

# Potential for CDM in the Pacific Islands **Programme of Activities**

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CDM capacity building workshop in Fiji, 26<sup>th</sup> January 2011



# Presentation Overview

- **Overview of Programmatic CDM**
  - What is Programmatic CDM
  - Main advantages
  - Applicability to the PICs
- **Opportunities in the Pacific**
  - Project Types
  - Examples of potential projects
  - Essentials for project development



# Why Programmatic CDM?

- n Asymmetries in participation:
  - some regions and countries thus far not benefiting at all from CDM – e.g. The Pacific
  - Small projects and some types of projects not benefiting
- n In some regions there is a limited number of “typical” projects per country
  - Smaller sectors and projects
  - Low CER volume per activity
  - High transaction costs
- n Programmatic CDM aims to facilitate smaller projects in smaller markets



# Programmatic CDM (p-CDM): Glossary

- n Multiple activities under one “Programme”
- n **PoA**: Programme of Activities – a voluntary coordinated action, policy or programme
- n **CPA**: CDM Programme Activity under a PoA – an unlimited number of CPAs can be conducted under one PoA
- n Each CPA treated as a regular CDM project; but “easier” to register once PoA has been validated has been registered



# CDM Executive Board actions

- n Simplified procedures:
  - administrative levy halved
  - No fees from some PICs (LDCs – Samoa, Solomons, Vanuatu)
- n New simpler rules for CDM projects from Small Island States e.g. additionality automatic for smaller RE and EE projects
  - Type I: RE under 5MW
  - Type II: EE under 20 GWh a year
  - Type III: projects under 20,000 tCO<sub>2</sub>/year
- n Possible for one PoA to use many methodologies
  - If combination has already been used before
  - If not, permission has to be requested to EB



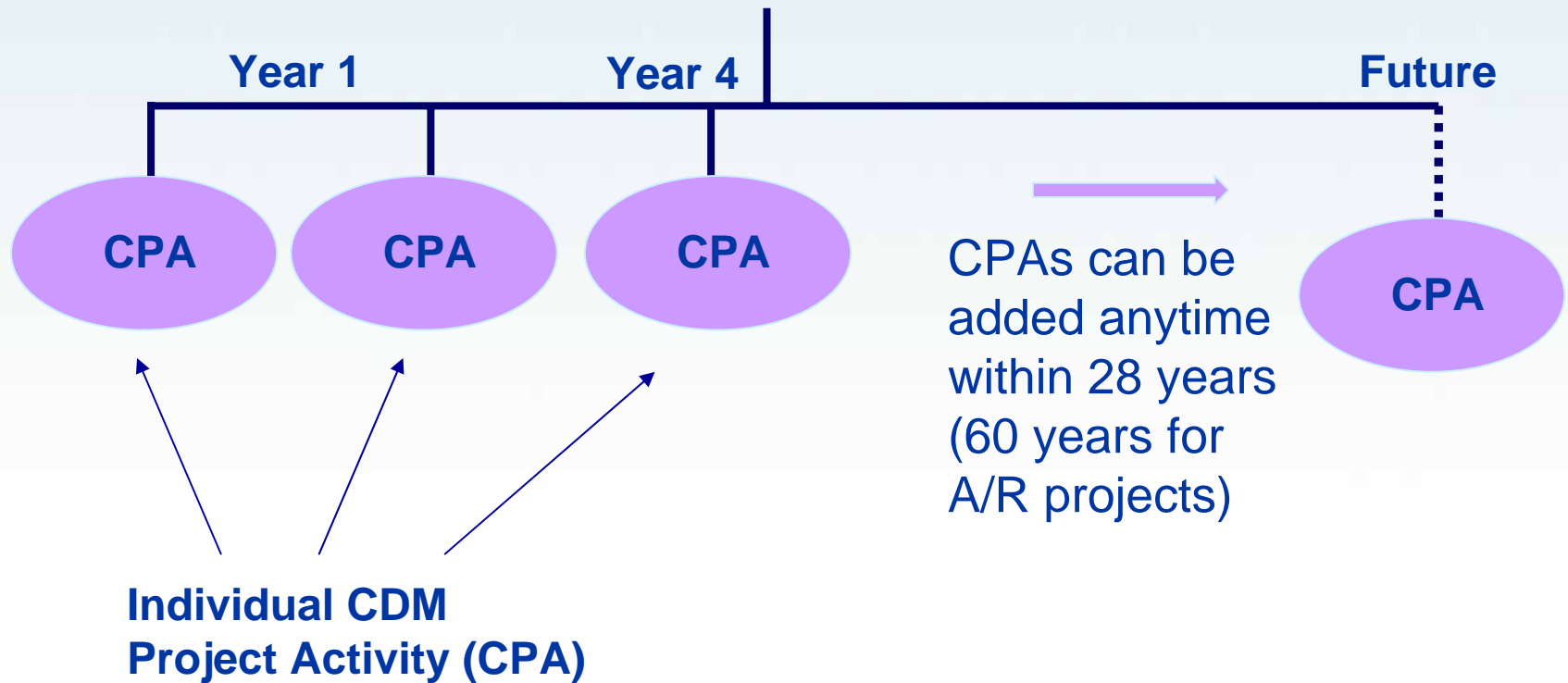
# Programmatic CDM (p-CDM)

- n A CPA can be included in a registered PoA any time (within 28 years for RE)
- n One time registration fee – reduced transaction costs
- n Fewer regulatory risks
- n Different time scales and sizes allowed for CPAs
- n More than one country can be included in the PoA – opportunity for the smaller PICs



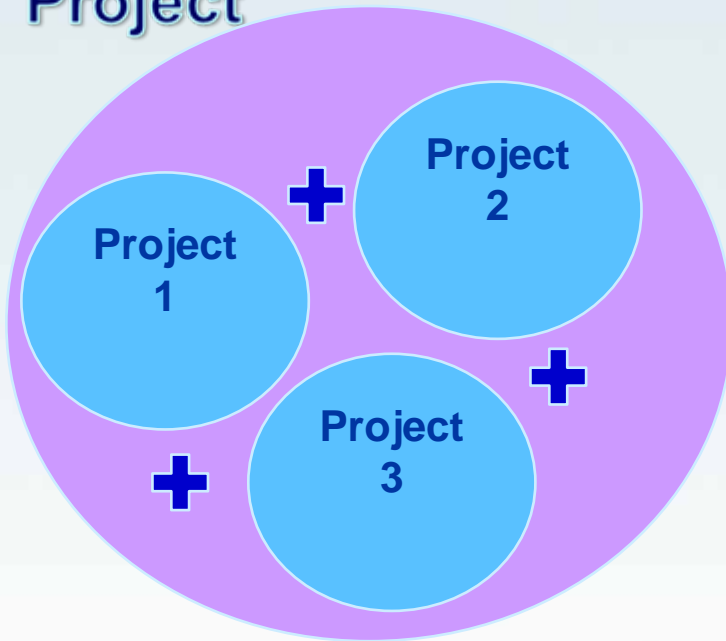
# Visualising Programmatic CDM

## CDM Programme of Activities (PoA)

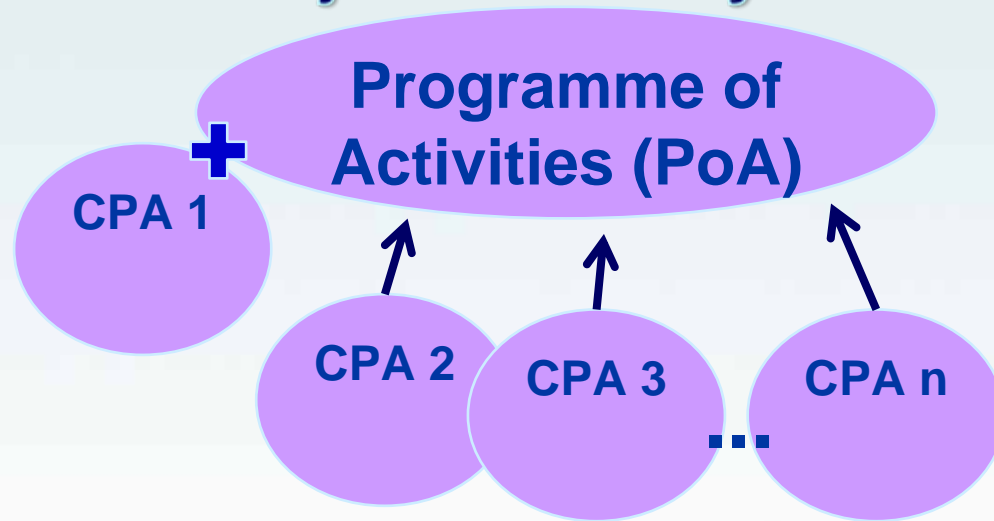


# Difference between PoA and Bundling

**BUNDLING: 1 CDM Project**



**PoA: 1 Programme + Unlimited number of Projects over 28 years**



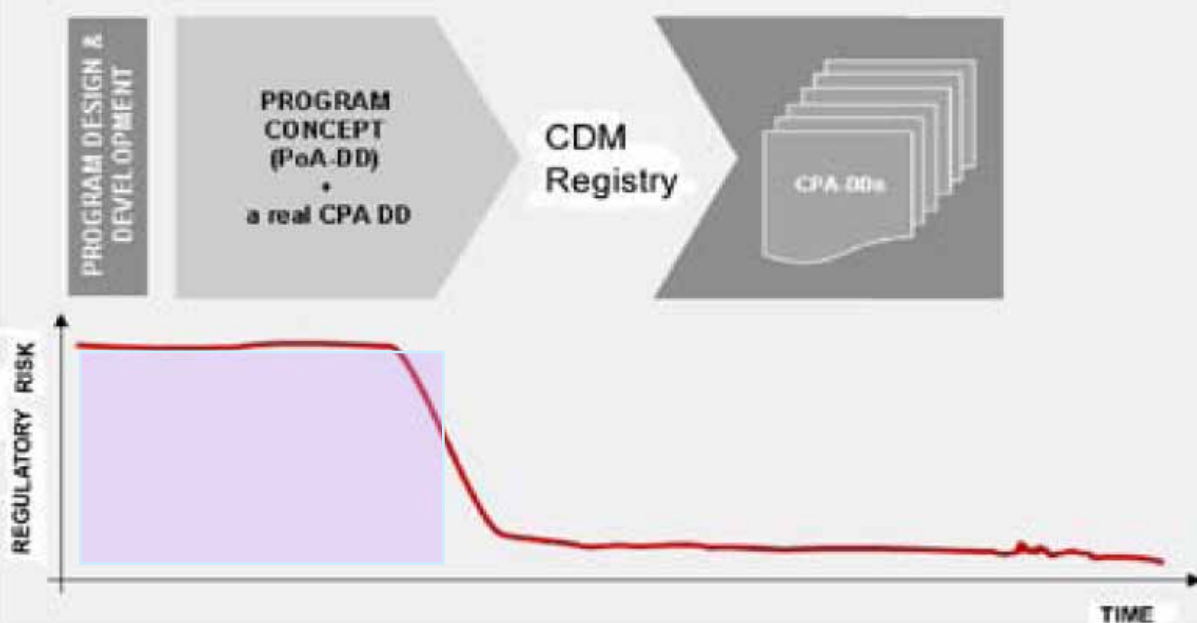
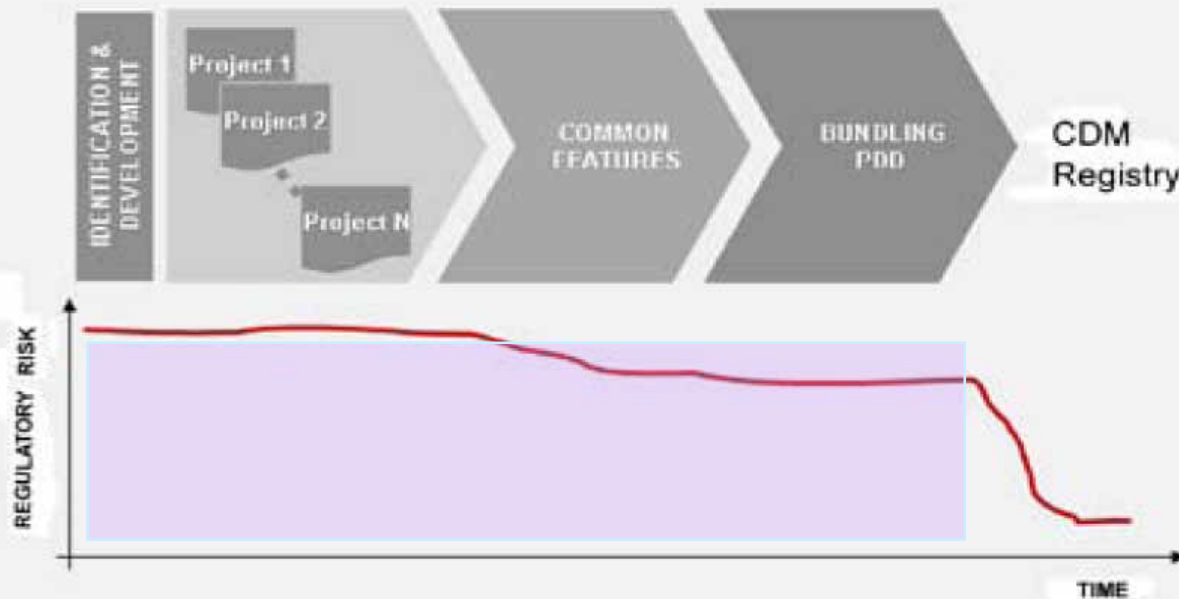
- Bundling: requires all projects to be identified and quantified before registration

- PoA: Can register the programme framework plus just one CPA – the other CPAs can be registered later





# PoA: Reducing regulatory risk over time



n PoA can reduce the amount of time where regulatory risk has to be carried



# Possible CPAs in a p-CDM: 4 types

- n Single Technology: Single Location  
High Efficiency Industrial chiller in a factory
- n Single Technology: Several locations  
CFL programme for ten (or more) cities
- n Several Technologies : One Location  
Many different Energy Efficiency actions in one industry
- n Several Technologies : Several Locations  
Many different Energy Efficiency actions in many PICs



# Examples of Registered p-CDM projects

Program of Activity	Date	Sector	Lifetime	Emission reductions
<b>Mexico: Smart Use of Energy program</b>	31 July 2009	Energy	June 2009 to June 2037	520,365 t CO <sub>2</sub> -e per annum
<b>Brazil: Animal waste methane capture and combustion</b>	29 October 2009	Agriculture	October 2009 to October 2037	591,418 t CO <sub>2</sub> -e per annum
<b>Uganda: Municipal waste compost program</b>	12 April 2010	Waste	April 2010 to April 2017	83,700 t CO <sub>2</sub> -e per annum
<b>India: CFL lighting scheme</b>	29 April 2010	Energy	May 2010 to May 2038	34,892 t CO <sub>2</sub> -e per annum
<b>Honduras: Masca Small Hydro Program</b>	21 August 2010	Energy	September 2011 to August 2039	4,395 t CO <sub>2</sub> -e per annum

Source: UNFCCC, 2010.



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# First Registered p-CDM

- n Mexico CFL programme (July 2009)
- n Gold Standard
- n Deployment of 30 million CFLs
- n 520,000 CERs expected per year
- n 30 CPAs spread over 5 years
- n CER Buyer: Eneco Energy Trade B.V.
- n Expected income over project lifetime (20<sup>th</sup> July 2009 spot price): 97 M Euros



# First PoA in Africa: Uganda Municipal Waste Composting Programme

- n Managing Entity: National Environmental Management Authority (NEMA)
- n Methodology: AMS-III.F. ver.6
- n 84,000 CERs / year expected for the first 7 years
- n Crediting period started 12<sup>th</sup> April 2010
- n CER buyer: Netherlands



# Examples of opportunities for p-CDM in the PICs

- n Small / Mini / Micro-hydro
- n Solar PV
- n EE lights (LEDs or CFLs)
- n EE in buildings
- n Waste management and landfill
- n Biomass
- n Forestry



# Examples focusing on Small-scale PoA

- n SSC-PoA: Small Scale Programme of Activities
- n Methodologies used: all the Small Scale Methodologies:
  - Type I: RE
  - Type II: EE
  - Type III: Others
  - A/R: Afforestation/Reforestation small scale methodologies



# National PoA: Fiji Micro-scale hydro example



	First CPA - Fiji	- PNG	x 10
Baseline	Grid electricity	Same	Same
Methodology	AMS – I.D.	Same	Same
Technology	Run-of-river hydro	Same	Same
Capacity	500 kW	Same	10 x 500 = 5MW
MWh expected	2,190 MWh	Same	21,900
Emission factor	0.5095 tCO <sub>2</sub> /MWh	0.75 tCO <sub>2</sub> /MWh	Same
CERs / year	1,115	1,642	16,420
Est. revenue / yr	16,725 USD	24,630	246,300
As % of capex over 10 years	9%	14%	Same





# National PoA - Fiji: Money matters

- n Single 500kW hydro project:
  - CDM Transaction costs: 100,000 USD
  - 10 year CDM revenue @15/USD/CER: 167,000 USD
  
- n Micro-hydro PoA with 10 CPAs:
  - CDM Transactions costs ~ 150,000 USD
  - 10 year CDM revenue: 2.4million USD



# Solar PV for rural electrification

- n Possible targets for CPAs:
  - Household systems
  - Institutional systems: schools, dispensaries, etc
- n Private sector / public funding / micro-finance / end-user finance
- n Replacing kerosene lamps - 2.8kgCO<sub>2</sub>/l
- n Replacing diesel for village electricity



# Example: Solar Home Systems in Bangladesh

- n Participating organisations: 15 NGOs and Financial Institutions
- n Additionality: the SHS programme is NOT required by law – it is voluntary
- n SHS from 10 Wp to 150 Wp
- n Replacing 5,000 litres of kerosene & 5,000 litres of diesel per year
- n Methodology: AMS-I.A.



# Example: IUCN Tonga Off-grid PV

- n 64 SHS installed = 160W each
- n Producing 414 Wh/day
- n Baseline: kerosene for lighting
- n Each HH: 4 gallons kerosene/month = 42kg CO<sub>2</sub>/HH/month
- n Whole project = 42 x 12 x 64 = reduction of 32t CO<sub>2</sub>/year
- n 32 CERs/yr = 480 USD



# PoA example: Regional solar off-grid PV

	Single Project = 64 households	Multiple projects in one country = 5,000 HH	Multiple projects in multiple countries = 25,000 HH
Baseline	Kerosene displacement	Same	Same
Methodology	AMS – I.A.	Same	Same
Technology	Solar Home System	Same	Same
Capacity	10.24kW	800kW	4MW
Fuel replaced	3072 gallons kerosene/year	240,000 gallons	1.2 million gallons
Emission factor	2.8 kgCO <sub>2</sub> /l	Same	Same
CERs / year	32	2,540	12,700
Est. revenue / yr	640 USD	50,800 USD	254,000 USD
As % of capex over 10 years	6%	Same	Same

# What about CDM for the urban environment: CFLs

- n Example: CFLs for residential applications
- n Small-scale: must not exceed 60 GWh/yr
- n Emissions reductions = Old bulb Wh – CFL Wh  
(- transmission losses, failure rate, etc.)
- n Total lumen output of CFLs = lumen of the bulbs they are replacing
- n Data on existing bulbs and replacement CFLs is needed e.g. Average life / annual failure rate
- n Replaced bulbs - collected and destroyed
- n Crediting period = life of CFLs max.10 years



# CFLs for households: numbers

	Single small-scale project e.g. Suva, Fiji	National PoA e.g. Suva, Lami, Sigatoka, Nadi, etc	Regional PoA: e.g. Port Moresby, Suva, Port Villa, Honiara, Apia, etc
Baseline	Incandescent bulbs	Same	Same
Methodology	AMS – II.J	Same	Same
Technology	CFL	Same	Same
Incandescent	60Wx3.5 = 210Wh/day	Same	Same
CFL	10Wx3.5 = 35 Wh/day	Same	Same
Emission reductions	~ 63 kWh /CFL/yr	Same	Same
No. of project CFLs	30,000	120,000	240,000
Emission factor	0.5095 tCO <sub>2</sub> /MWh	Same	Depends (0.65)
CERs / year	960	3,800	9,800
Est. revenue / yr	14,000 USD	57,000 USD	147,000 USD

# Combine EE measures in buildings

- n **Methodology: AMS-II.E.**
- n A single building, shop or residence, or group of similar buildings, such as a school, district or university.
- n Efficient appliances, better insulation e.g. Air-con units, efficient refrigerators, efficient fans, etc.
- n Replace existing equipment / installed in new facilities.
- n Energy savings each project < 60 GWh per year.
- n Must be possible to directly measure and record the energy use within the project boundary (e.g. electricity and/or fossil fuel consumption).
- n Uses grid emission factor to calculate CERs
- n Data needed for baseline / Monitoring + replaced equipment should be scrapped





# Other useful methodologies to look up

- n Off-grid RE for end-users: AMS-I.A.
- n Grid-connect RE: AMS-I.D.
- n Landfill: AMS-III.G.
- n Transport – plant oil biofuel: AMS-III.T.
- n EE lighting (CFLs): AMS-II.J.
- n EE in buildings: AMS-II.E.
- n Mangroves: AR-AMS003
- n **SEE METHODOLOGY BOOKLET from UNFCCC**



# Barriers to p-CDM development

- n P-CDM does not have all the answers
- n There is still quite a lot of work to do
  - Low level of awareness and knowledge
  - Must have a managing entity
  - Country capacity to develop projects
  - Need data for baselines
  - CPA validation can drive up costs
  - Additional financing still needed
  - Still takes a long time to register a CDM project (average 3 years)



# Still have to follow the CDM Project Cycle!

- n PoA – PIN (Project developer)
- n PoA – PDD (Project developer)
- n *+ CPA template CPD-PDD*
- n Validation (DOE) ←
- n Registration (EB)
- n Verification (DOE II)
- n Issuance of CERs (EB)
- n *Addition of CPA = validation of CPA* —



# Developing a p-CDM project

1. The project must reduce carbon emissions with respect to an approved baseline and methodology
  - Check that the project fits with an existing small-scale methodology
2. Replication: The PoA can be implemented through the replication of the project template (generic CPA)
3. Identify a suitable a Managing Entity



# Responsibilities of the Managing Entity

- n PoA-PDD and CPA-PDD
- n LoA from host and Annex I
- n Communication with UNFCCC EB
- n Coordinating CPAs joining the PoA (CPA implementers do not necessarily have to be project participants)
- n Manage validation and verification
- n Manage issuance and distribution of CERs
- n **Who can be an ME? Any public or private entity**



# How can DNAs / CROP agencies / the present CDM capacity building project help?

1. Assist countries to compile historical energy consumption data (e.g. diesel / kerosene) to be available to project developers so they are able to establish a baseline
2. Establish the Grid Emission Factor (E.F.) for each country
3. Provide technical assistance to projects developers or assist them to find / fund the TA they need
4. Provide a cost estimate for each stage of the CDM project cycle



# Additional information available

- n A Primer on CDM Programme of Activities, URC, CD4CDM project, November 2009, [www.cd4cdm.org](http://www.cd4cdm.org)
- n CDM Procedures:  
<http://cdm.unfccc.int/Reference/Procedures/index.html>
- n Forms related to PoA:  
[http://cdm.unfccc.int/Reference/PDDs\\_Forms/PoA/index.html](http://cdm.unfccc.int/Reference/PDDs_Forms/PoA/index.html)
- n Booklet on Methodologies:  
<http://cdm.unfccc.int/methodologies/documentation/index.html>

