

# Clean Development Mechanism: challenges and opportunities for bioenergy projects

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*By*

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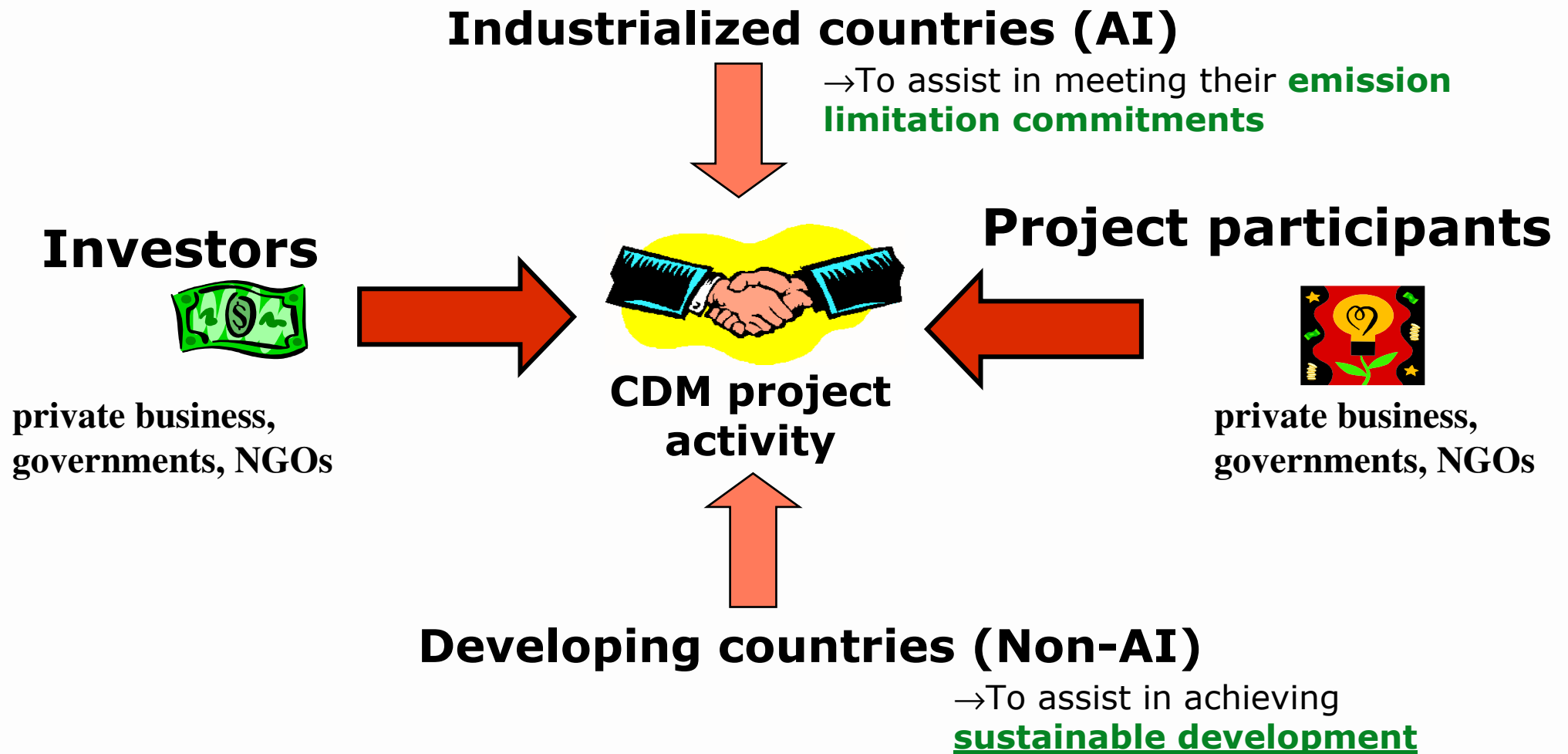
*Sustainable Bioenergy Projects in Africa*

*29 September -1 October 2009*

*Dakar, Senegal*

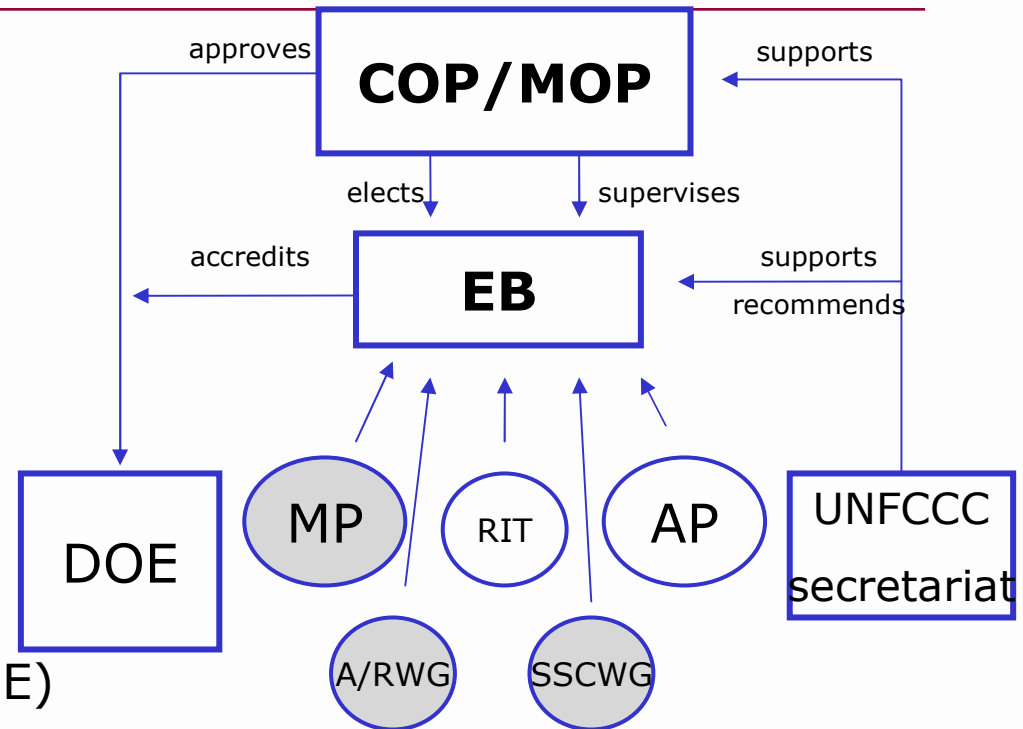


# What is the CDM - Incentives

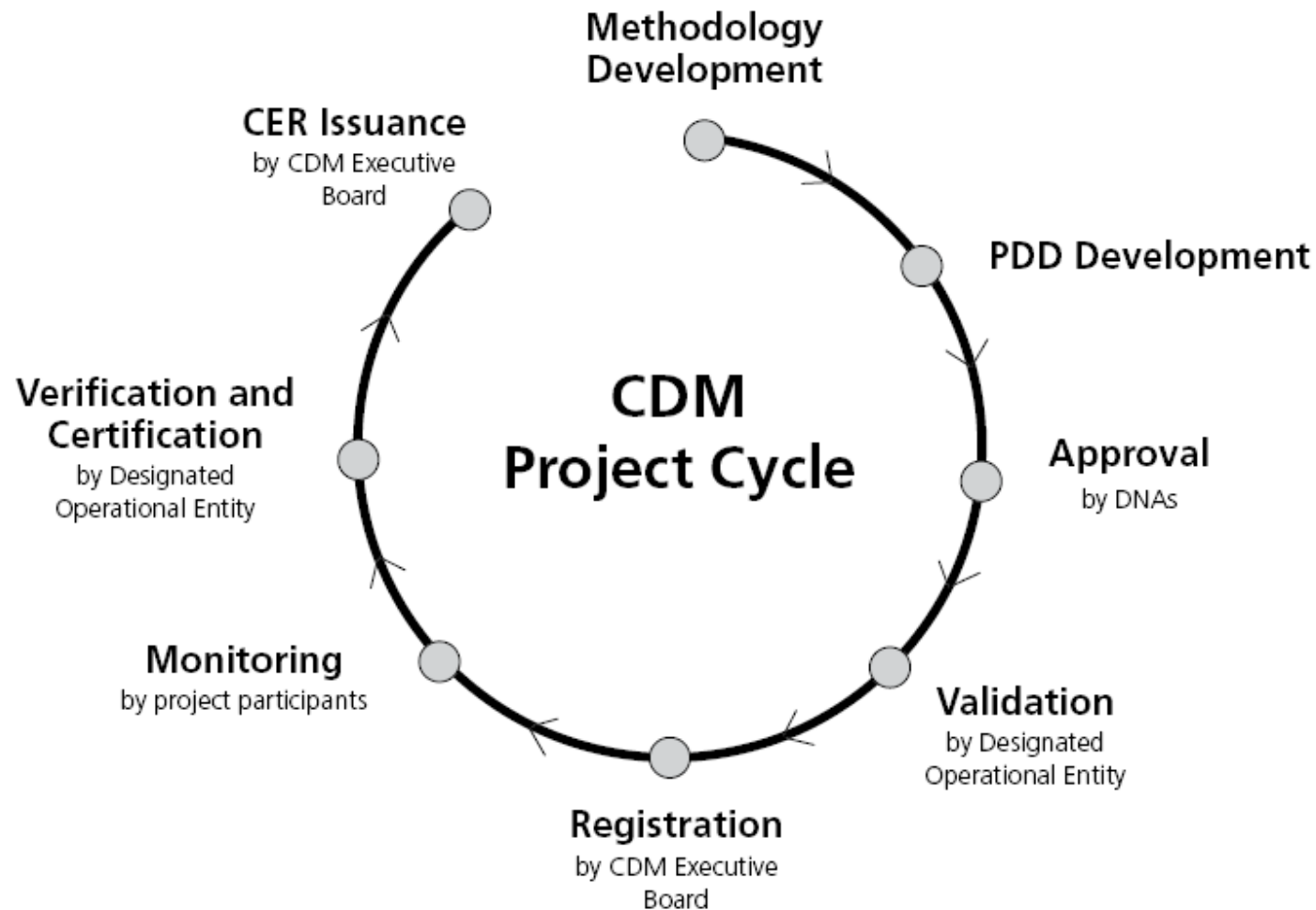


# CDM - Players

- COP/MOP
  - CDM Executive Board (supported by **panels** and **working groups**)
  - The UNFCCC secretariat
  - Designated operational entities (DOE)
  - Designated national authorities (DNA)
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- Project participants



# The Project Cycle



# Types of Methodologies/Project Activities under CDM

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- **Small Scale CDM methodologies for projects with emission reduction limits of:**
  - max output of 15MW or eq. (Type I-renewable energy)
  - max output of 60 GWh per year (Type II -energy efficiency)
  - Less than or equal to 60 kt CO<sub>2</sub> eq. annually (Type III -other project activities)
- **Small Scale CDM methodologies for A & R projects (SSC A & R):**
  - Limit of 8 kt CO<sub>2</sub> per year
- **Large Scale methodologies for projects:**
  - No limit
- **Large Scale methodologies for A & R projects:**
  - No limit

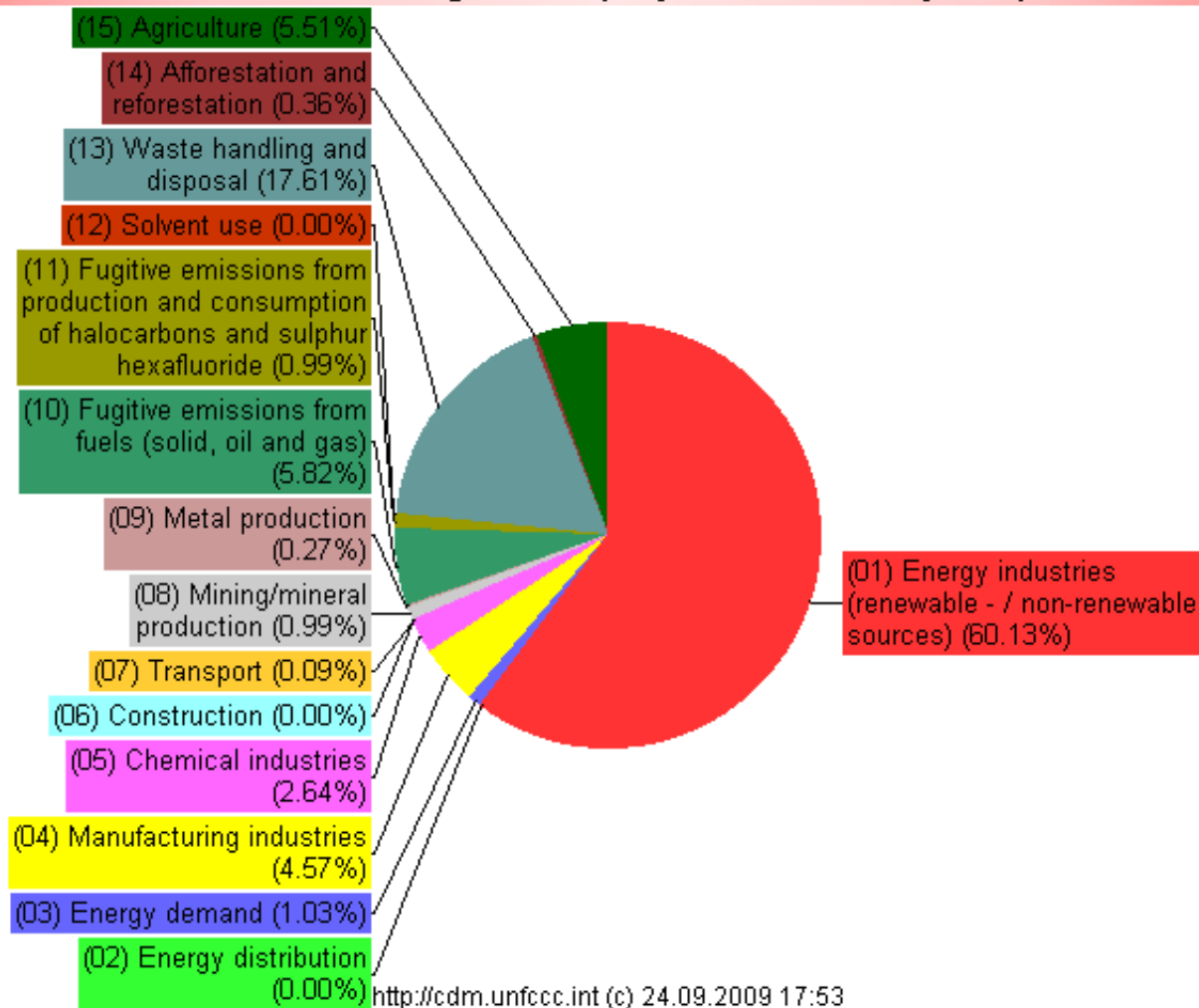
# Project Activities (Few Key Areas)

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- **Energy Efficiency and fuel switch (industry, agriculture, transportation, residential, commercial sectors)**
- **Waste Heat Recovery**
- **Renewable Energy (Wind, solar, biomass)**
- **Biofuels**
- **Methane avoidance, capture and energy generation**
- **HFC destruction projects**
- **Low greenhouse gas emitting vehicles**
- **Wastewater treatment (methane capture & energy generation)**
- **Agriculture sector (methane capture & energy generation)**

# PROJECTS BY SCOPE

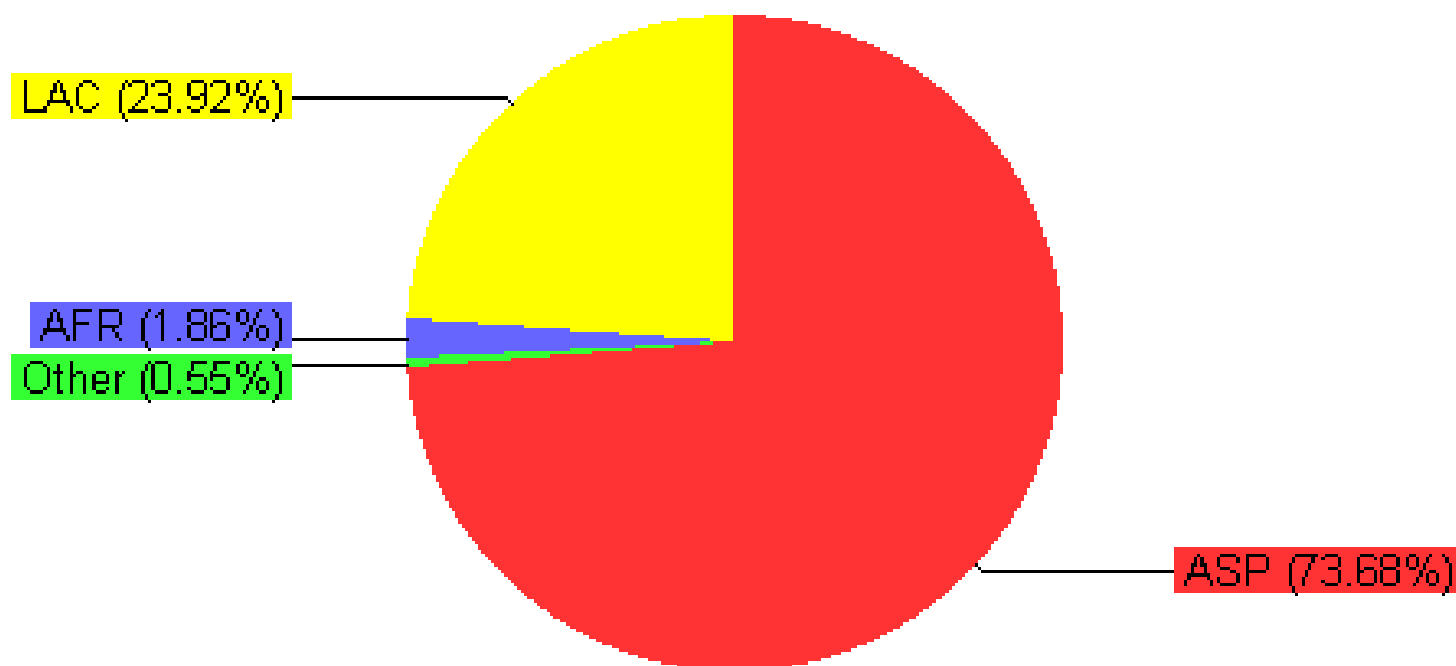
Distribution of registered project activities by scope



Biofuels scope 1 or 7

# Registered Projects by Region

Registered projects by region. Total 1831

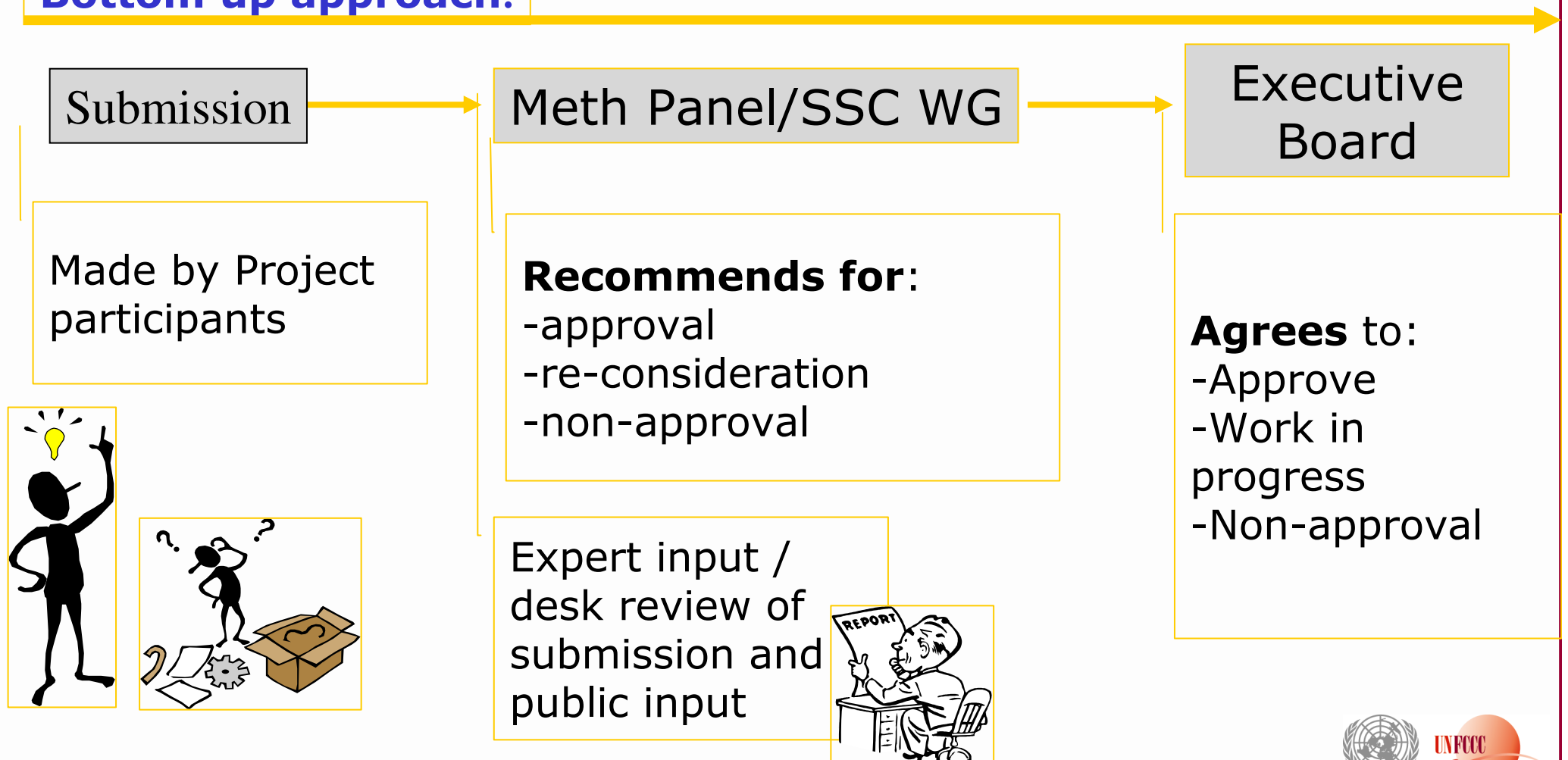


<http://cdm.unfccc.int> (c) 24.09.2009 17:53



# Methodologies - Process the Basics

## Bottom up approach!



# Elements of a CDM Methodology I

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- **Project Boundary**
  - **Spatial extent of boundary, emission sources within boundary**
- **Applicability Conditions**
- **Baseline Scenario**
  - **Baseline alternatives**
- **Additionality**
  - **Would the project happen under business as usual scenario?**
- **Determining baseline emissions**
  - **Emissions from baseline fuel example gasoline/petro-diesel that would happen in business as usual**

# Elements of a CDM Methodology II

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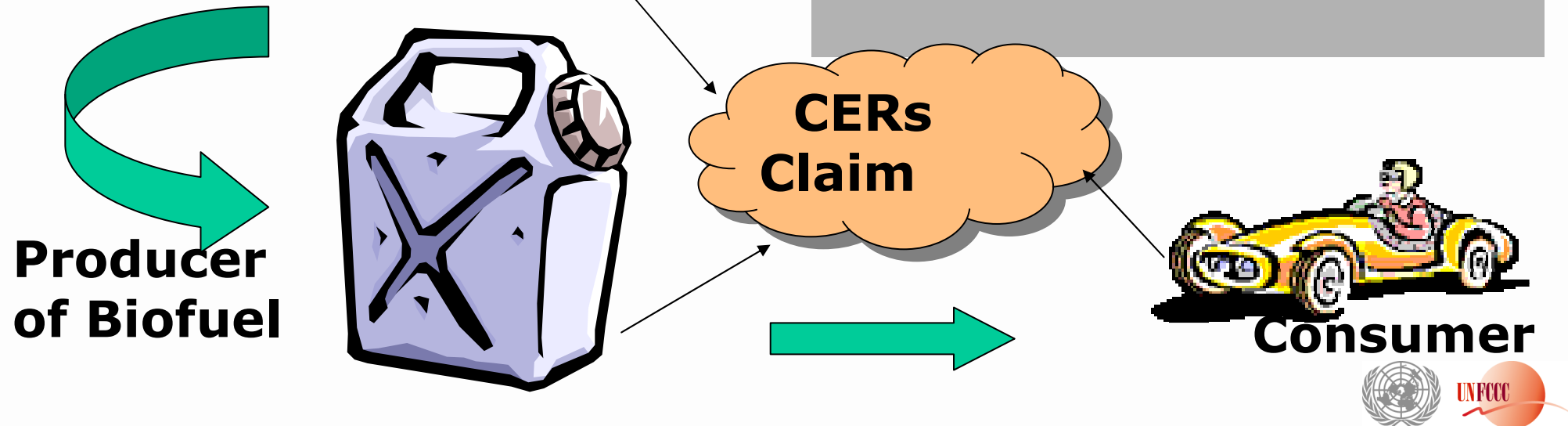
- **Estimating project emissions**
  - **Field Emissions - in production of biomass**
  - **Industrial Emissions**
  - **Transportation to end user**
- **Leakage Estimations**
  - **Displacement of land use activities (example, land clearance or land use change for bio-fuel crop production)**
  - **Competitive use for the bio fuel raw material**
  - **Production of the fossil fuel being replaced**
- **Emission Reductions =  $BL_{Emissions} - Project_{Emissions} - Leakage$**
- **Monitoring**

# Double Counting

## Producer of biomass



**Double counting** refers to the likelihood of emission reductions credits being claimed by more than one claimant in the production – supply chain (producer of biomass, producer of biofuel or consumer or by an Annex 1 party).



# **CDM – Guidance on double counting**

(EB 26 Annex 12)

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- **To provide guidance for project activities that use blended fuel for energy use to avoid double counting due to:**
  - **Biofuel production**
  - **Biofuel use**
- **CERs may be claimed by:**
  - **Consumers (end users) of biofuels; or**
  - **Producers of biofuels provided:**
    - **consumers, to whom the biofuel is sold, are included in the project boundary**
    - **the emissions reduction due to biofuel are based on monitored consumption by the consumers included within the project activity**
- **CERs cannot be claimed for biofuels exported to Annex I countries**



# CDM – Guidance on double counting

(EB 26 Annex 12)

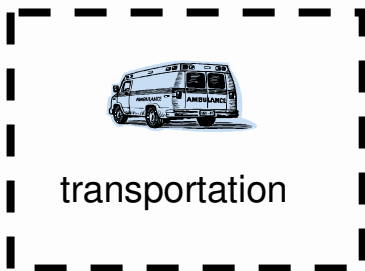
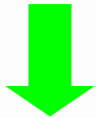
- **For claiming CERs, monitoring to ensure that biofuels are used for the intended purpose as proposed in the methodology, ie.**
  - Consumed by the consumer (end user) for displacement of fossil fuels
  - Consumption by the end-user corresponds to the production of the biofuel
- **Emissions from cultivation, harvesting of biomass used in preparation of biofuels**
  - Emissions associated with the production of biomass shall be accounted for when calculating emission reductions
  - In case biomass originates from an A/R CDM project activity emissions need not be accounted for (EB 25 paragraph 38)

# AMS III.T 'Plant oil production and use for transport applications'

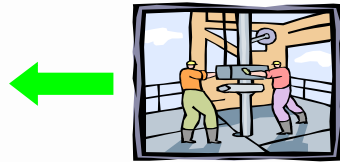
## Baseline scenario



Diesel Plant



transportation



Exploration



## Project scenario



Pressing and  
filtering  
(blending)



transportation

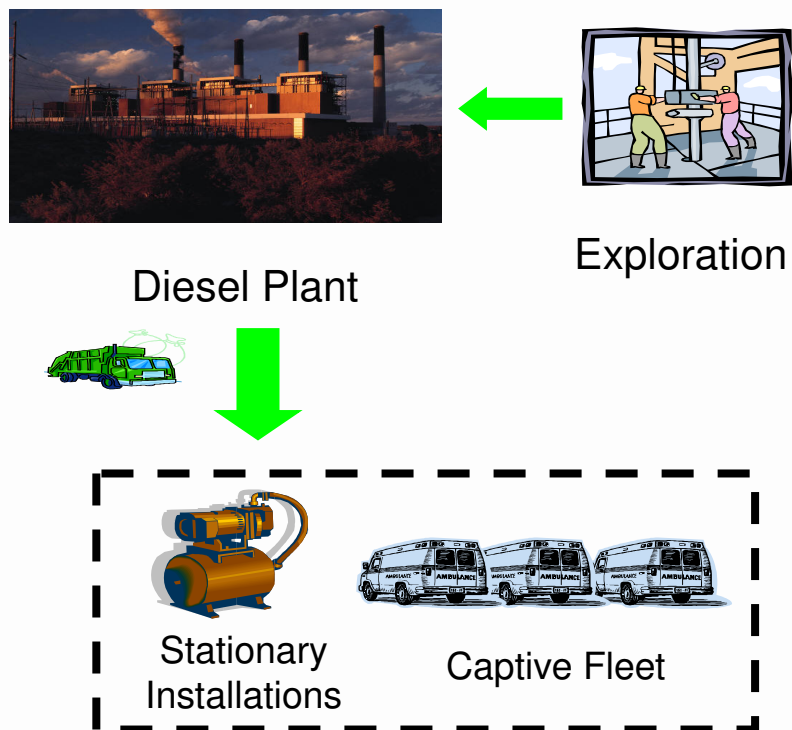


Cultivation of oil  
seeds (Jatropha)

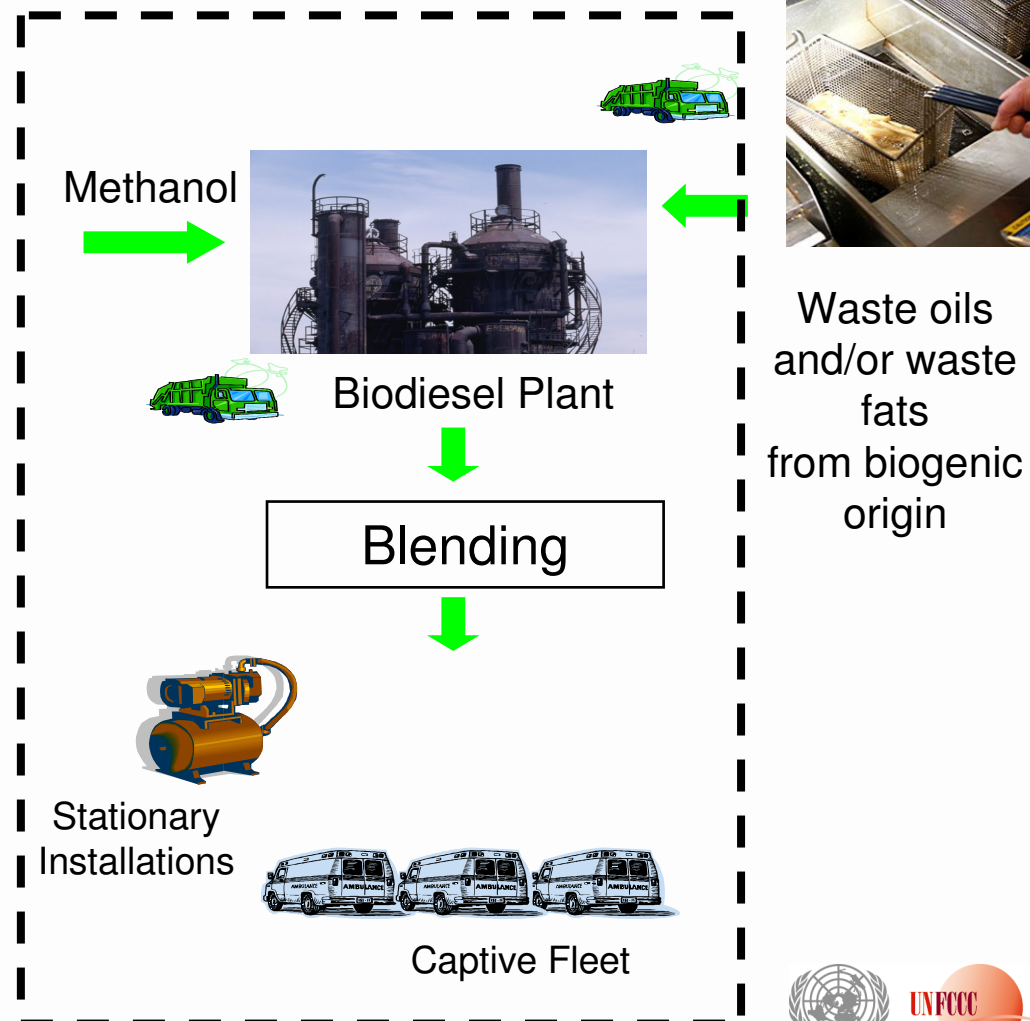


# AM0047: "Production of biodiesel based on waste oils and/or waste fats from biogenic origin for use as fuel"

## Baseline scenario



## Project scenario





# Revision of AM0047: LCA of oil derivatives applicable to biofuel methodologies

## Oil Extraction



Different regions or countries show quite different greenhouse gas emissions. Most important are direct emissions due to venting and flaring of associated gases. Important issues are e.g. differences between onshore and offshore production, level of exploitation and possibilities to use associated natural gas.

## Long Distance Transport



Long-distance transports are especially important for crude oils transported over long-distance and extracted with low greenhouse gas emissions.

## Refining



Flaring and venting in the refinery can have some importance. The infrastructure of the refinery is not relevant. Energy efficient operation modes can be expected more in developed countries. But, on the other side higher demands for product quality (e.g. sulphur content) and emission abatement might lead to higher energy uses.

## Distribution



Distribution of the fuel from the refinery to the final consumer is not very important



# Revision of AM0047

Compilation of the emission factors for the production of biofuels from the seeds

Review of the compilation of the emission factors for the production of biofuels from the seeds

Emissions resulting from changes in soil carbon stocks following a land use change or a change in the land management

**Palm**



**Soy**



**Cassava**



**Corn**



**Jatropha**



**Sugarcane**



## **Revision of AM0047**

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### **Production of Petrodiesel**

Upstream emission due to crude oil Production

Long Distance Transport

Refining

Distribution to filling stations

### **Production of Biodiesel**

Cultivation of oil seeds

Transport of oil seeds or vegetable oil

Vegetable oil production and biodiesel production

Transport of the biodiesel

Apportioning of project emissions

# Information Sources I

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- UNFCCC CDM website (<http://cdm.unfccc.int>)
- UNFCCC CDM News Facility (*Requirement to register as a UNFCCC CDM web site user (join) -> automatically subscribed*)
- Interactive map with registered project activities (<http://cdm.unfccc.int/Projects/MapApp>)
- CDM project search (<http://cdm.unfccc.int/Projects/projsearch.html>)
- CDM EB meetings are web cast (internet)
- Q&A sessions are held in conjunction with COPs/SBIs

# Information Sources II

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- Approved methodologies, SSC and A & R  
***<http://cdm.unfccc.int/methodologies>***
- Forms, PDDs  
***<http://cdm.unfccc.int/Reference>***
- Request for clarification on application of approved methodologies  
***<http://cdm.unfccc.int/methodologies/PAmethodologies/Clarifications>***
- Request for revision of methodologies  
***<http://cdm.unfccc.int/methodologies/PAmethodologies/Revisions>***

**THANK YOU**

