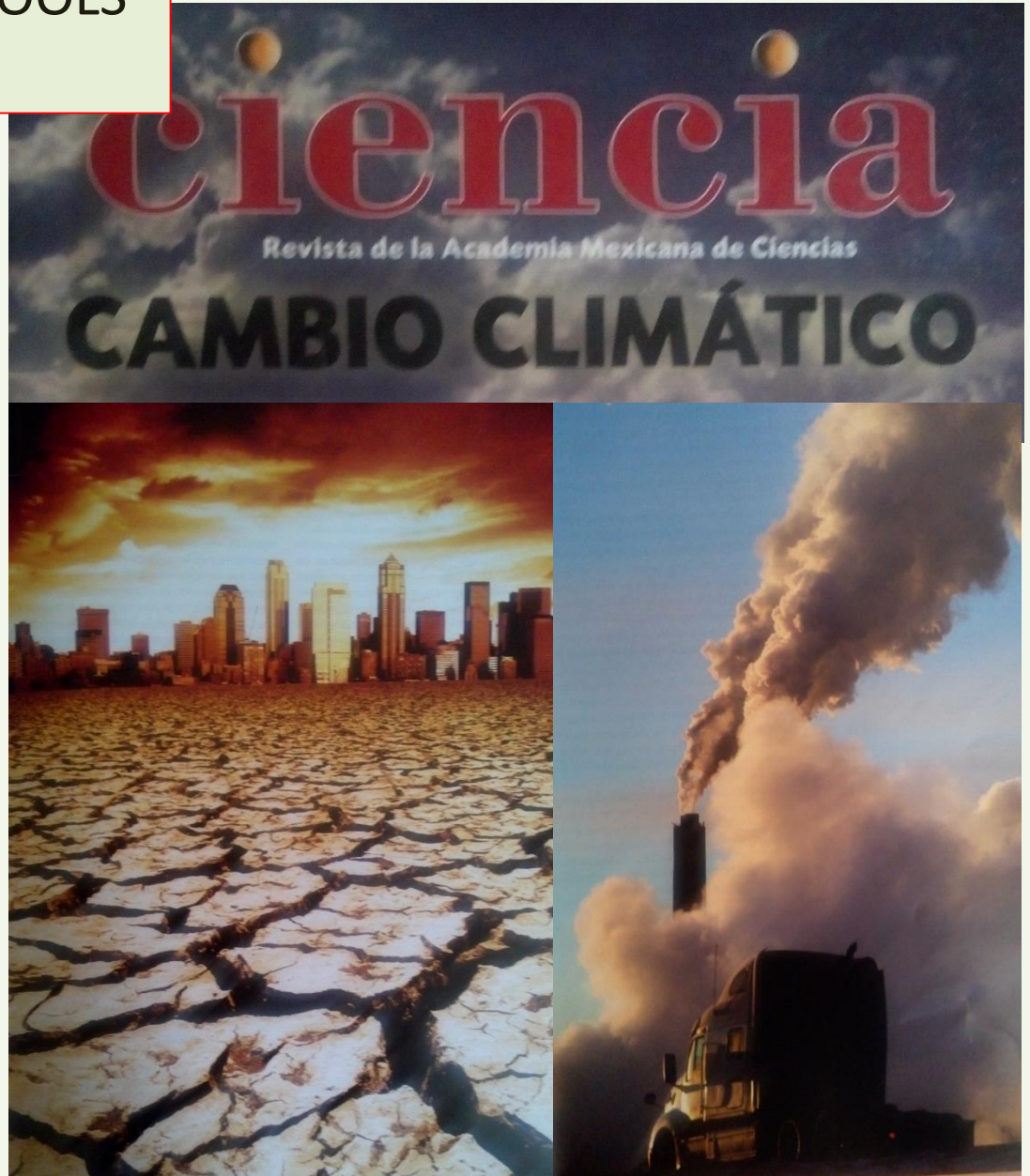


I. DESCRIPTION OF THE TOOLS

a) Background.

Excess carbon in the atmosphere destabilizes the planet, creating dramatic changes in climate.

Climate change is the result of multiple elements concentrated in the atmosphere as carbon dioxide, methane and other gases.



I. DESCRIPTION OF THE TOOLS

a) Background.

Long history of pollution, devastation and environmental degradation affecting rivers, lakes, ponds and dams

Urban and industrial discharges, agricultural runoff and leachate from landfills, contaminated water Its excess modifies the biotic conditions of water bodies



I. DESCRIPTION OF THE TOOLS

b) Problems in water bodies.

and microbial growth.

- Abundance of algae and plants.
- Urban trash.



I. DESCRIPTION OF THE TOOLS

b) Problems in water bodies.

Environmental:

- Loss of biodiversity, decreased dissolved oxygen, promotes eutrophication, siltation generates.



ABUNDANCE WATER HYACINTH

**INVASIVE SPECIES
PLAGUE - WEED
ORGANIC WASTE**



Productive:

- It affects water quality
Interrupts fishing and extraction of water for agricultural activities.
- Avoid navigation, tourism and recreation.
- Prevents displacement of phytoplankton and continuity of food chains.



Public Management :

- Propitious making wrong decisions where budget availability is the main argument.
- It generates political capital and interest motivates chains.

Public Health:

- Generates stagnant water
- Encourages the generation of odors.
- Motivates the deposit of household waste.
- Creates favorable conditions for the proliferation of mosquitoes and other vectors

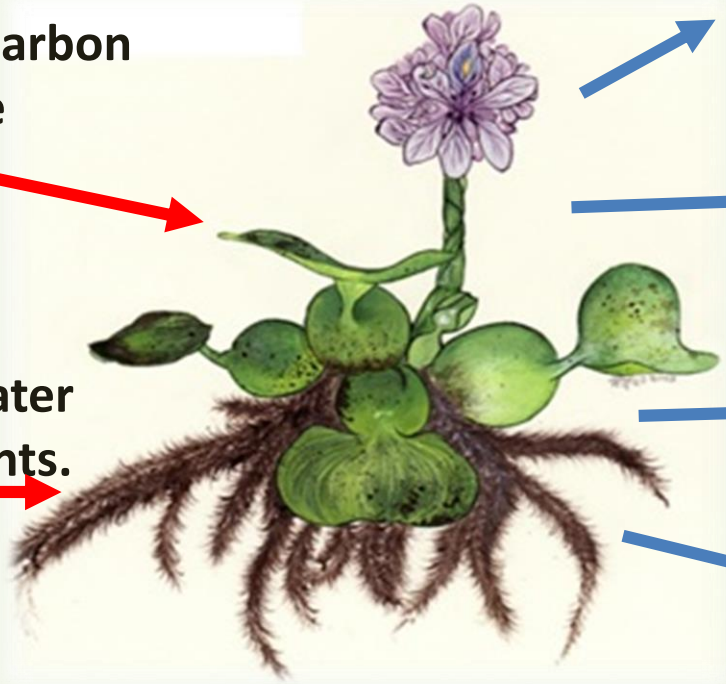
I. DESCRIPTION OF THE TOOLS
c) Water Hyacinth.

The NATURE offers us opportunities

Assimilates Carbon Dioxide



Absorbs water contaminants.



Oxygen Frees



Participates in the cycles of Carbon, Nitrogen, Phosphorus.



Improves water quality



Retains heavy metals



TRUTHS INDISPUTABLE

**Plant Protection
(Natural Filter)**

**Renewable Resource
(Regeneration)**

**Environmental Active
(Generates Welfare)**

I. DESCRIPTION OF THE TOOLS

c) Water Hyacinth.



Problematic

Navigation affects Inhibits growth and development of phytoplankton - food chains
Sanitation and Cleaning affect Mosquito breeding and disease vectors
Major silting Emission greenhouse gases Increased environmental liabilities
Abundance of biomass: 200-400 ton. per hectare
Presence in Mexico: 28 states covering 70,000 ha. (Estimated).
Presence in 60 countries.

Objectives

Avoid actions that harm the environment. Avoid depletion of natural capital
Withdrawal or harvest water hyacinth Take advantage of the abundance of biomass
Development of productive chains. Biodiversity conservation

Results

Development of "green" products with industrial utility and commercial value
Mitigating the effects of climate change. Carbon sequestration.

I. DESCRIPTION OF THE TOOLS

d) Mechanical or Manual Extraction.

Objective:

Sanitation and maintenance of water removing biomass and other floating materials.

EFFECTS:

- Method environmentally "safe".
- Promotes the rehabilitation of the water.
- The biological function water hyacinth in carbon sequestration, purification of pollutants and improving water quality is optimized.
- The controlled management water hyacinth ensures the balance of biodiversity and prevents the emission of greenhouse gases.



I. DESCRIPTION OF THE TOOLS

d) Mechanical or Manual Extraction.

Under favorable conditions a hectare of water hyacinth represents 200 to 400 tons of fresh biomass.

In Mexico have 70,000 hectares (estimated) in 28 states; that is available 2,000,000 to 4,000,000 tons of fresh biomass.

The fundamental challenge is to give utility and value, to the large amount of biomass available



II. PARTNER INSTITUTIONS.

For more than 18 years, solutions are presented in the management, control and use of the water hyacinth, emphasizing the merit of the plant as PROTECTOR, RENEWABLE RESOURCE AND ACTIVE ENVIRONMENTAL. The work contributes to assess the actions of sanitation and conservation of water bodies, favoring the development of productive activities and generation of employment. Gradually, government management is modifying actions that avoid environmental damage and affect environmental protection, climate change and mitigation of greenhouse gases.

Currently, the following associated institutions are integrated into the operational and technological model:

- Community Growth in Regional Employment, A.C. (1)
- REFUGIA Center for the Conservation of Ecobiodiversity, A. C. (2)
- TEMA Services and Environmental Products, S.A. of C.V. (3)
- Green Keeper África. (4)
- CDO Innov (5)

(1) Social Organization located in San Luis Potosí, Mexico. Social liaison in operational areas.

(2) Social Organization located in the Federal District, Mexico. Publications made by the Director of the Organization:

- To investigate alternatives of sustainable use of the primary production of eutrofizados bodies of fresh water as a measure of environmental recovery in the Centro Occidente Region.
- Potential risk factors of Mexico's epicontinental fishes in the face of global warming.
- To evaluate risk factors for water resources in the Central West Region and to determine specific recovery and protection measures for each locality in the Central West Region.
- Efficiency in Wastewater Treatment Plants Contribution to management and social development.

(3) Technological Based Company located in San Luis Potosí, Mexico.

(4) Organization located in Cotonou, Benin (African country)

(5) Company located in France.

(1) (2) (3) Participate in the operational and technological development in Mexico.

(3) (4) Formalized in 2015, Operational and Technological Collaboration Agreement.

(3) (5) They participate in a proposal to be financed by the European Union.

II. PARTNER INSTITUTIONS.

The work developed includes: cleaning, cleaning and maintenance of water bodies with abundant presence of water lily, development of new economic activities, promotion of productive activities, mitigation of the effects of climate change, economic, social and environmental improvement in vulnerable communities. Together these activities are considered of **PUBLIC INTEREST**.

- We participate to generate collective welfare, promoting models that generate products with utility and value in the market;
- We design and develop innovative actions and technological developments that allow the availability of services and environmental products.
- We promote actions that provide quality of life and respect for nature.
- We face government barriers that limit our ability to act.

It is INDISCUTIBLE that the work is a CAUSE OF PUBLIC INTEREST.

II. PARTNER INSTITUTIONS.

In 2015, the collaboration agreement is formalized with the organization Green Keeper Africa, located in the Republic of Benin (African countries), with whom knowledge and experiences shared. The implementation of operational and technological model is the reason for the distinction of the French Government to select the project water hyacinth as one of the flagship actions in the preparatory work for the COP 21.

138 / **Le club Business et sens** Isabelle Hennebelle/ **L'ESPRESSO**

COMMENT INVENTER DES MODÈLES ÉCONOMIQUES DURABLES ET PROFITABLES

La France s'engage (aussi) au sud

C'est au Quai d'Orsay, le 18 novembre, que la première édition de La France s'engage au sud dévoile ses 10 lauréats (voir l'encadré). Déclinaison du concours sur l'innovation sociale La France s'engage, lancé en grande pompe par François Hollande en juin 2014, cette initiative valorise des entreprises sociales et des associations originaires d'Afrique subsaharienne, du Maghreb, des Caraïbes et d'Asie du Sud-Est. « Chaque jour, dans ces pays, des citoyens engagés inventent des solutions pour améliorer les conditions de vie et protéger la planète. Nous voulons les encourager et les aider à changer d'échelle », explique Annick Girardin, secrétaire d'Etat chargée du Développement et de la Francophonie, qui porte l'opération avec Patrick Kanner, ministre de la Ville, de la Jeunesse et des Sports.

Agriculture, recyclage, numérique, luxe, biodiversité, santé... Quelque 1 000 initiatives ont été reçues et passées au crible par le ministère des Affaires étrangères et du Développement international et l'Agence française de développement. Un jury, présidé par Martin Hirsch, directeur général de l'AP-HP, a ensuite sélectionné 10 des 60 finalistes, en recoupant les avis des ambassades et d'étudiants de

rencontre des pionniers de l'innovation sociale, la création d'une plateforme pour fédérer une communauté – avec l'aide des experts de MakeSense –, et un appui à distance pendant un an grâce au savoir-faire de l'incubateur Bond'innov. Bien que lancée sans communication massive, cette première édition a suscité l'engouement d'un millier de candidats. De quoi changer d'échelle l'année prochaine ? ■

Pour aller plus loin : <http://lafrancesengage.fr/au-sud>

10 LAURÉATS ET UN PRIX SPÉCIAL

Bénin et Nigeria. Green Keeper Africa. Production de biofertilisants, de fibre absorbante pour la dépollution et d'alimentation du bétail à partir de jacinthes d'eau.

Cambodge. Samatou. Fabrication écologique de tissu de lotus.

Cameroon. Les vergers écologiques de Toyap. Développement local agricole et forestier durable.

Cameroon. Kmerpad. Sensibilisation à la « gestion de l'hygiène menstruelle » et confection de serviettes hygiéniques lavables pour femmes en milieu rural.

10 LAURÉATS ET UN PRIX SPÉCIAL

Bénin et Nigeria. Green Keeper Africa. Production de biofertilisants, de fibre absorbante pour la dépollution et d'alimentation du bétail à partir de jacinthes d'eau.

II. PARTNER INSTITUTIONS.



IDÉES POUR LE DÉVELOPPEMENT
L'aide au développement mérite un débat

afd
AGENCE FRANÇAISE
DE DÉVELOPPEMENT

CONFÉRENCE

MER. 02 DÉCEMBRE | 18h30

LE CLIMAT :
quelle opportunité pour le développement ?

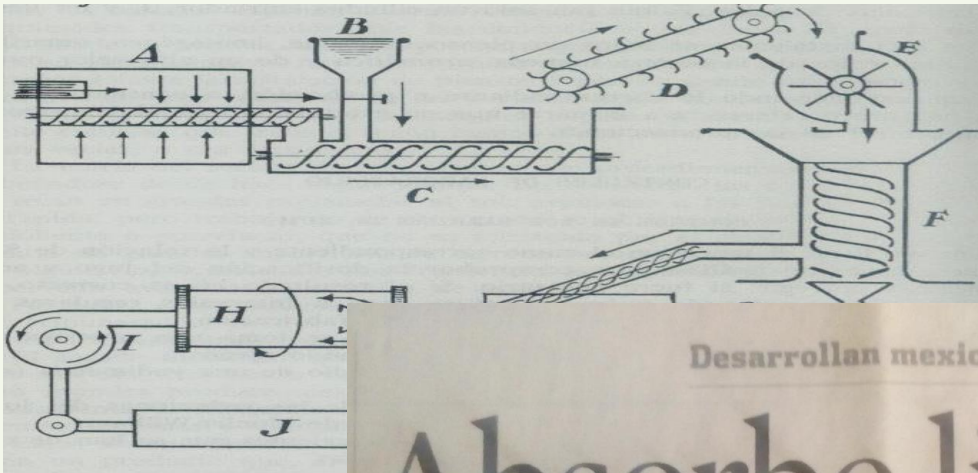
The complex block contains text and logos at the top. Below is a photograph of a busy outdoor market with various goods and people. At the bottom, there is a blue banner with white text providing the date and time of a conference, and another blue banner with white text providing the title of the conference.



III. KEY RESULTS.

a) Creative and innovative impulse.

From the porous structure of the plant, we design, develop and operate an operational and technological platform that appreciates the WATER HYACINTH as an environmental asset, renewable resource and protective plant.



Desarrollan mexicanos tecnología 'limpiadora'

Absorbe lirio acuático derrames petroleros

III. KEY RESULTS.

a) Creative and innovative impulse.

Instituto Mexicano de la Propiedad Industrial

TÍTULO DE PATENTE NO. 208255

Titular(es): [REDACTED]

Domicilio(s): Ismael Salas No. 264, Col. Fracc. Colonial Nuevo Paseo, C.P. 78320, San Luis Potosí, S.L.P., MEXICO

Denominación: METODOS QUE PERMITEN ATENDER EMERGENCIAS AMBIENTALES Y/O REHABILITACION DE SUELOS CONTAMINADOS, UTILIZANDO LIRIO ACUATICO

Clasificación: Int.Cl.6: B01D15/00

Inventor(es): JOSE CARLOS VARGAS SOTO

Número: PA/a/1999/004423	Fecha de presentación: 23 de abril de 1999	Hora: 09:45
País:	Fecha:	Número:

SOLICITUD

PRIORIDAD

ESTA PATENTE CONCEDE A SU TITULAR EL DERECHO EXCLUSIVO DE EXPLOTACION DEL INVENTO RECLAMADO EN EL CAPITULO REIVINDICATORIO Y TIENE UNA VIGENCIA DE VEINTE AÑOS IMPROPRORROGABLES CONTADOS A PARTIR DE LA FECHA DE PRESENTACION DE LA SOLICITUD.

Fecha de expedición: 6 de junio de 2002

LA SUBDIRECTORA DIVISIONAL DE EXAMEN DE FONDO

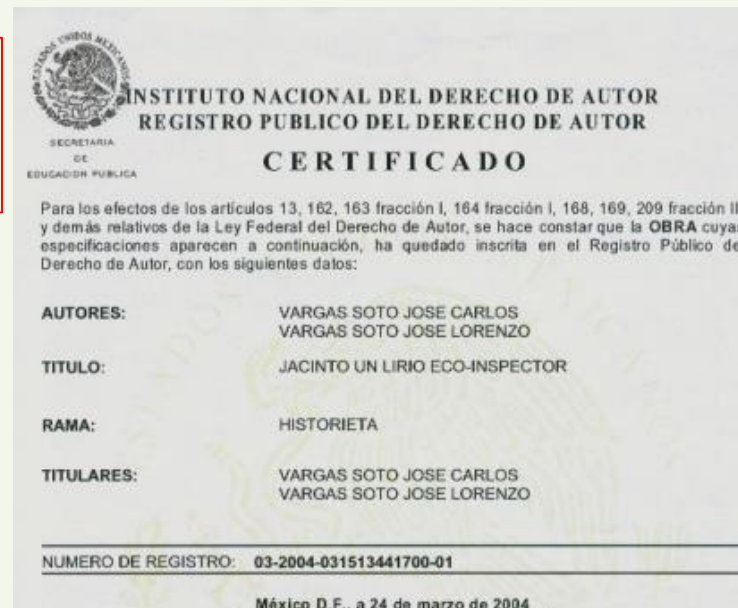
M. EN C. EMELIA HERNANDEZ PRIEGO.

- It recognizes its category of INVENTOR.

It participates in five technological developments recognizing its participation as CO INVENTOR.

III. KEY RESULTS.

a) Creative and innovative impulse.

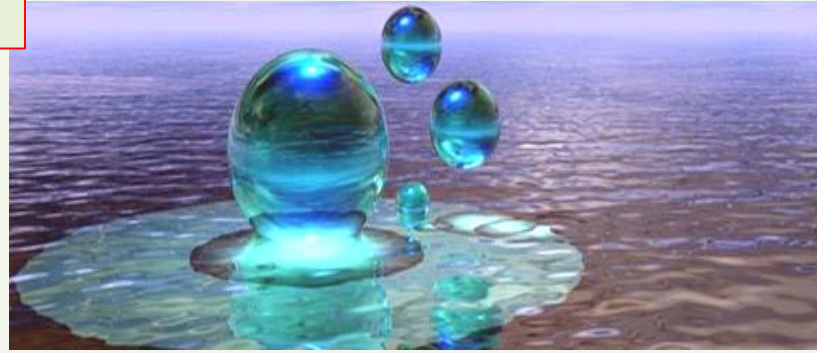


III. KEY RESULTS.

b) Valuing your biological function

It offers two effects that mitigate Climate Change:

1. Absorb available carbon in the air (carbon dioxide).
2. Assimilates water contaminants.



Their participation is blunt to improve the quality of air and water.



III. KEY RESULTS.

c) Avoid traditional practices.

Entrevista a Gilles-Eric Seralini.

Referente europeo en el estudio de agrotóxicos.

“El glifosato estimula la muerte de las células de embriones humanos”

Confirmó los efectos letales del herbicida en células humanas de embriones, placenta y cordón umbilical. Alertó sobre las consecuencias sanitarias y ambientales, y exigió la realización de estudios públicos sobre transgénicos y agrotóxicos. Cuando a conocer sus investigaciones, recibió críticas y desacreditaciones.

NO MORE

- Sinking of the plant.
- Greenhouse gas emissions.
- Environmental damage.

NO MORE

- Application of chemicals.
- Biologic control.
- Trituration plant.

ENVIRONMENTAL AND SOCIAL SUICIDE.



III. KEY RESULTS.

- d) Promote the extraction by mechanical or manual means.

BENEFITS

- Optimizes carbon sequestration, phosphorus and nitrogen.
- Avoid emission of greenhouse gases.
- Biomass removal and floating debris.
- Improved water quality.
- Prevents migration.
- More employment.
- Availability of water for domestic, urban, agricultural and industrial use.
- Productive for conditioning biomass opportunities.



III. KEY RESULTS.

- e) Implementing conditioning and processing works to obtain absorbent fiber.



III. KEY RESULTS.

f) Impact to meet oil and oil spills.

Materiales absorbentes
contra derrames de
hidrocarburos y aceites



Absorbent Fiber loose



Absorbent Pad



Absorbent Barrier



Kit to Handle
Oil Spills

III. KEY RESULTS.

f) Impact to meet oil and oil spills.

The Water Hyacinth conditioned and processed is a product accepted by PEMEX to attend oil and oil spills.

Número de documento: NRF-252-PEMEX-2012	
19 de febrero 2013	COMITÉ DE NORMALIZACIÓN DE PETRÓLEOS MEXICANOS Y ORGANISMOS SUBSIDIARIOS
PÁGINA 1 DE 15	SUBCOMITÉ TÉCNICO DE NORMALIZACIÓN DE PEMEX REFINACIÓN

**MATERIALES ABSORBENTES Y
ADSORBENTES DE HIDROCARBUROS Y
ACEITES**

PLAN NACIONAL DE CONTINGENCIA

PARA COMBATIR Y CONTROLAR DERRAMES
DE HIDROCARBUROS Y OTRAS
SUBSTANCIAS NOCIVAS EN EL MAR



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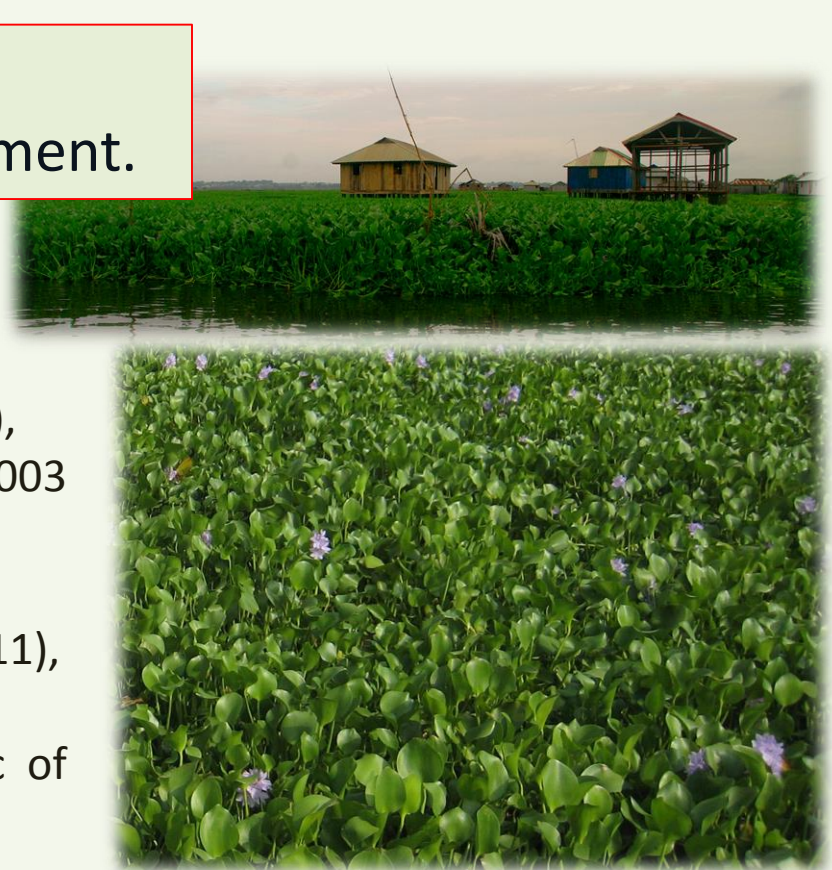
III. KEY RESULTS.

g) Environmental and social management.

Participations in bodies of water:

- Lagoon from Yuriria (Guanajuato-1998),
- Lake of Guadalupe (State of Mexico-1999),
- Waterway in San Juan del Rio (Querétaro 1999),
- Waterway from Xochimilco (Federal District-2003 to 2010),
- Dam Ignacio Ramirez (State of Mexico 2010),
- Waterway from Rio Lerma (State of Mexico-2011),
- Lagoon Colorada (Jalisco since 2012),
- Waterway and Dams located in the Republic of Benin - African country (2015)

During 2016, applications are received to participate in the following water bodies: Lake from Palo Verde located in Etzatlán (Jalisco); Lagoon from Yuriria (Guanajuato); Lake Chapala (Jalisco-participation included in integral sanitation); Lagoon from Cajititlán (Jalisco); Dams located in Manzanillo (Michoacán); Dam San José (San Luis Potosí); Lagoon from Teuchitlán (Jalisco); Hermenegildo Galeana (Guerrero); Lagoon de Zapotlán (Jalisco). The beginning of operational activities depends on the availability of the public budget and the continuity of interest expressed by public officials. Since 2014 information has been shared with stakeholders from Ecuador, Brazil, France and the United States.



III. KEY RESULTS.

g) Environmental and social management.

ENVIRONMENTAL VISION

Protective Plant,
Renewable Resource,
Environmental Asset

Environmental
Protection and
Industrial Safety

ABSORBENT
FIBER
+
HYDROCARBONS
AND OILS SPILL

Sequence for
Exploitation

Conditioning and
processing of water
hyacinth

Environmental
Classification

HAZARDOUS
INDUSTRIAL
RESIDUE

Creation of Value and
Industrial Utility

Absorbent Fiber to Attempt
Oil Spills and Oils

Use of Residual
Value

ENERGY
GENERATION
INPUT (Thermal
Oxidation-
Incineration)

- BETTER USE OF BIOMASS.
- MAJOR RESIDENCE OF CARBON IN PRODUCTIVE ACTIVITIES.

III. KEY RESULTS.

g) Environmental and social management.

FOCAL AREAS:

- Biodiversity.
- Climate Change.
- International Waters.
- Waste and Chemicals



PARTICIPATION IN THE NATIONAL DEVELOPMENT

- Natural Heritage Conservation.
 - Green Growth.
 - Sustainability.



TRANSVERSE BENEFITS

- Job creation in underserved communities.
- Associations Public / Private / Academic / Social.
- Attention of global environmental priorities.

KEY ACTIONS

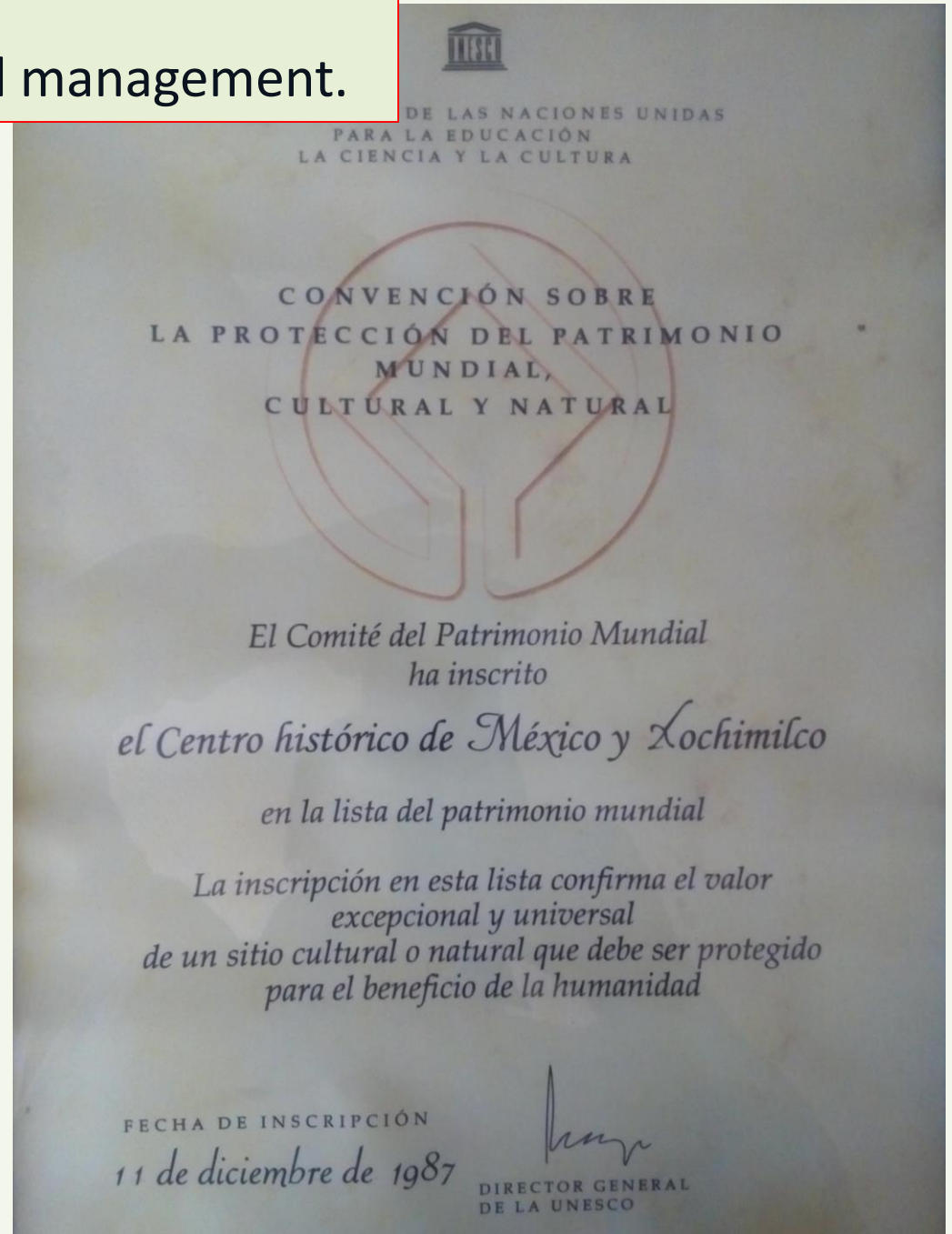
- Strengthens actions to mitigate climate change.
 - Promotes the generation of green jobs.
- Promotes better public policies, information, research, education, training, participation and human rights to strengthen environmental governance.

III. KEY RESULTS.

g) Environmental and social management.

From 2003 - 2010, in coordination with the Authorities of the Xochimilco - Mexico City Delegation, participated in maintenance and cleaning activities of the Channels of Xochimilco.

This operational point facilitates the link with instances of the federal government, state and municipal governments; As well as with Universities and Institutes of Technological Development.



III. KEY RESULTS.

g) Environmental and social management.

It effectively integrates public policies, citizen participation and territorial management processes.

Taking advantage of spaces of Citizen Participation, proposals are made in: National Development Programs 2000-2006, 2006-2012 and 2012-2018 SEMARNAT Sectoral Programs. Regulatory provisions: National Water Law, General Law of Ecological Balance and Environmental Protection, General Law of Climate Change, Federal Law of Environmental Responsibility.

The problem of hydrocarbon spills and the abundance of water hyacinth facilitates the sensitivity of Federal Deputies of the Water Resources Commission to issue recommendations to the holders of SAGARPA, SEMARNAT and the National Water Commission.



III. KEY RESULTS.

g) Environmental and social management.

Agreement No. 7 presented to the Commission, approved on February 25, 2014, where CONAGUA and other authorities are encouraged to consider the sustainable use of aquatic plants as a factor for competitiveness and conservation of water resources. The exhibition includes the following points of agreement:

"FIRST. Urges ... to consider the sustainable use of aquatic plants as a factor of competitiveness; Poverty alleviation Strategic actions to prevent and mitigate climate change ... In the future actions derived from the national development plan 2013-2018 ...

"SECOND. Exhort Avoid the use of control methods and / or products that lead to the sinking of aquatic plants, as organic waste is deposited inside the receiving bodies, damaging the quality of the water resource.

"THIRD. ... exhort The execution of a National Program for the Sustainable Use of Aquatic Plants environmental services that contribute to the generation of jobs and the sustainable conservation of our natural resources.

"FOURTH. Encourages ... to include projects, works and / or programs that detonate the sustainable use of aquatic plants as part of the strategic planning in the design and elaboration of the National Water Plan

IV. NEXT ACTIONS.

a) Proposed amendments to the Internal Regulations of the National Water Commission.

ARTICLE 30.- The following attributes are attributed to the Subdirector General of Hydro-agricultural Infrastructure:

II. Authorize administrative instruments

l) To implement actions and methods of control of aquatic weeds that prevent the sinking of biomass and damage the quality of the water resource in dams, headworks, canals, drains and water bodies ...

VII. Exercise, when they correspond to or affect two or more hydrological-administrative regions...

h) Assist with the General Coordination of Emergency Care and Cuenca Councils To carry out actions and methods of control of aquatic weeds that avoid the sinking of the biomass and damage the quality of the water resource in dams and head works;

ARTICLE 35.- The Irrigation Districts Management shall exercise the following attributions:

II. Exercise, in the case of irrigation districts ...

f) To carry out actions and methods of control of aquatic weeds that avoid the sinking of the biomass and damage the quality of the water resource in the channels and bodies of water in the irrigation districts

ARTICLE 52. The following attributions are the responsibility of the Technical General Subdirector:

II. Authorize administrative instruments ...

i) To implement actions and methods of control of aquatic weeds that avoid the sinking of the biomass and damage the quality of the water resource in the rivers or streams, lakes, reservoirs and other hydraulic systems;

XII. Provide technical advice to implement actions and methods of weed control that prevent biomass sinking and damage the quality of hydraulic systems ...

ARTICLE 57.- The following attributions correspond to the Water Quality Management:

I. To approve the draft administrative instruments ...

d) Reuse and recycling of water, control of aquatic weeds that prevent biomass sinking and damage the quality of water resources, integration of inventories, and technical advice;

IV. NEXT ACTIONS.

b) Challenger

- Diffusion.
- Will and governmental interest.
- Economic Support
250,000 Dlls per body
of water.



In areas with high presence of Water Hyacinth

CONTRIBUTE:

- Operational and Technological Model.
- Knowledge and Experience.
- Advice and Training.

Appreciate and recognize the Water Hyacinth as "Regenerative element" that helps reverse the effects of climate change, it is an indisputable truth.

Let us unite in proactive ways to collaborate towards the collective welfare, to cooperate, to make decisions that generate development and environmental protection, rebuilding programs for greater scope ... is the path to evolutionary economics.

COMMUNICATION AND INFORMATION

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