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THE SWEDISH TRADE & INVEST COUNCIL



LOW CARBON PROJECT

OPPORTUNITIES FOR SWEDISH COMPANIES IN MEXICO

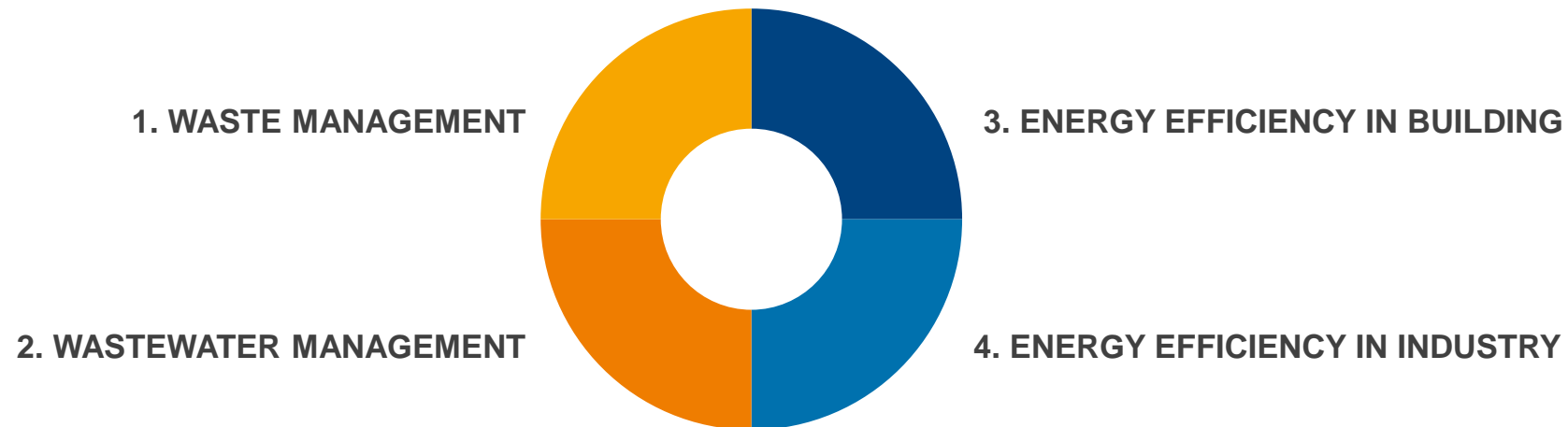
April 2017

Energy and Environment, Mexico City

THE LOW CARBON PROJECT

WORKING AREAS

- ▶ The Low Carbon Business Action in Mexico (LCBAM) is a project funded by the European Union that aims to contribute to the reduction of CO2 emissions in Mexico.
- ▶ The project is aimed at European industries and entities that are interested in setting up Cooperation Partnership Agreements (CPA's) with Mexican entities in **4 working areas**:

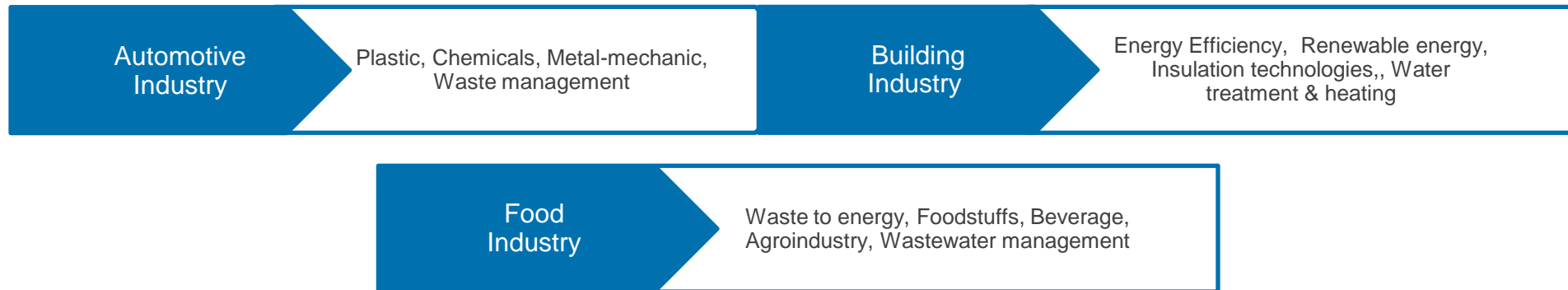


- ▶ Identified project opportunities may apply for feasibility grants from 30,000 to 70,000 EUR, 60-80% intensity grants.

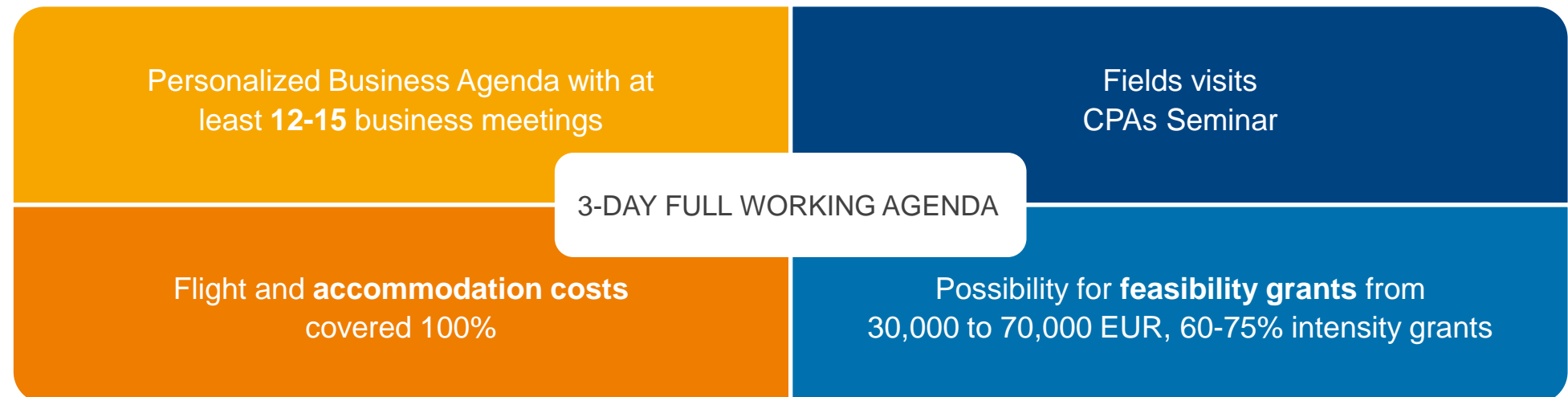


EXPLORE OPPORTUNITIES IN MEXICO AT NO COST WITH THE LOW CARBON PROJECT BUSINESS MEETINGS

THE 8th LCBAM BUSINESS MEETING* WILL FOCUS ON THE FOLLOWING INDUSTRIES:



EACH PARTICIPATING COMPANY'S PROGRAM INCLUDES:



*LOW CARBON BUSINESS ACTION IN MEXICO MEETING TO BE HELD IN CHIHUAHUA, CHIHUAHUA 25-27 APRIL, 2017



OPPORTUNITIES IN WASTE MANAGEMENT

SEVERAL INDUSTRIES IN SEARCH OF GENERATING MORE VALUE FROM THEIR TRANSFORMATION PROCESSES

UNATTENDED NEEDS

Agricultural Industry
<ul style="list-style-type: none"> • Use of waste from crops • Waste utilization of fisheries and aquaculture • Use of waste from the timber industry

Municipal, industrial and commercial solid waste
<ul style="list-style-type: none"> • Electronic waste treatment and final disposition technologies • Technical improvement of anaerobic digestion systems • Energy efficiency upgrades of biogas, syngas, and landfill gas combustion, incineration plants • Technical improvement of landfills design and operation

Building Industry
<ul style="list-style-type: none"> • Integrated waste management for housing building (specially demolition) • Insufficient installed capacity, mainly in the "Bajio" region and northern border

Food Processing Sector
<ul style="list-style-type: none"> • Dairy production waste • Bagasse from alcoholic drinks manufacturing and molasses of sugar mills • Slaughterhouses and cold cuts processes waste • Waste from coffee bean and cocoa (90% of the biomass is currently discarded)

OPPORTUNITIES

<ul style="list-style-type: none"> • Integral co-digestion systems • Software/hardware for digesters • Energy-efficient crushing and pumping systems of pretreated semi solids • Equipment for production of biodiesel from fish processing and aquaculture • Briquette and biochar production lines

<ul style="list-style-type: none"> • Smart storage and collection systems, eco-point programs and technologies for recycling • Optical multiplexer sorting systems, density sorting systems Specialized processing equipment previous to digestion systems • Waste to energy systems: Pyrolysis, Circulating fluidized bed (CFB), Gasification • Combined heat and power units (CHP), Combined cool, heat and power units (CCHP)
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<ul style="list-style-type: none"> • Rubble recycling machines with high throughput, mobile, compact and low fuel consumption or hybrid • Fixed stations with complete recycling lines that provide service to the industry and municipalities
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<ul style="list-style-type: none"> • UASB Biodigester systems and methanol extraction equipment • Integral briquetting systems of bagasse, molasses, coffee husk and cocoa shell. • Bioethanol production lines and Bio solids gasification systems • Meat waste gasification equipment

SOURCE: IDOM CONSULTING - LOW CARBON BUSINESS ACTION IN MEXICO



OPPORTUNITIES IN WASTEWATER MANAGEMENT

COMPETITIVE AND TECHNOLOGICAL GAPS IN CURRENT ADOPTED WASTEWATER TECHNOLOGIES

Structure of Wastewater Technologies

1. Pumps

2. Primary Treatment

- Septic Tanks
- Primary sedimentation tanks and chemically enhanced primary sedimentation
- Imhoff Tanks
- Anaerobic/facultative ponds

- Only 9.33% of all wastewater treatment plants employ septic tanks
- Market Potential here is EXTENSIVE

3. Secondary Treatment

- Activated Sludge
- Upflow Anaerobic Sludge Blanket (UASB)
- Trickling filter
- Rotating biological contactor
- Anaerobic Digestors/ Anaerobic filter
- Biological Reactor
- Land Treatment (Maturation Ponds; Areated Ponds; Wetlands)

- Opportunity for efficiency optimization of current configurations
- Largest wastewater treatment facilities use non-membrane secondary process (GWI 2010)
- Disinfection step required due to limitations in suspended solids removal

4. Tertiary Treatment

- Micro-Filtration(MF)
- Ultra Filtration(UF)
- Nano-Filtration(NF)
- Reverse Osmosis (RO)
- Membrane Bioreactors(MBR)
- Ion-exchange
- Chemical oxidation
- Granular media filtration (Sand Filters, Carbon Filters)
- Disinfection (Ultraviolet, Ozone treatment and Chlorine disinfection)
- Nutrient Removal
- Land Treatment: (Soil Aquifer Treatment (SAT); Maturation Ponds)
- Modular Wastewater Treatment Plants

5. Energy Conversion

- Micro-algae Bioreactor
- Co-digestors
- Anaerobic Digestion

6. Monitoring and Control

- Automated Control
- Automated Monitoring

- Low Carbon Technologies to:
 - Recover nutrients
 - Increase energy efficiency
 - Recover energy
 - Allow water to be reused
 - Treat water at source (Modular wastewater treatment technologies)

OPPORTUNITIES



OPPORTUNITIES TO DEVELOP AND PROVIDE SOLUTIONS & TECHNOLOGIES IN THE BUILDING SECTOR (1/2)

ENERGY EFFICIENCY TECHNOLOGIES IN BUILDING

On-site Energy

- Power Supply
- Gas

- OPPORTUNITIES**
- Gas as an alternative for electrical power supply (Cogeneration / Trigeneration), is still an incipient technology for buildings in Mexico

Renewable Energies

- Solar Panel
- Photovoltaic Panel
- Biomass
- Wind
- Geothermal

- Need of incorporating new technologies (Opportunity for European Companies)
- Current technologies:
 - ✓ Solar
 - ✓ Photovoltaic Energy

Water Use

- Plumbing Fixtures & Fittings
- Water Heaters
- Meter Water Systems
- On-site/Off-site Treated Wastewater
- Rainwater Harvesting System

- Local rules regarding water reusing and water treatment.
- The most important gap regarding water cycle in a building comes from domestic hot water generation and based on cost reduction (electrical boiling)



OPPORTUNITIES TO DEVELOP AND PROVIDE SOLUTIONS & TECHNOLOGIES IN THE BUILDING SECTOR (2/2)

ENERGY EFFICIENCY TECHNOLOGIES IN BUILDING

Building Envelope

- Shading
- Windows: Double-glazed Low-e Glass
- Windows: Films /Attachments
- Windows: Highly Insulating Window (Triple-glazed, etc)
- Roofing
- Insulation: Typical
- Insulation: Advance
- Air Sealing

Lighting & Appliances

- Luminaires
- Lighting Control
- Appliances & Electronics

Environmental Quality

- Ventilation
- Thermal Comfort
- Sensors/Controls

OPPORTUNITIES

- Insulation Technologies
- Air Sealing Technologies
- Advanced Thermal Comfort Technologies

- Residential and non-residential sectors are integrating energy efficient lighting and electronic devices.
- There is a growing market regarding LED luminaires in building and popular housing

- HVAC systems may account for more than 40% of the building total power consumption.
- Water efficiency is also basic when defining HVAC systems in buildings. In almost all regions of Mexico washed air cooling systems are used (evaporative cooling)

SOURCE: IDOM CONSULTING - LOW CARBON BUSINESS ACTION IN MEXICO



OPPORTUNITIES TO DEVELOP AND PROVIDE SOLUTIONS & TECHNOLOGIES IN THE INDUSTRY

ENERGY EFFICIENCY TECHNOLOGIES IN INDUSTRY

OPPORTUNITIES

Specific Production Technology	Industrial Processes	Renewable Energy
<ul style="list-style-type: none">▪ Boilers And Turbines▪ Thermal Technologies▪ Cooling Technologies▪ New Hot Technologies▪ Industrial Waste Technology	<ul style="list-style-type: none">▪ Combustion▪ Air Compressed Generation▪ Steam▪ HVAC▪ Drying, Separation and Concentration Processes	<ul style="list-style-type: none">▪ Biomass▪ Photovoltaic▪ Wind Energy▪ Solar Thermal Applications▪ Geothermal Technology▪ Wave Energy▪ Hydro Power

OPPORTUNITIES

Electrical & Electronic Systems	Power Storage	Cogeneration	Waste
<ul style="list-style-type: none">▪ Electric Power Generation▪ Transmission▪ Distribution▪ Optimization of Power Consumption	<ul style="list-style-type: none">▪ Thermal Storage▪ Electrical Storage▪ Water Storage▪ Mechanical Storage	<ul style="list-style-type: none">▪ Cogeneration Inside and/or Outside the Installation	<ul style="list-style-type: none">▪ Use of waste

SOURCE: IDOM CONSULTING - LOW CARBON BUSINESS ACTION IN MEXICO



BUSINESS SWEDEN CAN HELP YOU MAKE THE MOST OUT OF YOUR VISIT TO MEXICO

- ▶ The Low Carbon Business Meetings provide a good first contact with the Mexican market, however our experiences from similar projects tell us that in order for Swedish companies to fully take advantage of the visit to Mexico, hiring Business Swedish services can be a good idea
- ▶ Business Sweden can offer SMEs a project worth 100 KSEK where the Swedish Government subsidizes 50% and you only pay the remaining 50 KSEK. The project will be tailored according to your specific needs and can include the following modules:

Market Check

- ▶ Includes a customized overview of the market based on key questions agreed upon in prior discussions
- ▶ The market check is presented before the visit to Mexico

Meeting Program

- ▶ Consists of additional meetings with companies, government officials, associations and other relevant stakeholders.
- ▶ The meetings will take place right before or after the Low Carbon Business Meetings

8TH LCBAM Meeting
June 6-8th

Action Plan

- ▶ The action plan contains recommendations on how to best proceed in the investigated market
- ▶ Analysis from the market check, as well as feedback from the meeting program, are translated into tangible actions in this stage

SMALL AND MEDIUM-SIZED COMPANIES ARE OFFERED A 50% PROJECT DISCOUNT

OUR 'VALUE ADD' IS ORIGINATING FROM OUR CUSTOMERS' CHALLENGES

