Study on Financing Options for LVCs with Servicing Only

Resource Mobilisation opportunities to address the climate co-benefits identified in HPMPs

Joint Meeting of the OzonAction Networks of Mexico, Central America, South America and the Caribbean, Kingston, Jamaica

1-4 October, 2013

Patterson Consulting

Purpose of the presentation

- To introduce the UNEP resource mobilization project : 4 Workshops + study
- To describe our thinking in what should go into the resource mobilisation framework for LVCs in servicing
- To give initial direction about issues and options
- This is work in progress (1st draft under review)

Parties covered in the study: “LVCs with servicing only”

- **What are LVCs “with servicing only”**
  - No manufacturing
  - No foam
  - UNEP is the agency for 48 Parties that are LVCs with servicing only
  - How many others are there?

Servicing

- For the purposes of this study, we are focusing on servicing for all sub-sectors of refrigeration
- We also include retrofitting

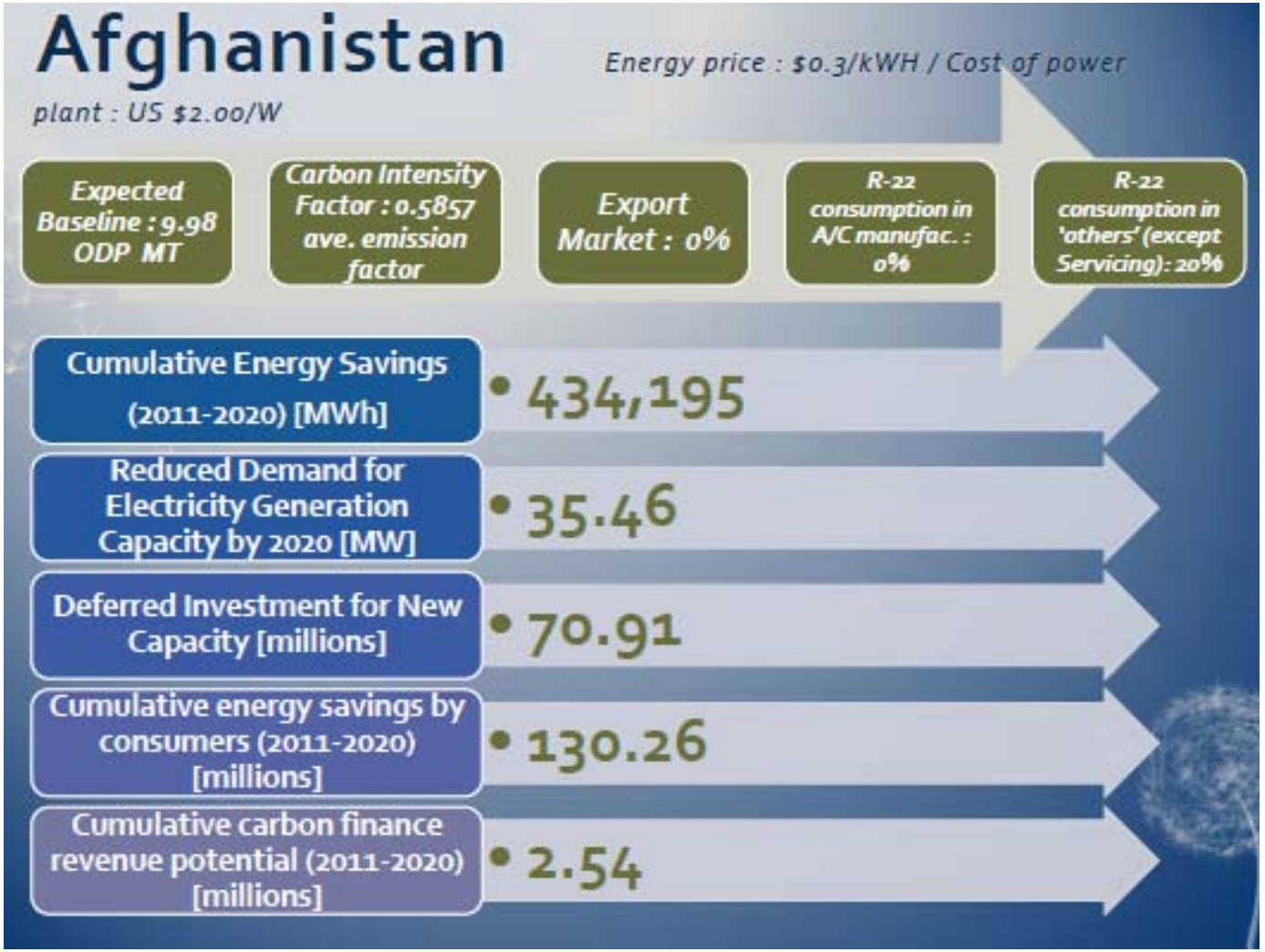
LVCs with servicing only are not like other Parties

1. Small amounts of ODS– economies of scale not there
2. Difficult for Institutions like MLF and GEF to support (administration costs can be higher than project costs)
3. Many kinds of governments, many levels of expertise – few “one-size fits all” solutions
4. Far from disposal/destruction facilities

Opportunities for an LVC that mobilizes additional resources

- There are economic benefits
  - New technology should create less CO2 and fewer ODS, is more energy efficient so it is cheaper for the user
  - Lower electricity demand means governments & energy suppliers do not need to develop more energy generation
  - Carbon credits are possible from energy efficiency and chemical elimination and mean $ back to governments
  - IEA says that in general new appliances including REF/AC are cheaper to produce – some are cheaper consumers

Resource mobilisation makes it possible to design projects with a variety of funding sources (e.g. the World Bank)


Afghanistan
Energy price : $0.3/kWH / Cost of power
plant : US $2.00/W
Expected Baseline : 9.98 ODP MT
Carbon Intensity Factor : 0.5857 ave. emission factor
Export Market : 0%
R-22 consumption in A/C manufac. : 0%
R-22 consumption in 'others' (except Servicing): 20%
Cumulative Energy Savings (2011-2020) [MWh]
• 434,195
Reduced Demand for Electricity Generation Capacity by 2020 [MW]
• 35.46
Deferred Investment for New Capacity [millions]
• 70.91
Cumulative energy savings by consumers (2011-2020) [millions]
• 130.26
Cumulative carbon finance revenue potential (2011-2020) [millions]
• 2.54

Ways to achieve climate benefits through action on the ODS

- **Retrofit/conversion with lower GWP** refrigerant or alternative possible with proper training
- **Implement better containment** (to minimize HCFC requirements for servicing existing HCFC dependent products until their retirement); and
- **Implement voluntarily import quotas** of HCFC (this will result in significant reductions of wasteful usage of HCFC).

Climate benefits through increasing energy efficiency

- Refrigeration and air-conditioning alone accounts for 40%-60% of total electricity consumption in developing countries
- Reduced power needs
- What approaches should be considered (i.e. labeling, regulations, standards….)

Climate co-benefits from the servicing sector

Activity	Potential benefit	Beneficiary		
		Equipment owner	Government	Environment
Good refrigeration servicing practices	Reduced purchases of refrigerant	✓	✓	✓
	Reduced or avoided direct GHG emissions		✓	✓
Replacement of high-GWP refrigerants with low- or zero-GWP refrigerants	Reduced GWP of refrigerants		✓	✓
Replacement of vapour-compression equipment with equipment based on different cycles(e.g. adsorption)	Reduced or avoided direct GHG emissions		✓	✓
	Reduction of energy consumption (cost savings)	✓	✓	✓
	Reduced need for additional electricity generation capacity (power plants) and/or fuel imports		✓	✓
Improved energy efficiency of replacement technology	Reduction of energy consumption (cost savings)	✓	✓	✓
	Reduced need for additional electricity generation capacity (power plants) and/or fuel imports		✓	✓
Building design that avoids/minimizes need for refrigeration	Reduction of energy consumption (cost savings)	✓		✓
	Reduction or avoidance of direct GHG emissions			✓
Recovery and recycling of refrigerants	Reduced requirement for importing/purchasing new refrigerants	✓	✓	✓
Destruction or disposal of waste/contaminated ODS	Reduction or avoidance of direct GHG emissions			✓

TEAP: Alternatives to high-GWP HFCs in Air Conditioning /Refrigeration Sectors

Table 4.1. Alternatives to high-GWP HFCs used in air-conditioning and refrigeration sectors

Sectors where high-GWP HFCs are currently used	Examples of low-GWP alternatives used commercially in specific applications	Examples of alternatives under development
Refrigeration equipment HFC-134a, blends such as 404A, 407A, 407C, 410A, 507A	Ammonia (R-717), ammonia/carbon dioxide, ammonia/water absorption, hydrocarbons (R-290 propane, R-600a isobutane, R-1270 propene), carbon dioxide (R-744), transcritical CO_2, water (R-718), adsorption/absorption, solar cooling, cryogenic (open-loop) systems using nitrogen or CO_2, eutectic plates based on frozen salt solution	HFC-1234yf, Stirling cycle, cryogenic (open-loop) systems using nitrogen or CO_2, air cycle, water vapor compression, magnetism, and improvements in existing methods
Air-conditioning systems for buildings HFC-134a, blends such as 404A, 407C, 410A	Ammonia, ammonia/dimethyl ether, hydrocarbons (R-290 propane, R-1270 propene), carbon dioxide, water, water/lithium bromide absorption, zeolite/water adsorption, desiccant and evaporative cooling, microchannel heat exchangers, architectural designs that avoid the need for air-conditioning systems	HFC-1234yf, HFC-1234ze, HFC-161, new blends, and improvements in existing methods
Air-conditioning systems in vehicles HFC-134a in cars, light trucks. 134a and 407C in buses, trains	Refer to Section 4.6. Commercial introduction is anticipated soon	HFC-1234yf, carbon dioxide, hydrocarbons, HFC-1243zf blends, other proprietary blends

Sources: EPA 2006; EPA 2010a; IPCC/TEAP 2005; RTOC 2011; TEAP 1999; TEAP 2010ab; TEAP 2011ab; UBA 2009, UBA 2011ab, UNEP 2010abd.

TEAP: Sectors that use Alternatives

Table 4.3: Examples of sectors which use a substantial percentage of alternatives

Sector	Examples of alternatives	Use of alternatives in sector		
		Industrialised countries	Developing countries	Global total
Industrial refrigeration systems[a]	ammonia, CO_2, hydrocarbons	92 %	40 %	65 %
Industrial air-conditioning systems[a]	ammonia, CO_2, hydrocarbons	40 %	15 %	~ 25 %
Domestic refrigerators (compressors)[b]	hydrocarbons	51 %	22 %	36 %
Foam in domestic refrigerators[c]	hydrocarbons	66 %	68 %	67 %
Foam in other appliances[c]	hydrocarbons	38 %	<1 %	28 %
Polyurethane foam boards and panels[c]	hydrocarbons	82 %	21 %	76 %
Fire protection systems[d]	water, foams, dry chemicals, inert gases	-	-	75 %
Asthma medication[e]	dry powder inhalers	-	-	~ 33 %
Solvents[f]	aqueous, no-clean, alcohols, others	> 90 %	> 80 %	> 80 %

Sources: FTOC 2011; RTOC 2011; TEAP 2009ab; TEAP 2010a.

The percentages in this table refer to:

[a] refrigerants used in new installations annually; [b] annual production of new equipment; [c] annual consumption of blowing agents; [d] usage or market; [e] annual medical doses; [f] market penetration in solvent applications.

Opportunities from Synergies between Climate and Ozone

- Defining Climate-Ozone Linkages in the Montreal Protocol Context and Challenges in Translating this to Action
- Mobilizing Resources through low-carbon, HCFC Phase-out Projects Energy Efficiency as a focus
  - Modelling Tools

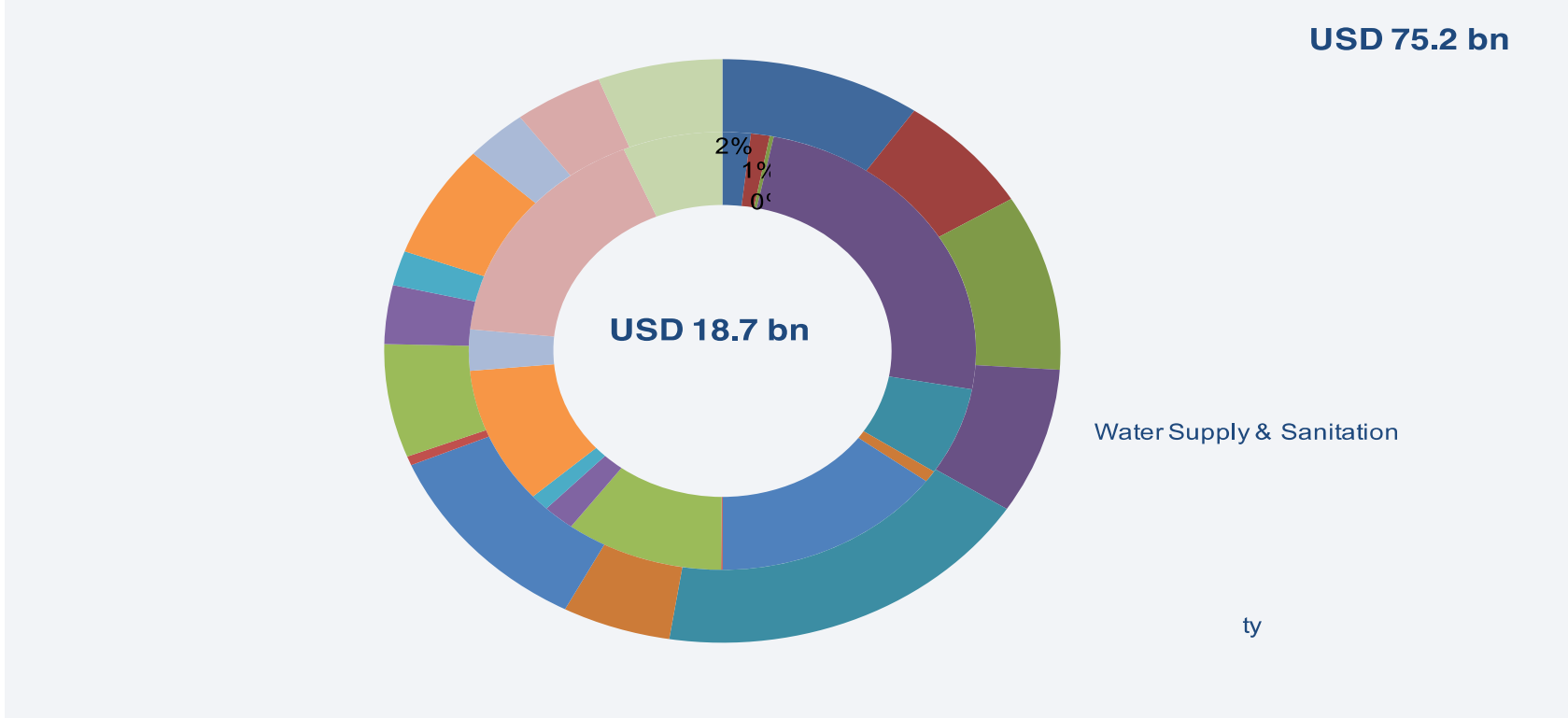
Funding sources when climate benefits are a focus

- Official Development Assistance through Mainstreaming (ODA)
- GEF
- UN Agencies
- Bilaterals, private sector, foundations, etc.
- World Bank Group/ MDBs including carbon finance, Climate Investment Funds (CIFs)
- Climate Development Mechanism (CDM)
- Domestic sources

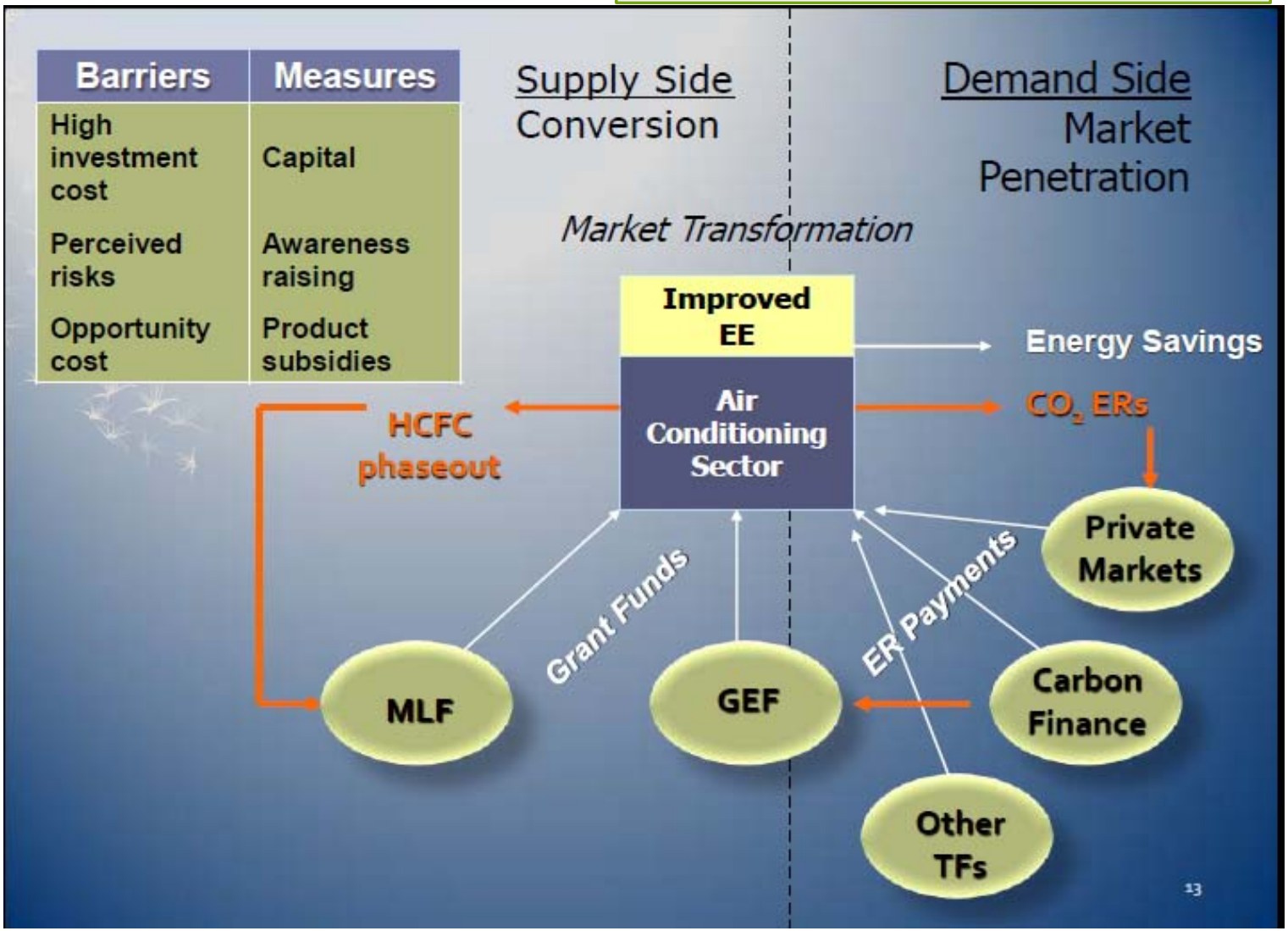
The Size of Financial Flows for Climate

- North-South finance flows for mitigation represent a fraction of the total finance flows in the emitting sectors
- **In 2009-2010 period, aggregate North-South flows for mitigation and adaptation are estimated in the range of $70 to $120 billion annually (Clappet al., 2012)**
- This is mainly from private sources (i.e. foreign direct investment, other private flows and investment, and finance flows associated with the carbon market)

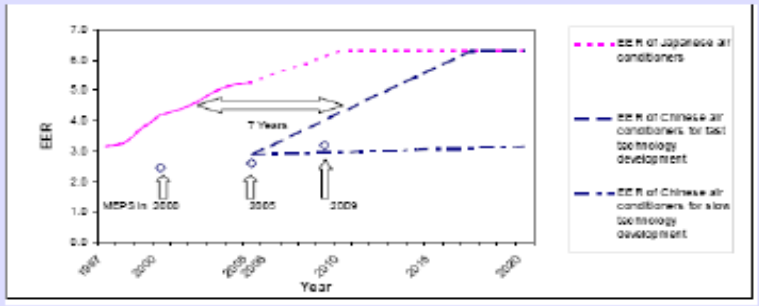
Mainstreaming: Official Development Assistance (ODA) For Environment

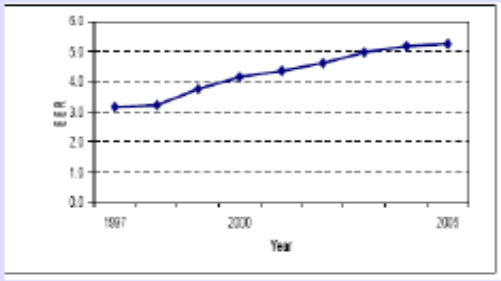


Source: Statistics Based on DAC Members' Reporting On the Environment Policy Marker 2008-2009


Barriers
Measures
High investment cost
Capital
Perceived risks
Awareness raising
Opportunity cost
Product subsidies
Supply Side Conversion
Demand Side Market Penetration
Market Transformation
Improved EE
Air Conditioning Sector
Energy Savings
CO_2 ERs
HCFC phaseout
Private Markets
Grant Funds
ER Payments
MLF
GEF
Carbon Finance
Other TFs
13

Mobilizing non-MLF Resources to Facilitate HCFC Phase-out





EER for Japanese Air Conditioners

Example: Air Conditioners

Country	Baseline EER	Targeted EER	Units Sold/Yr	CO_2 Emission Reduction (MT)	Revenue (EUR)
Ghana	2.55	2.8	100,000	3 million	30 million
China	3.4	5.00	4 – 18 million	28 – 61 million	280 – 610 million

Source: Satoru Koizumi, IEA Information Paper (©OECD/IEA, November 2007)

What gets Financed by MLF (phase I)

- Preparation & implementation of HPMPs
- Enhancement of regulatory frameworks, capacity building, awareness
- Training for customs officers
- Training service technicians
- Promotion of alternatives
- Retrofit & recovery
- Tool kits

What gets Financed by other Avenues

- Climate co-benefits like: Energy efficiency gains
- Scaling up
- Demand side actions related to climate co-benefits
- Enabling actions for climate co-benefits such as standards and energy efficiency labelling programmes

Domestic sources

- Explore possibility of the use of economic instruments and regulations to leverage domestic resources. i.e. *Emission charges/fees/taxes; User charges/fees/taxes; Product charges; Tradable permit systems; Non-compliance fees; Deposit-refund systems; Non-compliance bonds.*

NOUs - First steps: Who you need to know

- Other agencies (domestic) that could be involved in standards, labeling and energy efficiency programs
- Bilateral Donors that are active in your country – look at the World Bank CAS, UNDAF, PRSPs for all of the governments and agencies active in climate activities in your country
- Your country's contacts or focal points for GEF and Climate type Funds

NOUs – How to be prepared

- How to partner with Bilateral donors, contact and focal points and other agencies
- Know your program
- Learn from colleagues how to develop/submit funding proposals
- Consult & seek support from Management on pursuing resource mobilization
- Document what needs financing (when discussing with funders, come prepared to discuss the funds needed for the project to be addressed)
- Understand the climate benefits/ know the alternatives i.e. benefits from efficiency gains, ODS, GWP, decrease in energy needed, destruction…..

Templates

- Project examples for energy efficiency (this will come from the experience of other agencies working with countries)
- Methodologies for carbon financing

Workshops to date

- Australia workshop, good opportunity for Aus., It. and the U.S. to share experience in offsetting costs in domestic HCFC phase out program. Countries like Fiji, Cook Island, Bangladesh noted efforts in attracting financing for the climate co-benefits.
- Macedonia workshop highlighted keen interest by ozone officers in better understanding resource mobilization opportunities with Macedonia and Croatia mentioning the creation of funding opportunities to support their MP programs
- Main points from these workshops :
- need to have system in place that provides the most up to date information on alternative technologies in terms of performance and alternative gases.
- need for project preparation funds that would focus on the climate co-benefits.
- need to recognize that internal (domestic) resource mobilization includes the use of economic instruments. It was clear that resource mobilization does not necessarily mean actual funds but could also mean human resources (training and knowledge sharing).

Questions for NOUs

- Do the existing sections in your HPMPs cover all the needs for phase 1 phase-out?
- Including climate co-benefits?
- What type of additional assistance do you require?
- What information is lacking in current HPMPs to define additional needs?
- Are you considering leapfrogging to no or low GWP alternatives instead of high-GWP HFCs?
- What are the barriers to doing this in your country?

Questions for NOUs cont'd

- Should energy efficiency in R/AC be part of a larger energy efficiency program at the country level?
- Should the NOU be a "facilitator" to another agency in developing a program of this kind?
- Should there be a source of funding for preparing these types of projects?
- Should there be a one stop shop to get the most updated alternative technologies
- Do you have any experiences with resource mobilisation?

Thank you

Patterson Consulting

Ottawa, Canada