



Department
for International
Development



BRACED

Building Resilience and Adaptation to Climate Extremes and Disasters



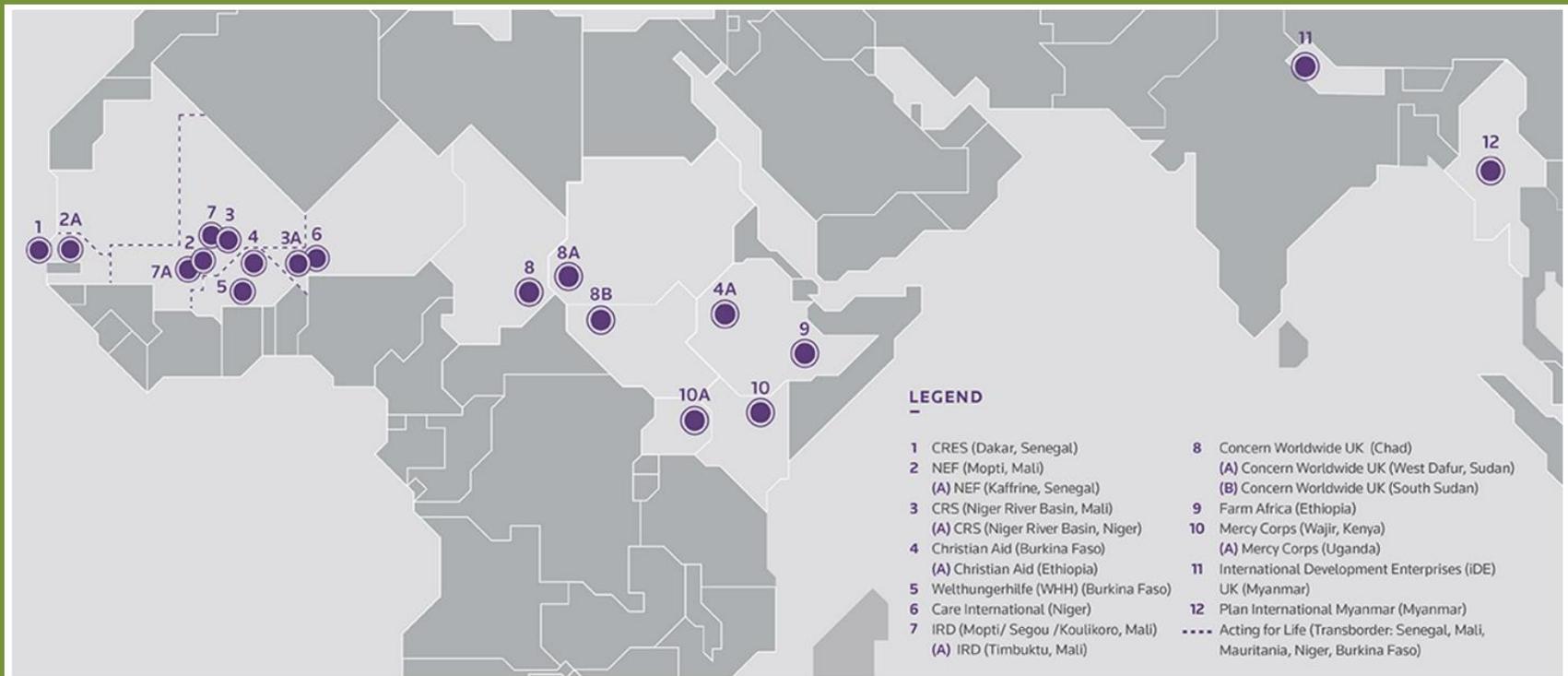
What is resilience and why focus on it?

- Resilience in the context of BRACED is people's ability to adapt to, anticipate and absorb the impacts of climate shocks and stresses;
- Less developed countries and the poorest are disproportionately affected by disasters like droughts, floods, landslides and storms;
- These disasters slow down development, exacerbating poverty and hunger.



BRACED Projects

Currently active in: Senegal, Mauritania, Burkina Faso, Mali, Niger, Chad, Sudan, South Sudan, Kenya, Uganda, Ethiopia, Nepal, and Burma.





Focus on improving...

- Climate and disaster risk management;
- Access to climate and weather information;
- Basic service delivery to strengthen household resilience;
- Access to markets;
- ...and using this experience to inform policy.



Department
for International
Development



Example Projects









Department
for International
Development



Emerging Lessons



Emerging Lessons: Essential Ingredients

- What success looks like varies by geography;
- Sustainable natural resource management;
- Gender equality and empowerment;
- Local economic development and access to financial services;
- Climate information in decision-making ;
- Continue delivering projects during shocks.
- Please see the [Resilience Exchange](#) for more information

Pilot Program for Climate Resilience (PPCR)



Gender, Institutional Development, and Climate Risk: *Adaptive Social Protection and DRR Program Considerations*

Anne T. Kuriakose, Ph.D.
Sr. Social Development Specialist, CIF AU
PPCR Pilot Countries Meeting
Manila, May 22, 2018

Outline of Presentation



- 1. Climate and Disaster Risk from Lens of Gender and Social Inclusion**
- 2. Linking Individual, Household, and Area Adaptive Capacity**
- 3. Adaptive Social Protection (ASP) approaches for enhanced Resilience**
- 4. Strategic Gender Interests and Transformational Change under the CIF**



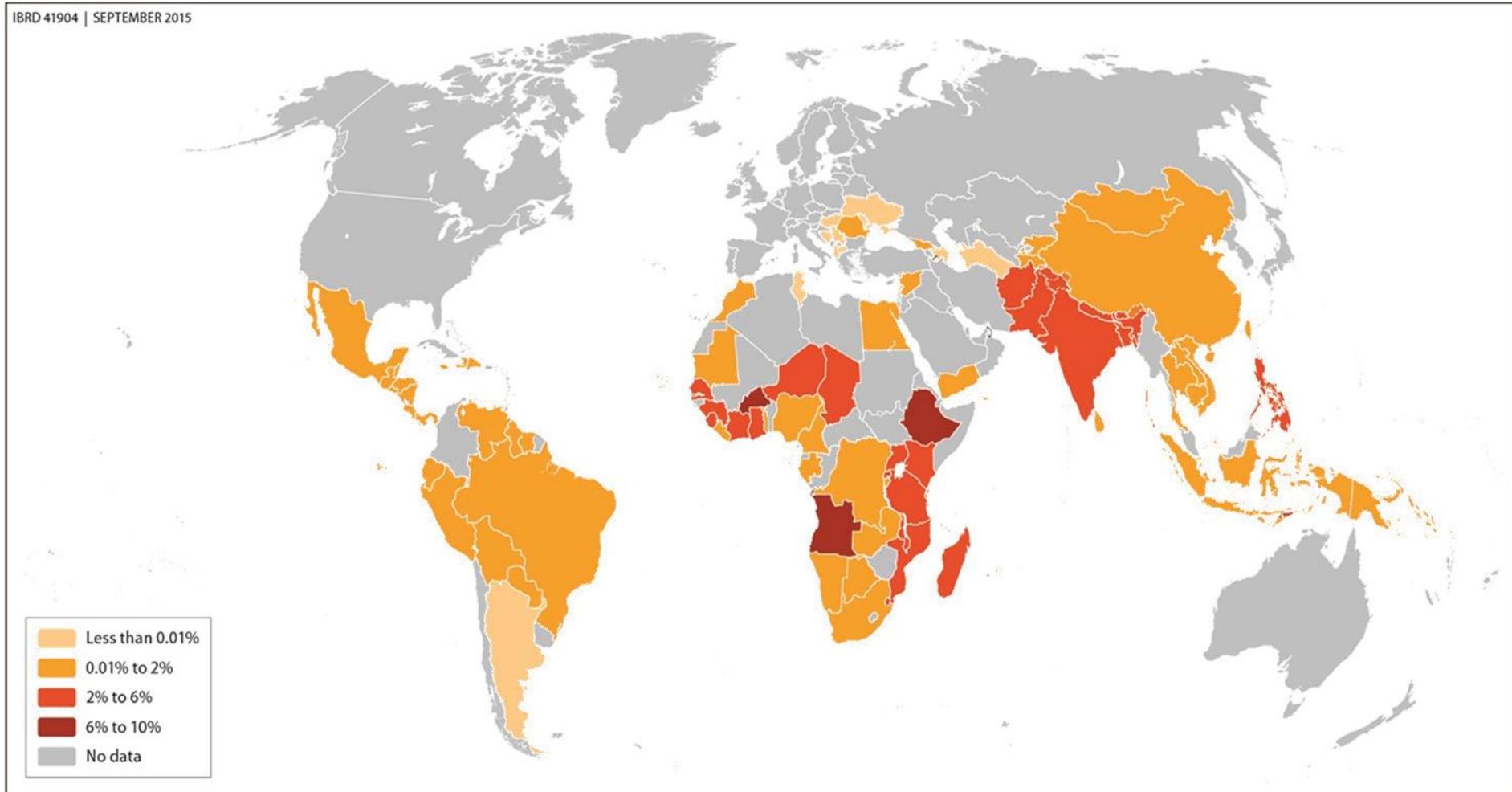
“Climate change and climate variability worsen existing poverty, exacerbate existing inequalities, and trigger both new vulnerabilities and some opportunities for individuals and communities...Climate change interacts with non-climatic stressors and entrenched structural inequalities to shape vulnerabilities”

IPCC, AR5 2014



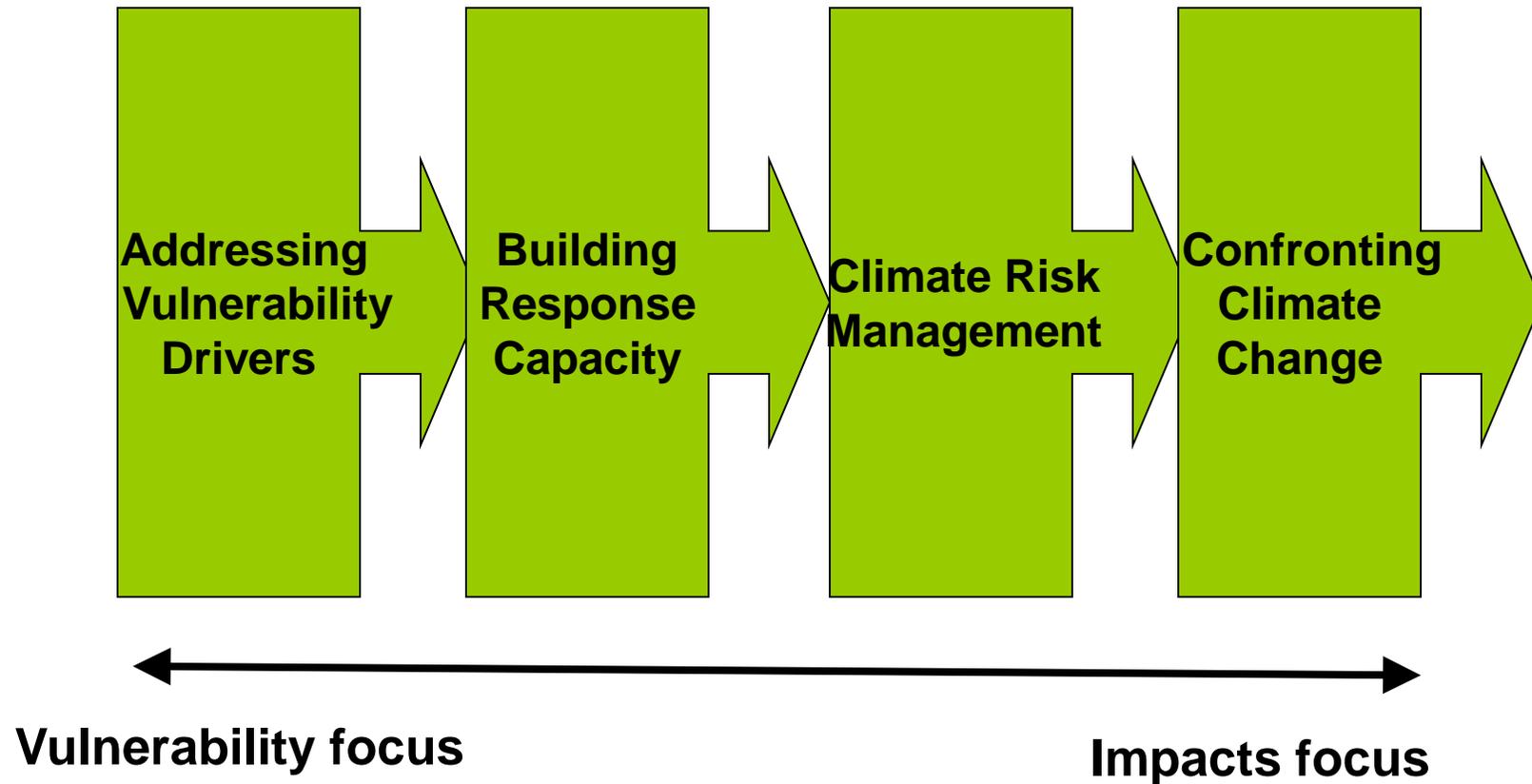
Absent good development, climate change could keep more than 100 million people in poverty, especially in Sub-Saharan Africa and South Asia

Poverty Scenario



Up to 122 million more people below the poverty line in 2030 due to climate change

From Disaster Response to Climate Risk Reduction and Resilience



*Source: Hallegatte, adapted from
WRI (2007)*

“Vulnerability does not fall from the sky”
-- Jesse Ribot, U. of Illinois

- **Exposure** to hazards
- **Sensitivity** to risk
- **Adaptive capacity** to respond → resilience
 - **Endowments** of human, financial, natural, physical and social capital
 - **Entitlements** (rights, voice)



Hazards x Vulnerability=Risk

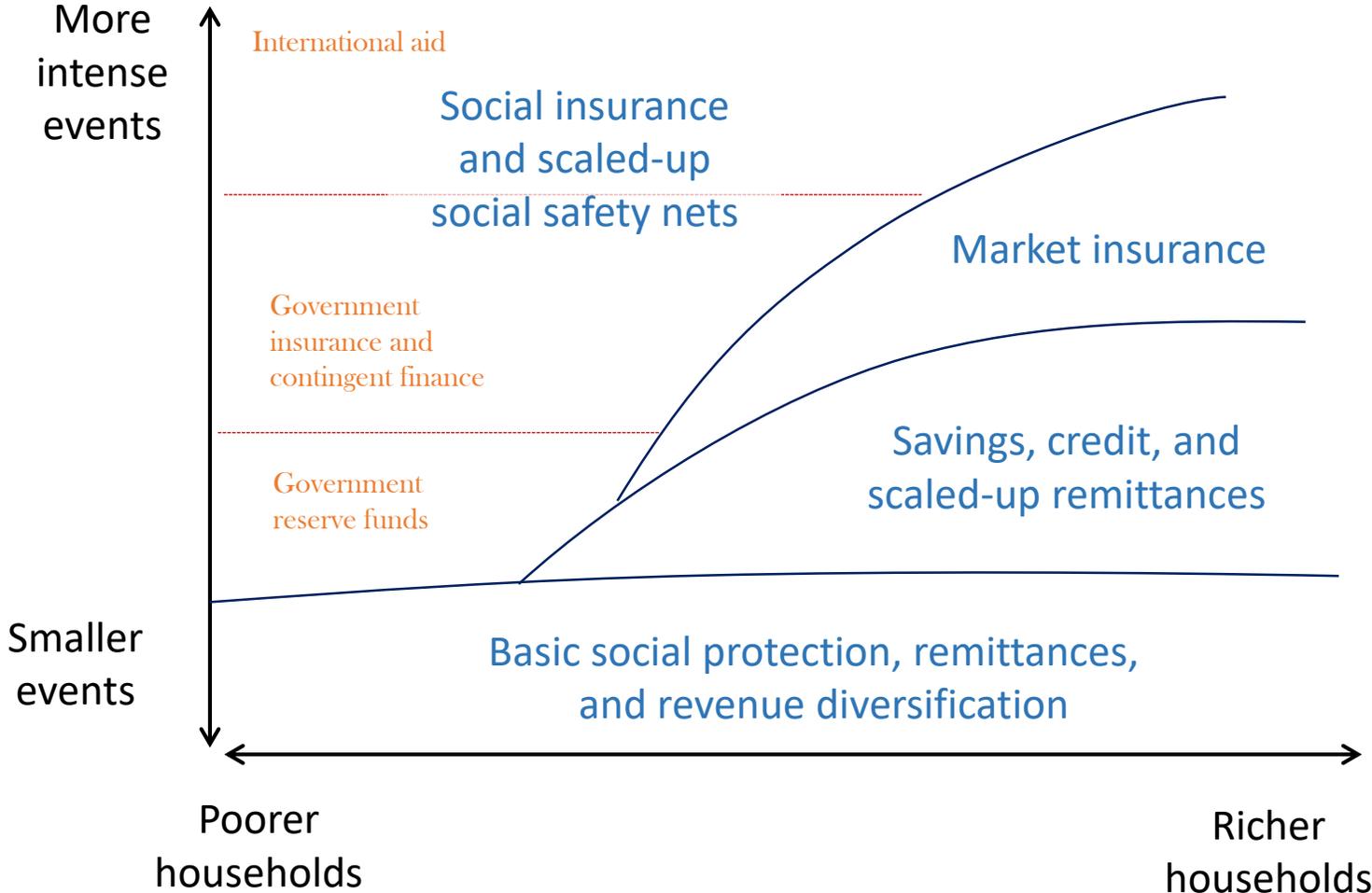
VULNERABILITY: The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards.

RISK: The probability of harmful consequences, or expected losses resulting from interactions between natural hazards and vulnerable conditions.

Components of DRR

Risk identification: understand the problem	Hazard maps; community vulnerability and capacity analysis; risk modeling, understanding direct, indirect, and secondary effects of disasters; quantifying social and env impacts
Risk mitigation: do the needful to reduce potential impacts ex ante (including preparedness and pre-disaster recovery planning)	Structural and non-structural mechanisms: e.g. land use planning; structural design and construction practices; building codes; public education; early warning systems; preparedness and response plans
Risk financing: for the risk you cannot eliminate	Self insurance; safety nets; informal mechanisms; insurance; catastrophe bonds; contingency financing; calamity funds, micro-insurance

Good development includes strengthened social protection systems





Understanding Vulnerability to Climate Change

'Vulnerability':

- Comprises both ***physical vulnerability*** ('exposure' to climate hazards) and
- ***Social vulnerability***
 - 'sensitivity' to climate risks based on: poverty levels; dependence on natural resource-based livelihoods; high social stratification or social exclusion (e.g., gender, caste, ethnicity, age, migrant status).

Investments:

- PHYSICAL - Coastal zone management, polders against sea level rise; mangrove restoration;
- SOCIAL – National adaptation planning capacity; social protection...

[HARD AND SOFT ADAPTATION measures required]



Gender Considerations in Climate Risk Context

“Climate change interacts with ...entrenched structural inequalities to shape vulnerabilities”

IPCC, AR5 2014

- **Climate finance benefits for all persons, women and men, will not be maximized** unless women’s gender-specific interests and vulnerabilities are taken into account, including:
 - predominance in natural resource-based livelihoods
 - health and economic impacts of energy poverty (indoor air pollution; prod.uses of energy)
 - risk profiles in contexts of extreme events and slow-onset disasters
 - tenure insecurity and access to resource governance in diverse land use contexts;
- **However, opportunities for women through climate finance abound:**
 - improved asset bases and livelihood streams, including in emerging industries
 - improvements for production through e.g., extension support tied to hydromet./ climate services targeted to women
 - expanded voice in resilience planning at all levels

-- BUT ONLY IF IDENTIFIED AND PLANNED FOR FROM THE START!



**Gender-responsive
climate action is a
more robust response
to climate risk.**



RESOURCES



ASSETS



ACCESS



RESPONSIBILITIES

Some Key Gender Gaps in Climate:

- ❑ Women and men's **mortality rates in extreme events** vary greatly
 - *Cyclone and flood disasters in Bangladesh 1991: death rate among women aged 20-44 was 71 per 1000, vs. just 15 per 1000 for men of same age group*
 - Due to gendered norms re socio-physical mobility, skills
- ❑ Women's disproportionate **reliance on natural-resource based livelihoods** → more vulnerable to climate impacts on agriculture, fisheries
 - Still lack access to farm inputs, extension, hydromet. services
- ❑ Gender roles and norms in hh reproduction and care → additional layer of risk for women and girls
 - Women use **negative coping strategies** during climate shocks, e.g., reducing their own food intake during food shortages.
 - Water and fuel collection in climate-induced scarcity context increase women's **workload and time poverty**

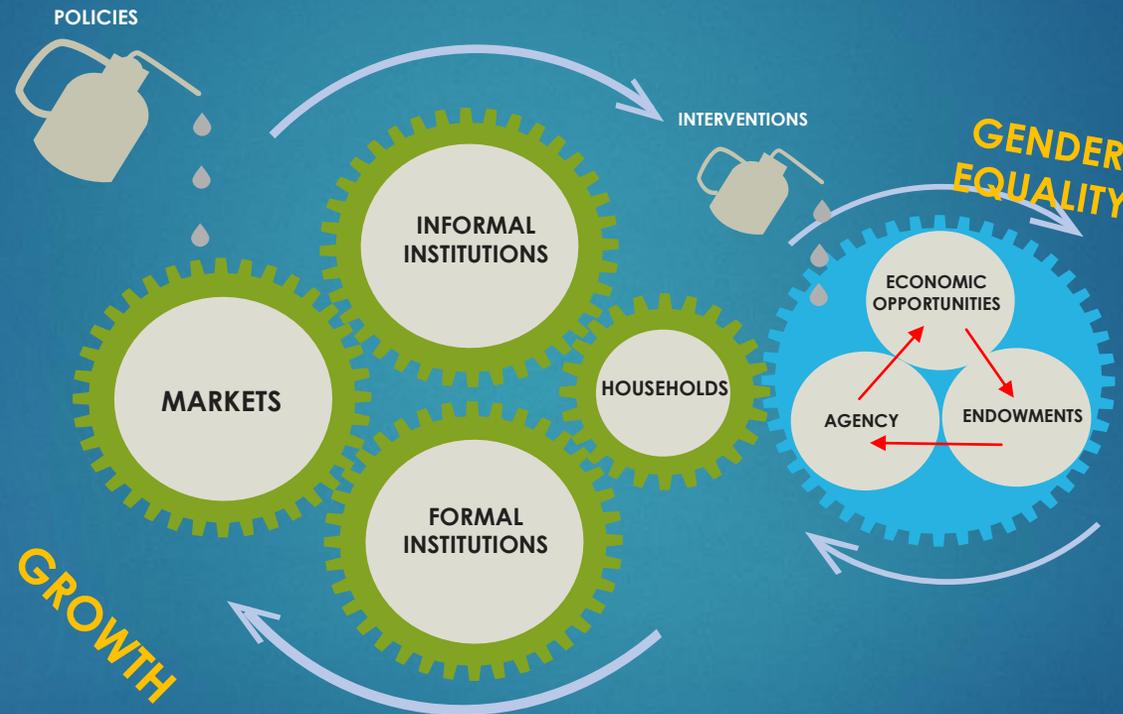
Some Key Gender Gaps in Climate (cont'd):

- ❑ Women's particular **vulnerability in climate-induced migration**
 - Tenure insecurity; GBV; loss of social networks; potential changes in social restrictions on physical mobility outside home; increased labor burden for women as *de facto* female heads of hh due to male out-migration

 - ❑ Gender blindness can lead to **new adaptation assets created or to services** not reflecting needs of women or improving their assets... unless gender lessons from development are deployed
 - **ASSETS AND 'RULES'**: Women's access to and control over a share of any new resources and assets; (*e.g., land reclamation, labor reqs. for land title – UP IWRM Project India; women's land title*)
- **Women's effective participation in climate planning needs specific support → VOICE**

Gender equality is central to the WBG twin goals of ending extreme poverty and boosting shared prosperity

The Strategy builds on the WDR 2012 conceptual framework

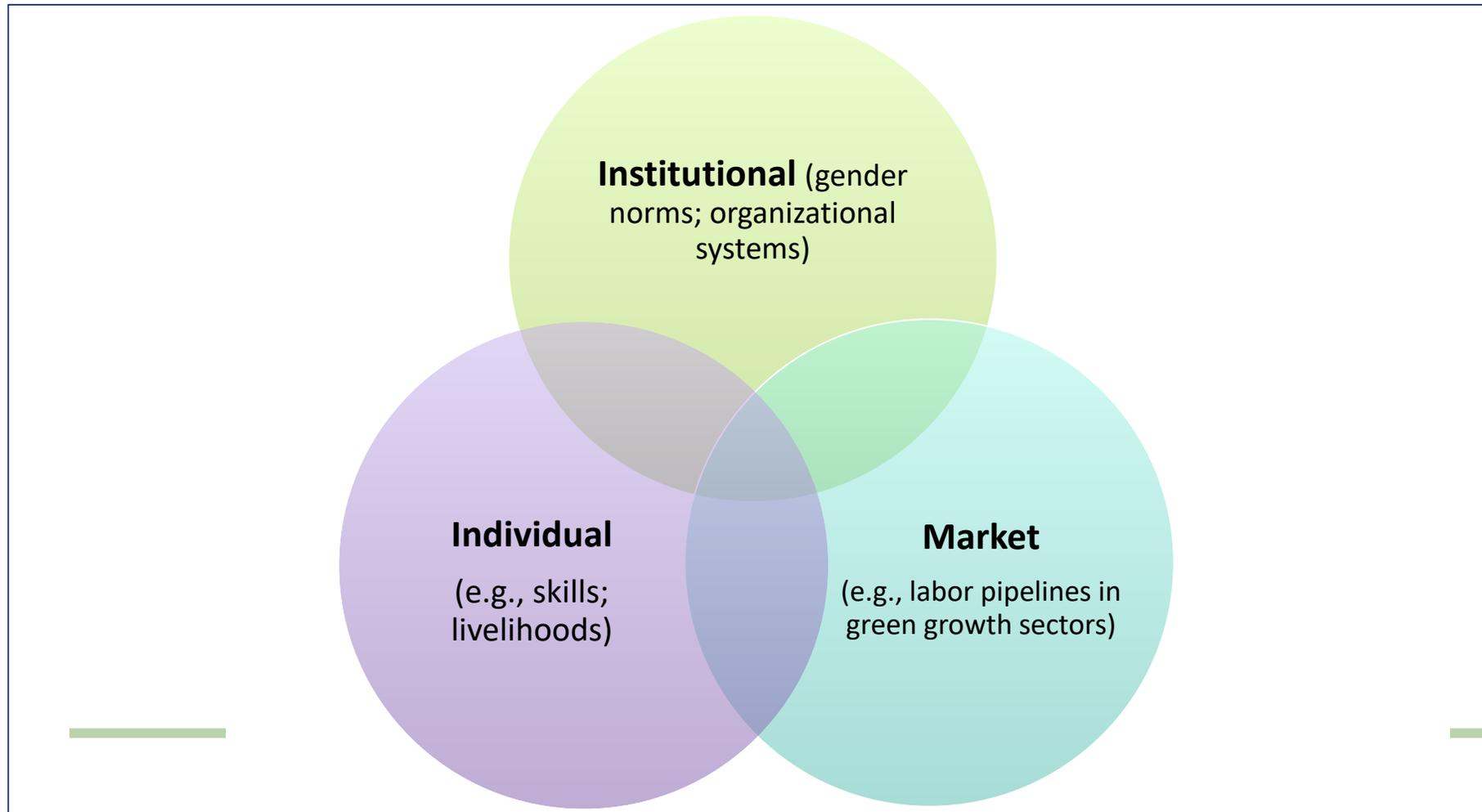


Men and women are not homogenous groups, rather, sex is one dimension of identity, along with race, ethnicity and disability, among others. Often these dimensions, combined with factors such as income level and location, can act as sources of disadvantage.

CIF Gender Program's theory of change



CIF Gender Arenas of Change





Advancing gender equality outcomes through CIF investments

■ Good practice examples from portfolio range from:

- **Targets** for women's employment-related outcomes from projects, both direct and indirect (*CTF*)
- **Training** delivered to women in different sectors (*various projects*);
- **Ancillary services** such as credit schemes (*various projects*);
- **Gender focal points** posted in adaptation planning units of countries (*PPCR Yemen*);
- **Women's participation as primary beneficiaries** in climate-responsive social protection in soil and water mngmt (*Niger PPCR project*);
- **Identifying and tracking of female beneficiary targets** (incl. those in additional vulnerable category of national
- **Gender-sensitive project design** for mass rapid transit in urban areas (*CTF Vietnam project*)
- **Women's participation in user association** membership and leadership in water sector (*PPCR Tajikistan project*)
- **Women-owned enterprise development** in cookstove retailing (*SREP Nicaragua IP; planned project*); ethnic minority groups as part of national goals on social inclusion in RE (*SREP Nepal project*);
- **Enhancing women's role in local governance and planning** on forest resources (*FIP Mexico project on ejidos*).

→ **Projects largely advancing strategic gender interests**, incl. from an economic, or voice/ agency viewpoint i.e., expanded participation in public sphere) – Positive Externalities for inclusive governance

→ Some simply making **project management or organizational changes to improve program/ project responsiveness on gender** (e.g., through focal point posting or tracking of beneficiaries).

Influence Area	Design Type		Specific Examples from CIF Projects from GAP Phase 1	examples from:
*** GENDER-POSITIVE TRANSFORMATION	GOVERNANCE, VOICE & AGENCY		7-Enhancing women’s formal roles in natural resource governance	PPCR, FIP
	SECTOR CHANGE		6-Sector training for women, incl. RE industry pipeline development	SREP, CTF
** STRATEGIC GENDER INTERESTS	ECONOMIC OPPORTUNITIES	5-Strategies/ targets for women’s employment (e.g., women-owned energy enterprises)		SREP, CTF
			4-Ancillary services (e.g., targeted credit schemes)	CTF, PCR, FIP
* GENDER MAINSTREAMING	ORGANIZATIONAL MAINSTREAMING	3-Gender focal points in climate planning units; gender budgeting and planning approaches		PPCR, SREP
	PROJECT ASSESSMENT & DESIGN	2-Gender-sensitive project design (e.g., in mass rapid transit)		All programs
	TARGETING	1-Identification/ tracking of female beneficiary targets (including re national social inclusion goals) at national and CIF reporting levels		SREP, PPCR, FIP, Partial in CTF

PPCR Zambia: “Strengthening Climate Resilience and the Barotse Sub-Basin”



- **Design features:** targeting women; customized support; gender in grant investment criteria/ use of quotas; USD 36m project (IBRD)
- **Project goals:**
 - strengthens Zambia’s national institutional structure for climate resilience
 - improves adaptive capacity of vulnerable communities in Barotse sub-basin
 - targets 25,800 households in 8 districts, of which about 32% are female-headed
- **Gender focus:** focus on climate information services; reserves at least 30% of individual ‘champion grants’ for women for local adaptation activities



Social Protection in face of climate change

- SP schemes critical to help people adapt and cope with shocks, but in climate context in particular must be flexible & scalable (to respond to rapid & slow-onset disasters)
 - Social safety nets can help reduce poverty impact of disasters and economic shocks (such as changes in price of food, energy or demand for labor)
 - Bgd Chars Livelihoods Dev program protected 95% of recipients from losing their assets after 2012 floods
 - Mexico's cash transfer program ensured participants were less likely to withdraw children from school following economic shocks
 - Pakistan's post-flood Citizen's Damage Compensation Program included two phases (post-disaster support plus larger transfers later for reconstruction)
 - *But longer-term adverse climate impacts (sea level rise; desertification) much harder to counter with SP measures alone (compared to shorter-term livelihoods protection)*
 - ASP can help in the short to medium-term with investments in area resilience such as soil and water management and small-scale infrastructure through public works programs, as well as household promotive activities such as livelihoods diversification
- LOCK-IN of people to unsustainable locations or activities remains a threat with SP (i.e., propping up unsustainable livelihoods through transfers)

Poor people are often more exposed to these shocks – take the case of Nigeria



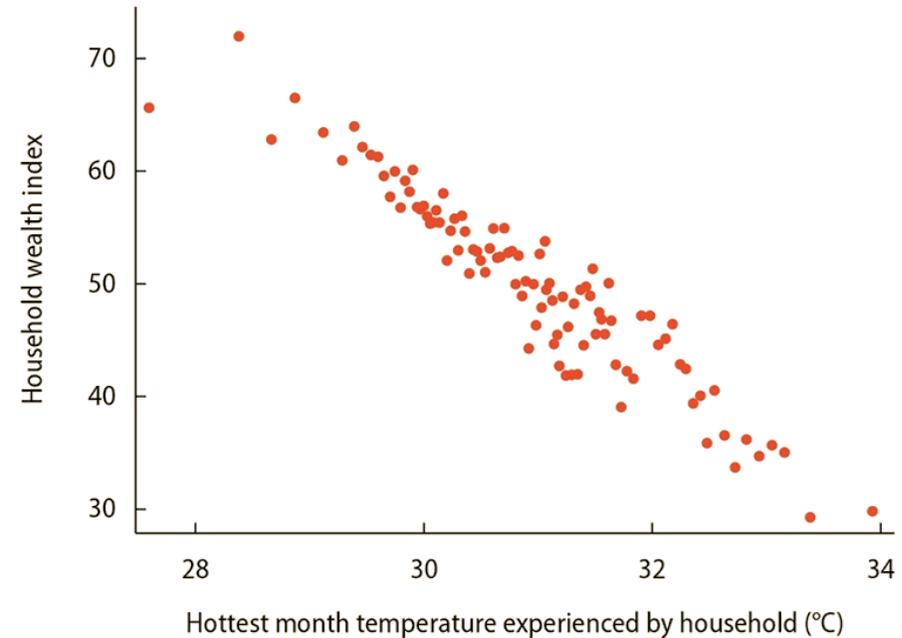
Poor people are 50% more likely to be flooded



Poor people are 130% more likely to be affected by a drought



Poor people are 80% more likely to be affected by extreme heat



Common shocks that drive or keep people in poverty....



Spikes in food prices and shocks to agricultural or ecosystem-based income



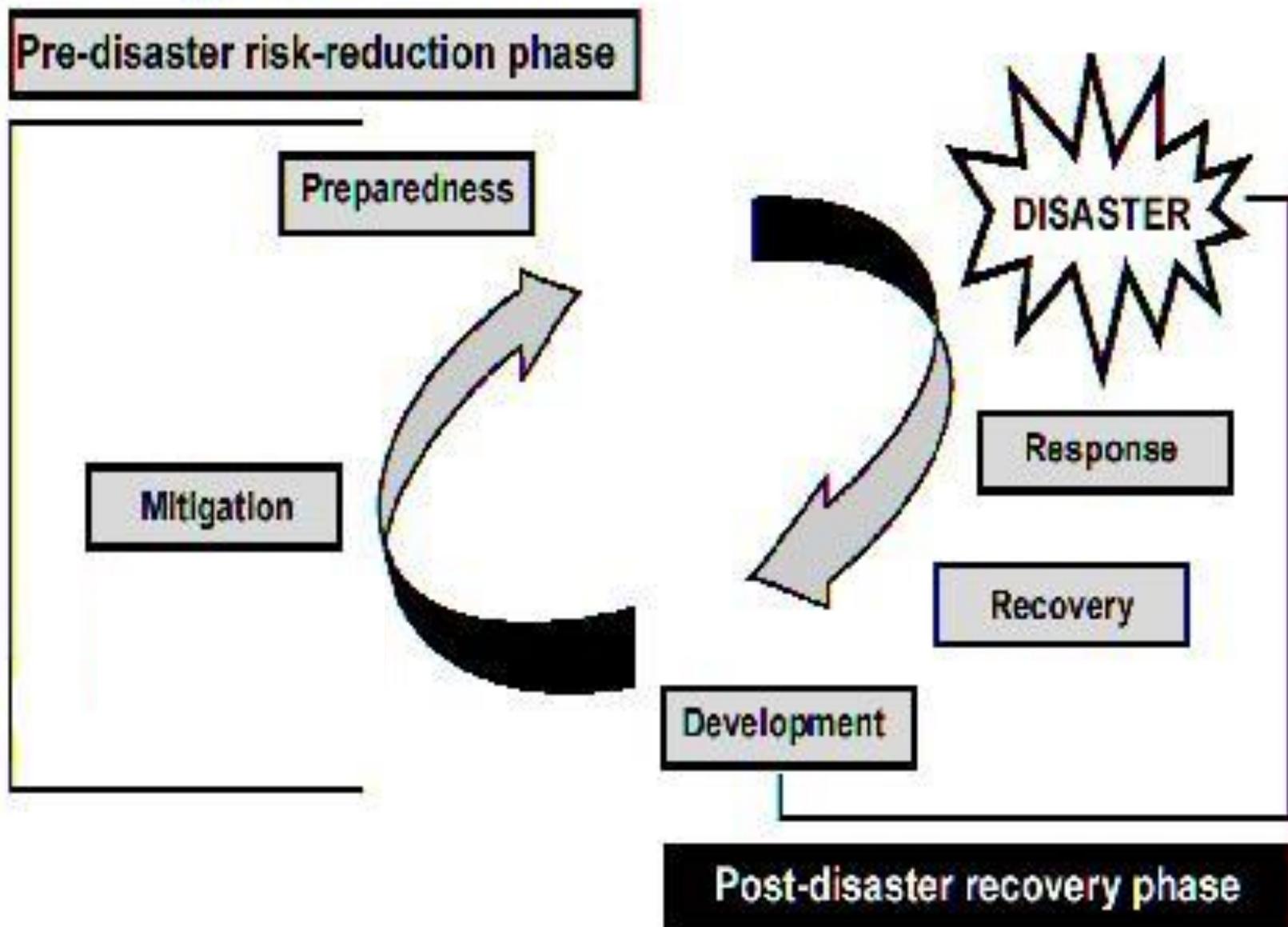
Natural disasters such as droughts, floods, and storms



Disease and health shocks, such as malaria, diarrhea, stunting, and mental disorders

... will be worsened by climate change

Traditional Approaches to Disaster Management

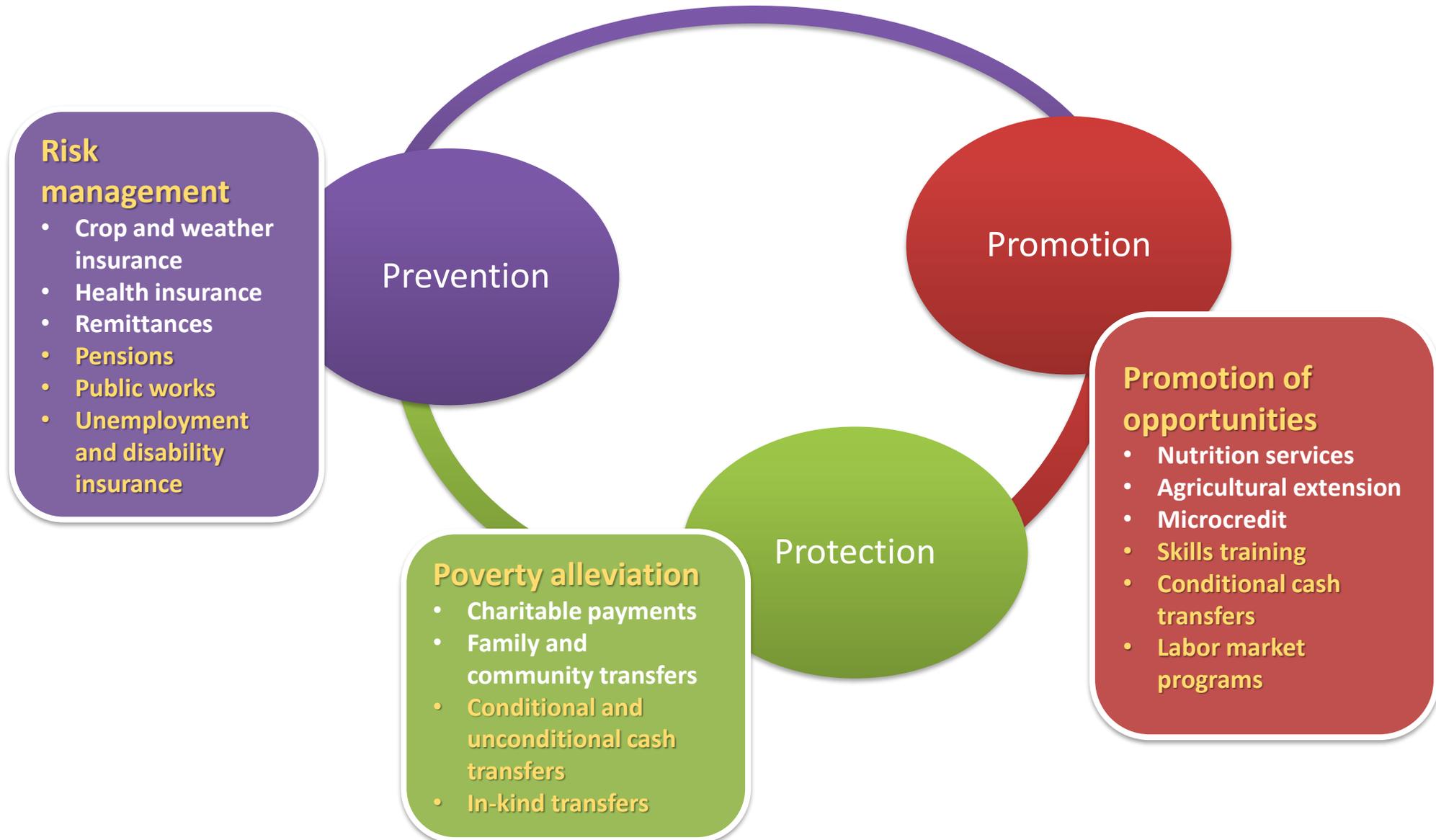


The “3P” framework: A multi-dimensional approach



Derived from the Social Risk Management Framework (World Bank 2001), Bonilla Garcia and Druat (ILO 2003), Devereux and Sabates-Wheeler (2004) and others

The “3P” framework: Typical tools to address the “3P”s



Risk in the context of climate change

- **Direct and indirect risks.** E.g. crop yield changes → indirect consequences for rural incomes, food prices, labor demand, health and nutrition, and settlement and migration.
 - Indirect risks hard to predict but can give rise to scale effects.
- **Higher frequency.** CC increases frequency (and intensity) of extreme climate events.
 - More frequent exhaust informal coping mechanisms; rebuilding livelihoods after disasters at shorter intervals difficult.
 - *More formal risk management is needed; targeting strategies incl. for transitory poor/BPL*
- **Covariate risks.** CC exacerbates covariate risks (those affecting entire communities or countries), both direct (disaster; yield declines over large areas) & indirect (vector-borne epidemics; price & empl effects at regional, national levels).

-
Consequently, localized risk management based on risk pooling or transfers may fall short (incl. trad mechanisms), and risk pooling or transfers over larger areas – nationally or internationally – using more formal public or market-based instruments will be required.

Risk in the context of climate change – cont'd

- **Uncertainty.** Uncertainty about when, where, and how much of the predicted climate changes will manifest. Though this should not lead to inaction... political economy variable abound however, including about budget priorities in national contexts .

“No regrets” adaptation interventions, defined as actions that bring net social benefits under all realistic scenarios of future climate and impacts : *e.g., early warning systems; land use planning, development and enforcement of building codes, improvements to health surveillance, and ecosystem management and restoration.*

- **Irreversibility.** Absent successful adaptation, several risks from climate change could cause irreversible damages to life, assets, and social structures.
- **Inter-generational impacts** -- Irreversible damages to human assets – malnutrition, lost schooling – are no less important than irreversible damages to natural and physical assets and need to be avoided. (Dutch post WWII)
- **Improved disaster management and more risk responsive safety nets** can help prevent irreversible human damages and improve disaster recovery

Adaptive Social Protection (ASP)

Principles:

i) Climate-aware planning; ii) Taking livelihoods and assets into account; iii) Building adaptive capacity

Design Features:

- ❑ *Scalable and flexible programs* (depending on need; and with innovative financing at macro level – reserves, CAT-DDO, contingent risk financing facility)
- ❑ *Climate-smart targeting* (proxy means testing; community-based; area-based; livelihoods based; including transitory poor in scale-up)
- ❑ *Investments for resilience and adaptive capacity* (win-win solutions) → risk-reducing at household AND area levels (e.g., soil and water management, roads)
- ❑ *Institutional capacity and coordination for climate risk management* (across ministries and across local-national levels; EWS, hydromet etc for integration of climate data).

Some Definitions – Adaptive Capacity

- **Adaptive capacity** -- ability of a human or natural system to adjust to climate change, including to climate variability and extremes; prevent or moderate potential damages; take advantage of opportunities; or cope with the consequences.
- Adaptive capacity of a household, region, or country depends on its stock of financial and economic resources, access to technology, information and skills, infrastructure assets, institutional assets, and degree of equity (Smit et al. 2001).

Adaptive Capacity, e.g., of a geographic unit/ area

- ❖ Attention to ***adaptive capacity*** elements at area level, linkages to household resilience and migration decisions → *can also aid social inclusion of the poor and disadvantaged groups such as women*

- ❖ **Area adaptive capacity** levels, e.g., based on characteristics such as:
 - *Diversification* of economic base of area and of household livelihoods strategies (risk reduction), including away from natural resource-based strategies;
 - Remittance inflows;
 - Presence of CSOs and other forms of institutional development
 - *Prior resilience investments* by government or others (e.g., infrastructure; DRM)
 - Education levels;
 - Poverty levels (also degree of landlessness,; wealth in livestock or other assets);
 - *Social cohesion*; presence of conflict
 - Urbanization/ population density

“Climate-Smart DEVELOPMENT AS BEST FORM OF ADAPTATION”



Vulnerability and Adaptive Capacity in Climate Context

--**VULNERABILITY TO CLIMATE CHANGE:** both *physical vulnerability* ('exposure' to climate hazards) and *social vulnerability* ('sensitivity' to climate risks, poverty, dependence on natural resource-based livelihoods; high social stratification or social exclusion (e.g., gender, caste, ethnicity, age, migrant status)).

■ **ADAPTIVE CAPACITY** is a dynamic state, based on e.g.,:

- Human and social capital levels
- Presence and quality of formal and informal institutions
- Existing governance, policy and technology/ innovation frameworks
- Resources such as fiscal status and planning systems

■ **Interactions among local, sub-national and national investments in infrastructure capacity, enabling environment -- *and decision-making under uncertainty***

- *INVESTMENTS IN WHAT, FOR WHOM, TO WHAT END? / PPCR SPCR/ INVESTMENT PLAN AS 'ECOSYSTEM' OF ELEMENTS; SEQUENCING*

Checklist for Pro-Poor Adaptation



- ✓ Combine investments in **hard and soft adaptation** options to meet the needs of the poorest and most vulnerable
- ✓ Anchor decision-making processes in inclusive and **participatory processes**, including transparency in monitoring and evaluation of adaptation investments. Seek integration of policies across sectors and scales
- ✓ **Target geographic regions** where sensitivity to climate hazards is high. Consider multi-sectoral investments that build area resilience
- ✓ Invest in **enabling policies** that enhance sector-specific interventions (e.g. improved land policy, natural resource management, and transfer and adoption of new technology)
- ✓ Design **social policy** interventions (including social protection, education and training) that take better account of climate risk and its impacts on households and communities

Some thoughts ...



- ❑ **Development** (esp. ‘no-regrets’ investments still a key element of resilience: in particular, attention is needed to sub-national development and lagging regions (infrastructure deficits; sectoral diversification); and human capital base
- ❑ At the household level and community levels, investments in **community-based DRM**, social protection, CDD approaches, and the organizational experience developed therein can help improve climate resilience (esp. for women)
- ❑ Countries may increasingly have to make **hard choices** about highly-degraded regions already facing irreversible declines; good practices in resettlement still under development
- ❑ Use of **voice and accountability** mechanisms can improve quality and absorption of planned adaptation investments by government, by ensuring users’ knowledge and preferences are accounted for
- ❑ **Role of private sector** in resilience needs further innovation

Influence Area	Design Type		Specific Examples from CIF Projects from GAP Phase 1	examples from:
*** GENDER-POSITIVE TRANSFORMATION	GOVERNANCE, VOICE & AGENCY		7-Enhancing women’s formal roles in natural resource governance	PPCR, FIP
	SECTOR CHANGE		6-Sector training for women, incl. RE industry pipeline development	SREP, CTF
** STRATEGIC GENDER INTERESTS	ECONOMIC OPPORTUNITIES	5-Strategies/ targets for women’s employment (e.g., women-owned energy enterprises)		SREP, CTF
			4-Ancillary services (e.g., targeted credit schemes)	CTF, PCR, FIP
* GENDER MAINSTREAMING	ORGANIZATIONAL MAINSTREAMING	3-Gender focal points in climate planning units; gender budgeting and planning approaches		PPCR, SREP
	PROJECT ASSESSMENT & DESIGN	2-Gender-sensitive project design (e.g., in mass rapid transit)		All programs
	TARGETING	1-Identification/ tracking of female beneficiary targets (including re national social inclusion goals) at national and CIF reporting levels		SREP, PPCR, FIP, Partial in CTF

CIF Gender Program's theory of change



Pilot Program for Climate Resilience (PPCR)



Gender and Climate Resilience: PPCR Experience of the Asian Development Bank

Sonomi Tanaka
Chief of Gender Equity Thematic Group
22 May 2018
Dialogue Session 2.1.

Outline

- **Gender & Climate Change – ADB Approach**
- **Gender Mainstreaming of ADB PPCR Projects**
- **PPCR Gender Results Examples**
- **Key Observations**



Gender & Climate Change

ADB Approach

- Guided by **Gender Operational Plan (2013-2020)** and **Climate Change Operational Framework (2017-2030)**
- ADB Strategy 2030 two top priorities
 - Gender: “Building women’s resilience” one of 5 pillars
- Key Outputs
 - Gender-responsive climate change and DRM policies, strategies, action plans, budgeting
 - Green jobs for women and related access to finance
 - Women’s resilience to climate change and disaster impacts/environmental degradation through:
 - ✓ Climate-smart technologies & infrastructure
 - ✓ Diversification of economic activities and assets
 - ✓ Disaster insurance, savings, and financial safety nest
 - ✓ Participation in community-led solutions
 - ✓ Knowledge, skills, preparedness, information
 - ✓ Active participation and leadership in climate relate decision-making process at all levels

ADB Project Gender Categories

1. Gender Equity Theme (GEN)

- Gender equality and women's empowerment (GEWE) as explicit project outcome
- Directly supports GEWE
- e.g., Gender-focused education project, women SME project

2. Effective Gender Mainstreaming (EGM)

- GEWE substantially integrated but not explicit outcome
- Directly supports GEWE
- e.g., infrastructure, PSM

3. Some Gender Elements (SGE)

- Indirectly supports GEWE
- Gender addressed in mitigation where applicable + some proactive gender actions/features

4. No Gender Elements (NGE)

- Gender not integrated in design

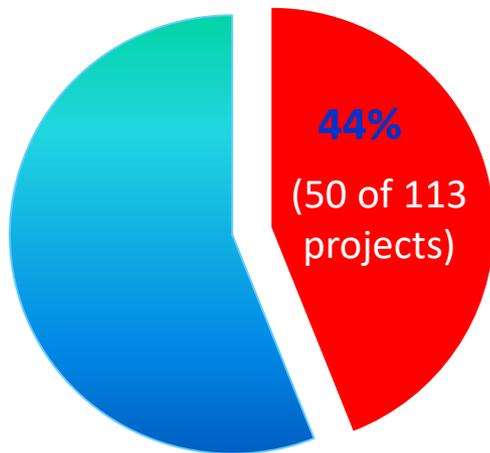
Categorized by Project Team Leaders and verified by Gender Anchor Unit

Gender Mainstreaming in ADB-CIF Portfolio

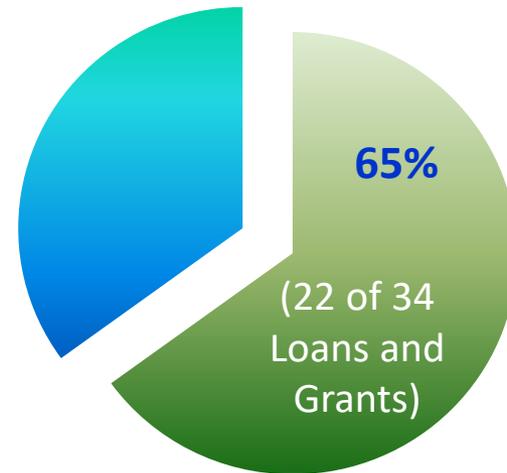
ADB

CIF

Public Sector Projects (2016)



Projects # (Cumulative)



GM in ADB-CIF projects similar to that in ADB-wide projects

ADB PPCR Investment (1)

Project Title	Gender Category	Amount (\$mil)
SOVEREIGN and NON-SOVEREIGN LOANS		
BAN: Coastal Climate-Resilient Infrastructure Project	EGM	30.6
BAN: Coastal Towns Environmental Infrastructure Project	GEN	40.4
CAM: Provincial Roads Improvement Project	EGM	17
CAM: GMS Southern Economic Corridor Towns Development Project	EGM	10
REG: GMS Flood and Drought Risk Management and Mitigation Project (CAM)	EGM	10
CAM: Climate Resilient Rice Commercialization Sector Development Program	EGM	10
CAM: GMS Biodiversity Conservation Corridor	EGM	8

ADB PPCR Investment (2)

Gender Mainstreaming = 100%

Project Title	Gender Category	Amount (\$mil)
CAM Integrated Urban Environmental Management in the Tonle Sap Basin Project	EGM	10
CAM: Rural Roads Improvement Project II	EGM	16
NEP: Building Climate Resilience of Watersheds in Mountain Eco-Systems	EGM	24.4
PNG: Building Resilience to Climate Change in Papua New Guinea	EGM	30
TAJ: Building Climate Resilience in the Pyanj River Basin	EGM	21.55
TON: Climate Resilience Sector Project	EGM	19.25

ADB PPCR TAs

Gender Mainstreaming = 60%

Project Title	Gender Category	Amount (\$mil)
TECHNICAL ASSISTANCE		
CAM: Mainstreaming Climate Resilience into Development Planning	SGE	10
BAN: Climate Change Capacity Building and Knowledge Management	GEN	0.5
NEP: Mainstreaming Climate Change Risk Management in Development	SGE	7.2
REG: Implementation of the SPCR	GEN	3.89
TAJ: Building Capacity for Climate Resilience	EGM	6.01

Example 1: Bangladesh: Coastal Towns Environmental Infrastructure Project (2014-GEN)

Key achievements as of December 2017



- **Economic:** livelihood training on poultry and cattle farming, fish culture, small entrepreneurship, tailoring, handicrafts, basic computer operation—participated by 1,242 (97%) women
- **Infrastructure:** construction of cyclone shelters in 8 *pourashavas* with 18% women involved in construction work
- **Voice:** project design, disaster management standing committee, training on DRM, community level hazard mapping (26-36%)
- **Voice:** Town gender action plans and Poverty reduction action plans in 8 *pourashavas* (33-40% women's participation in the preparation)
- **Voice:** Water safety planning: leadership role of women at community level

Example 2: Nepal: Building Climate Resilience of Watersheds in Mountain Eco-Regions (2013-EGM)

Key achievements as of September 2017

- **Skills:** Vocational training participants include 32% female, 14% Dalit
- **Time poverty reduction:** Average time for water collection reduced by 42.7%, from 2.6-5.2 hrs/day to 1.6-2.5 hrs/day
- **Voice:** Key posts/leader in community development groups held by 41% women, 19% Dalit
- **Institutional:** Training manual on gender equity and social inclusion in water resources management produced



Example 3: Cambodia: Climate-Resilient Rice Commercialization Sector Development Program (2013-EGM)

Key achievements as of March 2018

- **Economic:** 7,070 (50%) women farmers out of 14,106 farmer beneficiaries provided with access to water irrigation subprojects
- 6,637 (38%) women out of 17,694 employed in laser land leveling activity; 220 (25%) women out of 892 employed in rehabilitation of irrigation scheme
- 460 (36%) women out of 1,276 agricultural cooperative members trained on business development, management, and leadership
- **Voice:** Management positions in Farmer Water User Communities belong to 32% women (35 out of 105)
- **Institution:** Agricultural Land Law draft being reviewed on gender mainstreaming; Gender issues in land administration, management, and distribution (chapter on land and gender policy) integrated in policy white paper issued in 2015



Example 4: Tajikistan: Building Climate Resilience in the Pyanj River Basin (2013-EGM)

Key achievements as of April 2018

- **Economic:** 43 (17%) women of the 259 employed in construction work: cleaning construction sites, preparing food, cleaning domestic facilities, collecting stones for gabion preparations
- **Economic:** 46 (100%) loan officers trained on climate change and gender; 209 (28%) women out of 746 sub-borrowers of microloans less than \$1,000
- **Economic/Skills:** 397 (61%) women out of 652 household and dekhan farm members trained on financial literacy, new methods in agriculture, and principles of climate resilience
- **Human development:** 271 (53%) women out of 510 survey respondents; 72% of the women claimed that their family's health improved with the increase in family income from construction work
- **Voice:** 179 (51%) women, representing women's organizations, out of 346 participants trained on climate risks and adaptation, early warning systems, and disaster risk management

Example 5: Tonga: Climate-Resilience Sector Project (2013-EGM)

Key achievements as of December 2017

- **Skills:** 10 (45%) females (9 undergrad and 1 post grad) out of 22 awarded scholarships on climate change adaptation, marine/environmental science
- **Skills:** 13 (62%) females out of 21 received professional short term training on climate change adaptation and disaster risk reduction program
- **Voice:** 5 schools climate proofed, with at least 30% women from PTAs involved in decision-making and monitoring
- **Voice:** 26% women involved in developing coastal management plans, expected to increase with the establishment of the Special Management Areas where females, youth, and senior members are represented in the Board

Observations

- Since the CIF Gender Portfolio Review (2015-6)
 - From “vulnerable” to “active participants”
 - General awareness of gender-climate nexus
 - Awareness of need for institutional reforms
- Still struggling with measurement of women’s climate resilience
- Economic empowerment & skills:
 - Need to move from temporary and unskilled job opportunities to longer-term and higher-paying jobs
 - Longer-term asset building not considered
- Voice: Need for more “strategic” participation and leadership
- Time poverty: Measurement still an issue
- Challenging gender mainstreaming in the private sector operations

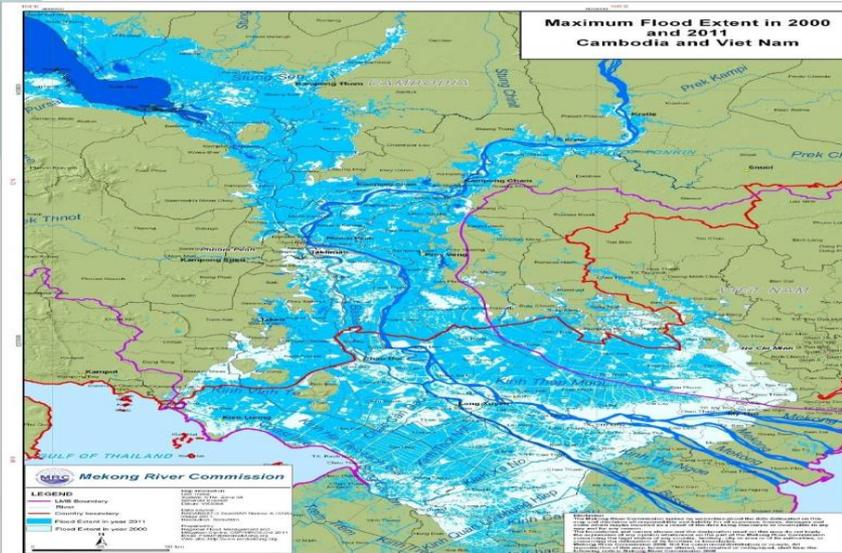
Visit our website

www.adb.org/gender

Contact: stanaka@adb.org



Overview of Project



Key Design Elements

Project categorized as “Effective Gender Mainstreaming ”

A gender action plan (GAP) was prepared to ensure:

- (i) equal opportunities to access project benefits;
- (ii) actively participate in project related technical training events, consultation on project design and resettlement arrangements;
- (iii) obtain employment opportunities in project funded construction works;
- (iv) collection of sex-disaggregated data to ensure fair shared benefit between women and men in the project; and
- (v) women’s voice and agent are counted at all levels.

Key Results of the GAP Implementation

Outputs	Key Gender Result to Date
<p>Enhanced regional data, information and knowledge base for management of floods and droughts.</p>	<ul style="list-style-type: none"> • 2 of 3 staff seconded by Dept of Hydrology and River Works to National Forecasting Flood Centre (NFFC) are women • 16 of 66 trainees (24%) were female - for 8 different trainings in 2016 and 2017. • Flood forecasting and drought forecasting models and flood risk maps are useful for women and other disadvantaged groups.
<p>Upgraded Water Management Infrastructure</p>	<ul style="list-style-type: none"> • 25 of 96 elected members of the FWUC, FWUGs and FWUSGs (26%) are women. • All civil works contracts include a clause on “Provide equal opportunity and equal pay for equal work to both females and males for labor construction”. • Special Clauses have been included in the contracts “at least 30% of unskilled labor hired will be women.
<p>Enhanced capacity for community based disaster risk</p>	<ul style="list-style-type: none"> • 50% of participants in public consultations for development of safer village and commune plans are women. • Community training schedule established based on consultation with all female and male participants during Needs Assessment Workshop. • CBDRM training manuals include content on gender roles and women in

Key Success Factors

- Three gender targets are on track
- Nearly all indicators in Gender Action Plan achieved
- Majority of participants in CBDRM activities are women
- Capacity of women for CBDRM enhanced

Note:

- (i) Sex-disaggregated data regularly collected;
- (ii) GAP implementation included in the project workplan and budget;
- (iii) GAP orientation with CPMU, PIU, and staff/consultants at national & provincial level
- (iv) GAP is regularly reported on in project quarterly progress report.
- (v) ADB provides hands-on guidance and training
- (vi) Field monitoring and supervision by gender team
- (vii) Timing and adequate gender inputs



MINISTRY OF NATIONAL DEVELOPMENT PLANNING
PILOT PROGRAMME FOR CLIMATE RESILIENCE

Gender and Institutional Development Session:
**Zambia Presentation to
PPCR Pilot Country Meeting**

Manila, Philippines

May 22, 2018

ZAMBIA AT A GLANCE



Population 15.5million (2015, CSO data)
61% rural / Land: 750,000 km²
River basins: Zambezi and Congo

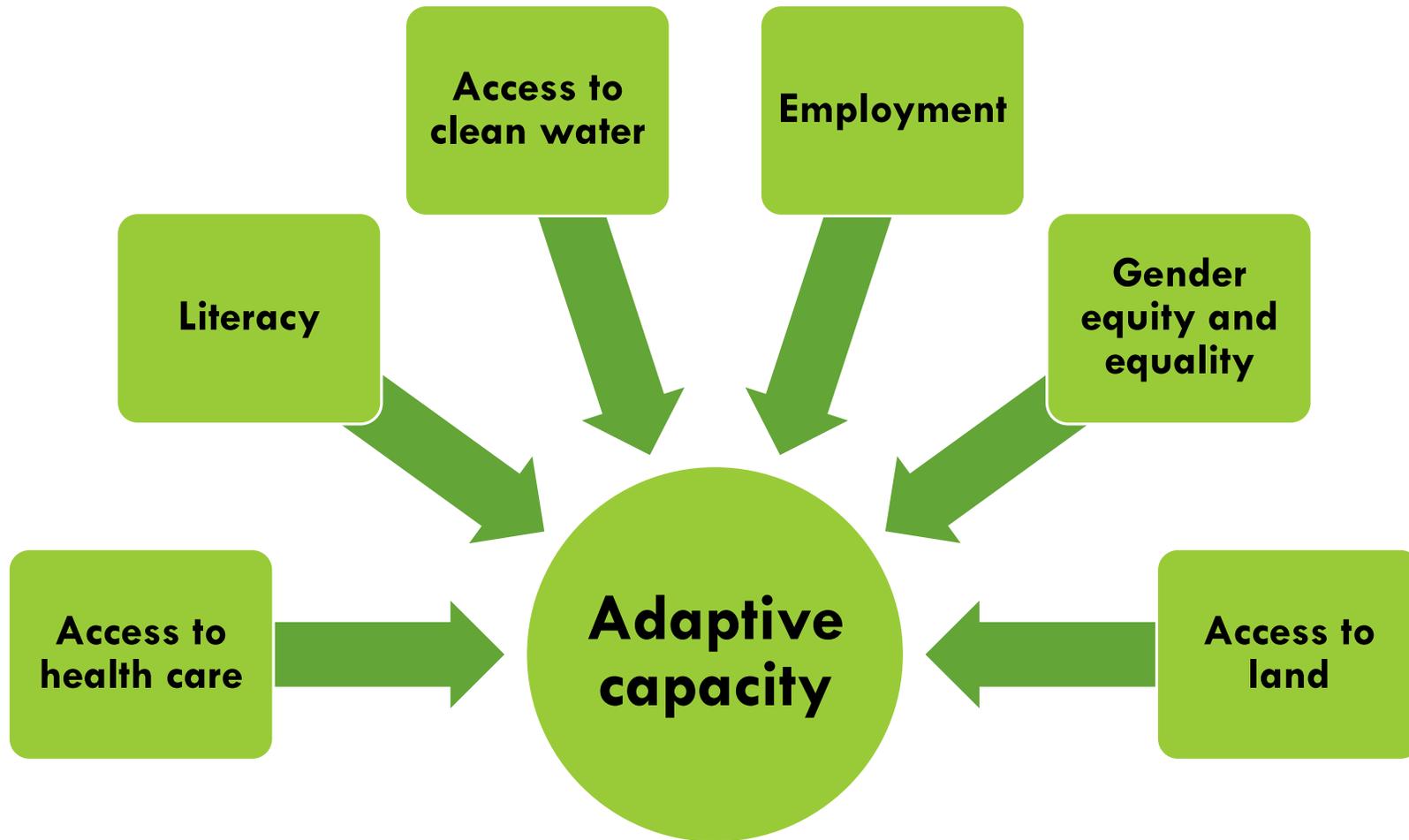
- ❑ Over past 30 years, floods and droughts cost Zambia US\$13.8b – equiv. to 0.4% annual GDP growth
- ❑ Without adaptation, rainfall variability could keep additional 300,000 Zambians below poverty line
- ❑ Climate variability could cost Zambia US\$4.3b in lost GDP over next decade, reducing annual growth by 0.9%

Climate Risks and Impacts

- **Droughts:** Soils become hard pans in droughts
 - **Floods:** fertiliser gets leached
 - Cannot engage in gardening
 - **Poor harvests**
 - **Food insecurity;** Malnutrition
 - **Increased workloads for women**
- e.g., Water dries up and women travel further to fetch water



ENGENDERING RESILIENCE AND FOCUS ON WOMEN



WHAT IS GENDER INTEGRATION?

Making process or activity gender-responsive by incorporating gender needs and interests, and eliminating gender discriminatory policies, strategies and practices.



NATIONAL INSTRUMENTS



Gender considered a cross cutting issue in the National Policy on Climate Change



National Gender Policy of 2014 (climate change adversely affects women whose livelihoods largely depend on natural resources for food, wood fuel and water)



Gender equity and equality Act, 2015 (developing support mechanisms for the progressive realisation towards 50% representation and meaningful participation of women)



Climate Change Gender Action Plan

PPCR INSTRUMENTS



Strategic Environmental and Social Assessment (SESA) at the design of PPCR



Environmental and Social Management Framework



Resettlement Policy Framework



Gender reporting framework



Environmental and Social Management Plan for large-scale investment projects



Grievance Redress Mechanism

ENTRY POINTS FOR ENGENDERING CLIMATE RESILIENCE



Climate Risk and Vulnerability Assessment at project/programme design



Gender-sensitive climate risk assessment at community engagement



Compliance to government thresholds on gender in public participation and decision-making



Screening for gender considerations at community funding



Verification of community participation and access to benefits disaggregated by sex during monitoring and safeguards audits

Project Design under PPCR Zambia

- **Key Design Elements**

- ✓ Demand-led (Community Participation in needs identification & project implementation)

- **Specific mechanisms**

- ✓ Gender-Sensitive Climate Risk Assessment (GCRA) Tool
- ✓ Positive discrimination based on gender (women-led projects prioritized for funding; 30% of all targeted investments for women)

- **Innovations**

- ✓ Matching grant funding

Photo Gallery



Outcomes

- Increases in: 1) women-led project **proposals** and 2) no. of **women-led projects funded**
- More **time available** for women for household chores & personal needs
- **Increase in HH income level**, esp. for women-headed households – social protection enhancement
- Reduction in **diseases** affecting women
- **Diversification of income** sources → more resilience overall



Key impacts and success factors...

Key impacts

- Increased **resilience to climatic shocks** – e.g., diversification of income sources, vs. dependence on rain-fed agriculture
- Increased **adaptive capacity** of women – e.g., alternative food sources

Success factors

- PPCR enhancing support to **women-led adaptation projects** through information and **links to extension services**.
- Sub-projects as integral part of **Ward & District Development Plans = access to gov't budget process**, assuring **sustainability** of support for women-led interventions

THANK YOU



Pilot Program for Climate Resilience (PPCR)



PROJET D' ACTIONS COMMUNAUTAIRES POUR LA RESILIENCE CLIMATIQUE NIGER

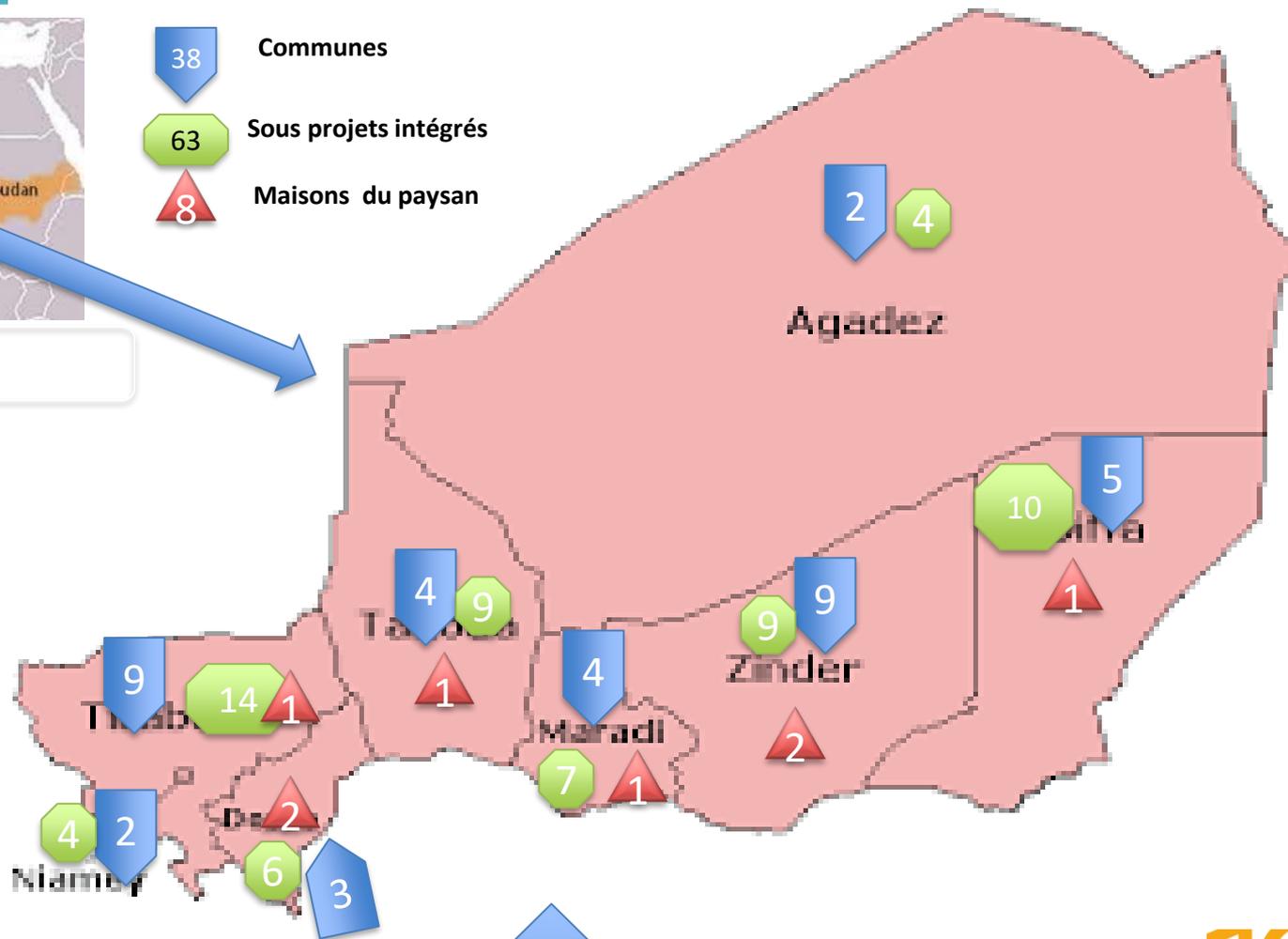


Zone d'intervention du PACRC



Sahel

- 38 Communes
- 63 Sous projets intégrés
- 8 Maisons du paysan



2.100.000 personnes soit 12% de la population du Niger

Cadre d'intervention du Projet

Cadre politique

- PDES
- I3N
- PSRC 2010
- PACRC 2012

Mécanismes spécifiques

- Approche programme
- Renforcement des stratégies nationales
- Amélioration de la résilience communautaire
- Renforcement de la participation de la femme
- Prise en compte des normes culturelles

Innovations

- Intégration de la résilience dans les cadres politiques et les plans de développement communaux
- Conception et mise en œuvre de sous projets intégrés de résilience communautaire
- Mise œuvre de maisons du paysan
- Technologies innovantes



Principaux Résultats

Indicateurs résultats	Cibles	Valeurs atteintes	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Politiques sectorielles acclimatées	<input type="checkbox"/> 3	<input type="checkbox"/> 2	
<input type="checkbox"/> Plan de développement communaux acclimatés	<input type="checkbox"/> 38	<input type="checkbox"/> 38	
<input type="checkbox"/> Amélioration du Rendement agricole	<input type="checkbox"/> 30	<input type="checkbox"/> 67	
<input type="checkbox"/> Amélioration du rendement fourrager	<input type="checkbox"/> 20	<input type="checkbox"/> 39	
<input type="checkbox"/> Superficies agrosylvopastorale avec GDT	<input type="checkbox"/> 30 800	<input type="checkbox"/> 33 444	
<input type="checkbox"/> Nombre d'infrastructures réhabilitées	<input type="checkbox"/> 175	<input type="checkbox"/> 212	
<input type="checkbox"/> Nombre de maisons du paysan réalisées	<input type="checkbox"/> 8	<input type="checkbox"/> 8	
<input type="checkbox"/> Nombre de ménages touchés par les interventions du Projet	<input type="checkbox"/> 310 000	<input type="checkbox"/> 387 967	
<input type="checkbox"/> Pourcentage de femmes touchées	<input type="checkbox"/> 50	<input type="checkbox"/> 49	

Facteurs de succès

Stratégique

Volonté politique/Alignement à l'UNCCC

Bonne cohérence entre objectifs du PSRC/PACRC et les stratégies nationales de résilience

Approche Programme

Prise en compte du genre dans les priorités locales /responsabilisation des bénéficiaires

Opérationnel

Priorité accordée à la résilience dans les stratégies et programmes de développement nationaux

Le PSRC/ PACRC appui la mise en œuvre de l'I3N

Forte Implication des institutions nationales

PDCs acclimatés
Sous projets intégrés
Maisons du paysan
Participation de la femme (49%)
COGES (1100)

A photograph showing a group of people, likely farmers, working in a large field of green crops. The workers are wearing colorful traditional clothing and are bent over, tending to the plants. The field is divided into rows, and there are some wooden stakes and white markers visible. In the background, there are several trees and a clear sky. The text "Merci de votre aimable attention" is overlaid on the bottom part of the image.

**Merci de votre aimable
attention**



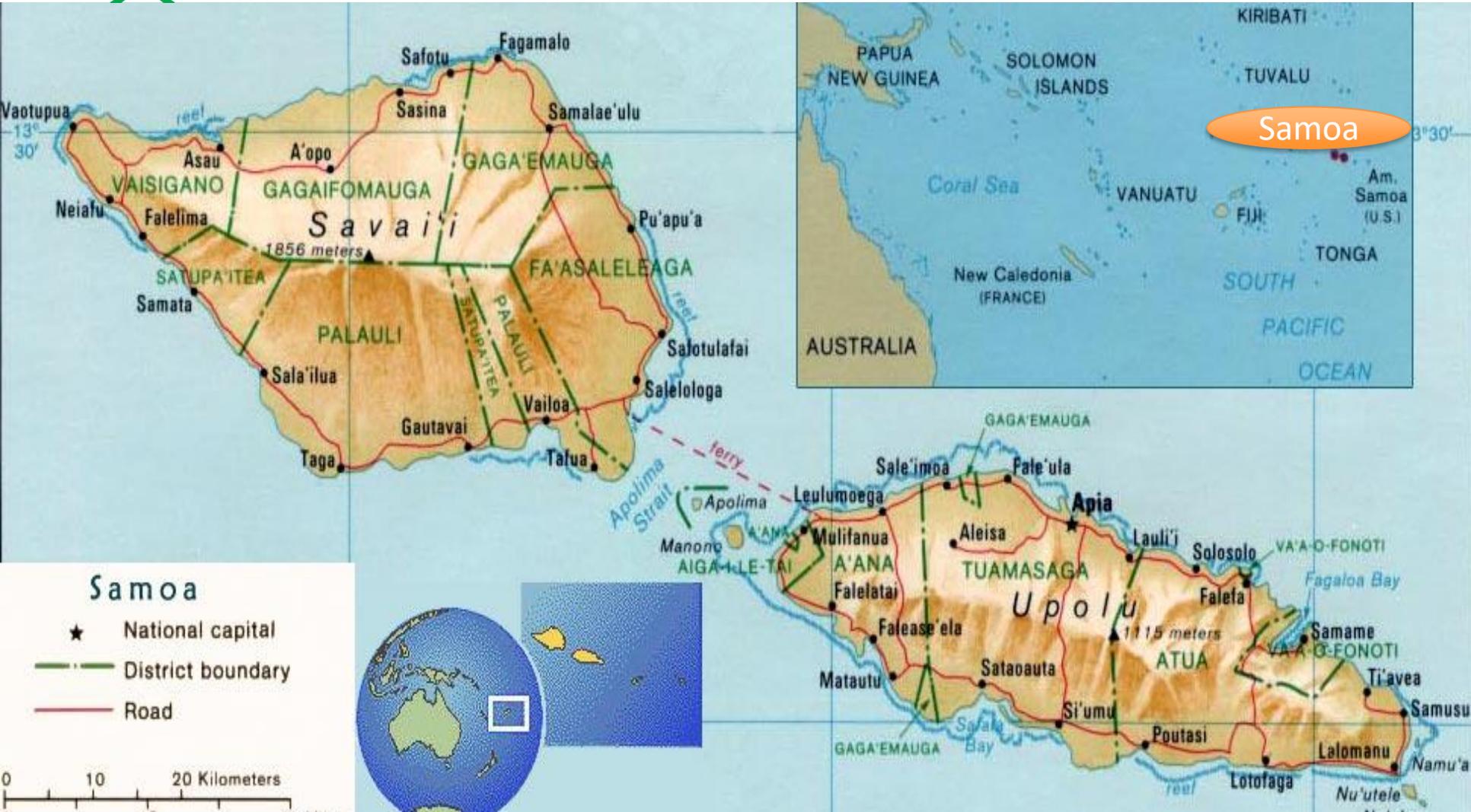
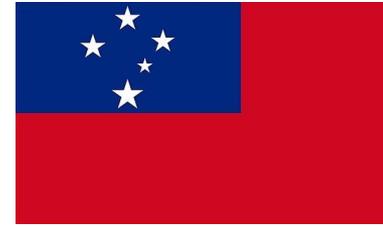
Gender and Institutional Development for Transformational Change: *PPCR Programming in Adaptive Social Protection*



Country Panel Discussion 2.1
22 May 2018



Geographical Location





PPCR Samoa

Investment Project 1

Enhancing the Climate Resilience
of the West Coast Road (WCR)

Implemented by Land Transport
Authority

• USD15million

Investment Project 2

Enhancing the Climate Resilience
of the Coastal Resources and
Communities (ECR)

Implemented by Ministry of
Natural Resources and
Environment

• USD14.6million



Key Outcomes

- **strengthened** contributions and leadership of women in disasters and increase their resilience.
- **recognized** the role of women in ensuring sustainable livelihood and by encouraging the equal participation of women in capacity building.
- Expanded and strengthened national systems/processes e.g. CSSP
- Strengthened women's groups
- Improved women's leadership and decision making opportunities

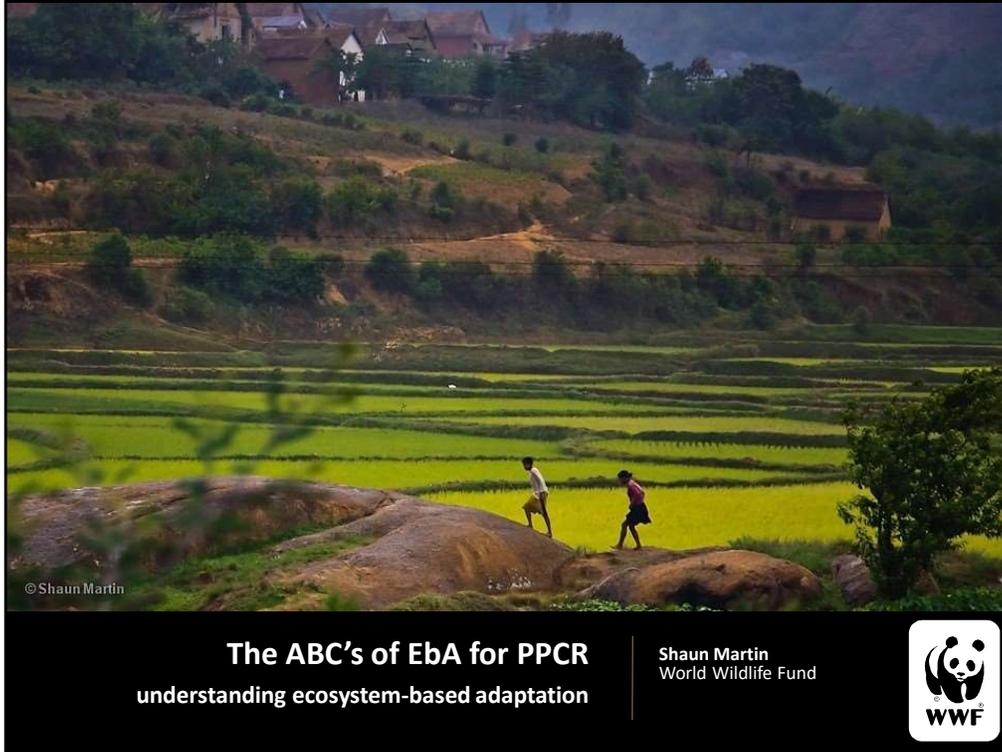
Innovations

- Education and capacity building programs
- Building codes
- Spring Pools
- Tourist facilities
- Roads
- Manage sand mining

Success Factors



- CIM Plan Process- integrated multi-sectoral planning best linked to sector plans/national plans
- Follow one government-much more improved and efforts collaboration, led by MWCSD
- Strengthened systems



The ABC's of EbA for PPCR
understanding ecosystem-based adaptation

Shaun Martin
World Wildlife Fund



Good morning. It is a pleasure for me to be here before all of you today.

EbA Definition

The use of biodiversity and ecosystem services as part of an overall strategy to help people adapt to the adverse effects of climate change.

Convention on Biological Diversity, 2009

There is a very long and complicated definition of EbA that was adopted by the Convention on Biological Diversity in 2009.

For today's purposes we will simply use the core of this definition that says, "Ecosystem-based adaptation is the use of biodiversity and ecosystem services as part of an overall strategy to help people adapt to the adverse effects of climate change."

What is an ecosystem?

Today, we are here to discuss a specific type of climate change adaptation – ecosystem-based adaptation, which I will sometimes refer to as “EbA.”

But before we talk about ecosystem-based adaptation, we must first understand what an ecosystem is and the services that ecosystems provide to us.



Ecosystems are simply a community of organisms that interact with one another and their physical environment.

We often forget that people are important parts of ecosystems, but people are indeed organisms that interact with other organisms and our physical environment.

And you may never hear a conservationist say that man-made infrastructure is part of an ecosystem, but it is. Infrastructure is part of the physical environment that living things interact with. Which is why it is so important we consider the impacts of infrastructure on ecosystem function and services.



People can either protect ecosystems, manage and use them wisely, or unfortunately, sometimes destroy them altogether.

**What is an ecosystem
service?**



It is important that we do not degrade ecosystems to the point where they no longer function.

This is because healthy ecosystems provide ecosystem services to people.

An ecosystem-service is a benefit that people derive from ecosystems. There are many examples.



Forests, for example, provide us with not only timber, but also help regulate water flows, prevent soil erosion, improve soil quality, store carbon, which is important for helping fight climate change, and provide habitat for species that are important to us for cultural and economic reasons.

The beauty of forests and the wildlife that inhabits them can also provide a source of income through ecotourism.

Clearing confusion around EbA

There has been some confusion around EbA among the conservation, sustainable development and other sectors as to what exactly EbA is and what it is meant to achieve.

In the next few slides I will try to clear some of this confusion so we all have a common understanding of what we mean when we say, “Ecosystem-based Adaptation.”

nature and adaptation



ecosystem-centric
adaptation



ecosystem-based
adaptation



ecosystem-friendly
adaptation

Many people believe that anything that has to do with nature and climate change adaptation can be called EbA. But this is not the case.

In fact, I believe there are at least three ways we can think about nature and adaptation – ecosystem-centric adaptation, ecosystem-based adaptation and ecosystem-friendly adaptation. Let's look at these closer.



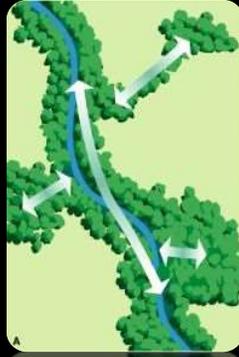
Ecosystem-centric adaptation helps nature so that it can adapt with the changing climate. You might also hear this approach referred to as adaptation for ecosystems or adaptation of ecosystems.

While many may call this approach “EbA” in fact it is not.

ecosystem-centric adaptation



identify climate
refugia



provide movement
corridors



climate-smart
restoration

Ecosystem-centric adaptation begins by looking at how climate change is affecting wildlife and ecosystems, and taking action to help species and ecosystems adapt to that change.

Success is measured in terms of biodiversity and ecosystem outcomes.

Some examples include identifying and protecting climate refugia, which are areas that are expected to experience the least impacts from climate change.

As species need to migrate to track suitable climates for their existence, we can build movement corridors or natural areas that facilitate their migration from one place to another.

And we can rethink how we restore natural areas by choosing species that are likely to do well in the future rather than what has done well in the past.



Unlike ecosystem-centric adaptation, ecosystem-friendly adaptation helps people adapt to climate change.

We do this in a way that does little or no harm to nature.

Success is measured in terms of the reduction of the vulnerability of people and the lack of damage to the environment.

Unlike ecosystem-based adaptation, ecosystem-friendly adaptation does not use biodiversity or ecosystems but rather it helps people adapt with minimal impact on the environment.

ecosystem-friendly adaptation



seed banks



rainwater
harvesting



fog catchers

Some examples of ecosystem-friendly adaptation might include seed banks for farmers to increase the number of suitable crops available to them under different climatic conditions,

or harvesting rainwater to save it for times of drought,

or one of my favorite examples, fog catchers which are used in mountainous areas to capture water from the air and use it for watering crops, trees or even as drinking water.

Fog catchers can, like rainwater harvesting, can provide people with access to water as rainfall becomes unreliable.

None of these approaches use natural, living ecosystems to help people adapt, but they are effective methods that do not harm ecosystems.



So far we have looked at what EbA is *not*.

What, then does EbA, look like?

We have already said that EBA helps people adapt to the changing climate by using nature and sound natural resource and land management principles to ensure that needed ecosystem services are available.

ecosystem-based adaptation



use wetlands to
protect communities
from flooding due to
increased heavy rainfall



restore forests on
slopes to prevent soil
erosion due to
increased rainfall



maintain dunes to
protect coastal
development from
sea level rise

Some examples of ecosystem-based adaptation might include using wetlands to help prevent flooding from increased rainfall for nearby communities

Or restoring forests to prevent soil erosion from increased heavy rainfall for agricultural communities

Or maintaining sand dunes to protect coastal communities from sea level rise

Note that many of these options look a lot like ecosystem-centric adaptation, but there is one important difference.

Ecosystem-centric adaptation is designed to help biodiversity adapt.

Ecosystem-based adaptation is intended to help people adapt.



EbA begins with identifying the vulnerabilities of people in a changing climate

It is important to remember that EbA *begins* by asking what people to reduce their vulnerability to the changing climate...

Residents collect sandbags to protect their houses against Typhoon Haiyan in Vietnam's central Da Nang city, on November 9, 2013. (Reuter: Duc Hien)



And then finding ways that ecosystems can help reduce those vulnerabilities.



Unlike traditional hard, infrastructure solutions to adaptation, ecosystem-based adaptation can provide a host of “co-benefits” for people. For example, in EbA we might use forests to protect communities from soil erosion as rainfall becomes more intense. But along with that service, people will also receive benefits from the many other benefits that forests provide.

Is it EbA?

criteria for ecosystem-based adaptation



**climate
change**



people



nature

So to summarize, here's an easy way to determine if something is ecosystem-based adaptation or not.

First, the motivation for EbA must be to help people.

Second, all adaptation, including EbA, must reduce vulnerabilities to changes in climate and the effects of those changes.

Finally, EbA must use nature to help people reduce their vulnerabilities.

Ecosystem-based adaptation requires all three of these components.

If any are missing, we cannot consider a strategy as ecosystem-based adaptation.

criteria for ecosystem-based adaptation



**climate
change**



nature

If people are not at the center of the adaptation strategy, this would be not be EbA but rather ecosystem-centric adaptation or adaptation of ecosystems.

criteria for ecosystem-based adaptation



**climate
change**



people



If we aren't using nature to help people adapt, then although a strategy might be adaptation, it's not ecosystem-based adaptation.

criteria for ecosystem-based adaptation



people

nature

And probably most importantly, while there are many ways that nature can help people, if we aren't using nature specifically to reduce vulnerability of people to *climate change*, then we are not practicing adaptation.

If so-called adaptation strategy is not informed by looking at climate trends and projections and a climate change vulnerability assessment, then it is not probably climate change adaptation.

criteria for ecosystem-based adaptation



climate
change



people



nature

So to summarize, here's an easy way to determine if something is ecosystem-based adaptation or not.

First, the motivation for EbA must be to help people.

Second, all adaptation, including EbA, must reduce vulnerabilities to changes in climate and the effects of those changes.

Finally, EbA must use nature to help people reduce their vulnerabilities.

Ecosystem-based adaptation requires all three of these components.

If any are missing, we cannot consider a strategy as ecosystem-based adaptation.

part of an overall strategy

EbA as a standalone approach will not achieve its goals



ecosystem-centric
adaptation



ecosystem-based
adaptation



ecosystem-friendly
adaptation

Many people believe that anything that has to do with nature and climate change adaptation can be called EbA. But this is not the case.

In fact, I believe there are at least three ways we can think about nature and adaptation – ecosystem-centric adaptation, ecosystem-based adaptation and ecosystem-friendly adaptation. Let's look at these closer.

case studies



GAMBIA

Large-scale Ecosystem-based Adaptation in the Gambia River Basin: developing a climate resilient, natural resource based economy





EST. IMPLEMENTATION PERIOD
6.0 YEARS

\$25.5m

Total project investment



57.8k

BENEFICIARIES

Anticipated number of people with increased resilience

criteria for ecosystem-based adaptation



increased
drought and
floods



rural people



restore
mangroves
and forests

Droughts and floods are increasingly severe, resulting in reduced agricultural production and unsustainable extraction of resources from forest ecosystems by rural households... Implementing Ecosystem-based Adaptation (EbA) is a significant part of this strategy, and its implementation will be enabled through the GCF investment. EbA will both protect the environment and facilitate the development of the sustainable, natural resource-based economy to the benefit of local communities. EbA will be integrated into planning at national, district and village levels. Agricultural landscapes and degraded ecosystems including forests, mangroves and savannahs will be restored using climate-resilient tree and shrub species across an area of at least 10,000 hectares. This will be complemented by the establishment of natural resource-based businesses managed by local communities.



NEPAL

Hariyo Ban Project



criteria for ecosystem-based adaptation



**heavy rainfall
and
landslides**



**mountain
communities**



**restore
vegetation on
steep slopes**





Landslide sites were rehabilitated using bioengineering, in combination with 'hard' measures like gabions where needed. This activity intensified after the 2015 earthquake caused many landslides. These sites were often at risk of further slides as a result of extremely heavy rainstorms.

EbA current state of play

1. EbA is gaining attention. Incorporated in many country NDCs to Paris agreement
 2. Increased funding, especially from GCF and govt of Germany
 3. More sectors want to play a part.
- Still lots of confusion of definition, purpose and application
 - Disparate applications of EbA mean evidence is hard to build
 - More money means more re-labeling existing conservation, sustainable development and humanitarian work
 - Dedicated funds keep EbA from being holistic and integrated into socio-economic development plans
 - Different sectors have different goals, values, stakeholders and technical languages
 - Different sectors work at different scales and time horizons

thank you



I thank you and wish you all great success.



Economics (Cost-benefit analysis) of Ecosystem-based Adaptation

**By. Dr. Benoit Laplante, Consultant
Climate Change Adaptation Economist
PPCR Countries Meeting
Manila, May 21-24**



Outline of Presentation

1. **A gentle reminder**
2. **CBA applied to EBAs**
3. **Selected challenges**

Outline of Presentation

- 1. A gentle reminder**
- 2. CBA applied to EBAs**
- 3. Selected challenges**

A Gentle Reminder

Purpose of economic (cost-benefit) analysis:

To assess the impacts of an investment project (or policy change) on *society's welfare* (not on profits, and not on economic growth).

Question:

What's likely to happen to society's welfare with this project (baseline being: society's welfare without the project – recognizing that society's welfare in the future will not be the same as today even without project)?

OR

Is this investment aimed at increasing resilience to climate change, or is this investment aimed at climate-proofing an investment project a good use of society's scarce resources?



A Gentle Reminder

Purpose of economic (cost-benefit) analysis:

To assess the impacts of an investment project (or policy change) on *society's welfare* (not on profits, and not on economic growth).

This is the sort of analysis we do when an investment project is under consideration by a multi-lateral development bank, or by a climate fund such as the Green Climate Fund.

A Gentle Reminder

Overall approach:

➤ Step 1: Identify and quantify impacts

Construct a scenario of how the country of interest might look like *without* the project.

Construct a scenario of how the country of interest might look like *with* the project.

Difference between the two scenarios are the impacts of the project.

A Gentle Reminder

Overall approach:

➤ **Step 1: Identify and quantify impacts**

Important to recognize:

Some of these impacts will be positive and some will be negative.

They are all measured in different units (e.g. more houses protected, loss of lives reduced, more carbon dioxide sequestered, more fisheries, etc.).

They take place at different time periods in the future.

A Gentle Reminder

Overall approach:

➤ Step 2: Transform these impacts into same unit

A convenient unit of measurement is \$.

Hence, the negative impacts of the project are transformed into costs, and the positive impacts are transformed into benefits.

➤ Step 3: Transform these impacts into same time period

We then use a discounting technique to transform all monetized impacts over time into a comparable unit of measurement, i.e. in present value terms.

A Gentle Reminder

Overall approach:

➤ **Step 3: Decision rule**

If only 1 project or design option:

Recommend adopting the project if $NPV > 0$.

Recommend rejecting the project if $NPV < 0$.

If many projects or options (and only 1 can be selected):

Recommend adopting the project or option with largest NPV provided that it is positive.

Outline of Presentation

1. A gentle reminder
2. CBA applied to EBAs
3. Selected challenges

CBA Applied to EBAs vs Non EBAs

Standard statement

“EBAs work, are cost-effective, and provide **a myriad of other benefits.**”

“Street trees and green spaces provide cooling, shade, cleaner air, and noise reduction, making core urban areas more livable and bringing **multiple economic benefits.**”

“Bioengineering techniques for slope stabilization **bring other benefits,** including improved water quality, increased wildlife habitat, and improved aesthetics.”

Most certainly correct but not very useful especially when an EBA option is compared to a non-EBA option.

In fact, even in the absence of site specific information, we can go further than that.



CBA Applied to EBAs vs Non EBAs

Situation 1

Suppose the Adapt benefits are the same. Suppose also that:

$$\text{Cost EBA} < \text{Cost Non EBA}$$

Then, there is no need to estimate co-benefits. It must be the case that:

$$\text{NPV EBA} > \text{NPV Non EBA}$$

A least-cost analysis would reach the same outcome.

CBA Applied to EBAs vs Non EBAs

For example:

Protecting near-shore oil and gas pipelines with oyster reef breakwaters cost approximately \$0.6 million per km, while standard rock breakwaters cost \$1.0 to \$1.8 million!¹

Installing shoreline edge wetlands with sills (living shorelines) cost about 10% less than bulkheads and riprap solutions.²

Hence:

Look for opportunities where EBAs prevail over non EBAs purely on the ground of cost effectiveness; in those circumstances, uncertainty pertaining to the nature and extent of co-benefits will not be consequential.

¹ Dow, SwissRe, Shell, Unilever, and the Nature Conservancy. 2013. *Green infrastructure case studies*.

² Chesapeake Bay Foundation 2007. *Living Shorelines for the Chesapeake Bay Watershed*.

CBA Applied to EBAs vs Non EBAs

Situation 2

If:

$$\text{Cost EBA} > \text{Cost Non EBA}$$

Or if:

$$\text{Adapt benefits of EBA} < \text{Adapt benefits of non EBAs}$$

Then we need an understanding of the nature and extent of the co-benefits.

What are “all those other benefits”? What’s their economic value?

Outline of Presentation

1. A gentle reminder
2. CBA applied to EBAs vs Non EBAs
3. Selected challenges
 - Economic
 - Scientific
 - Institutional

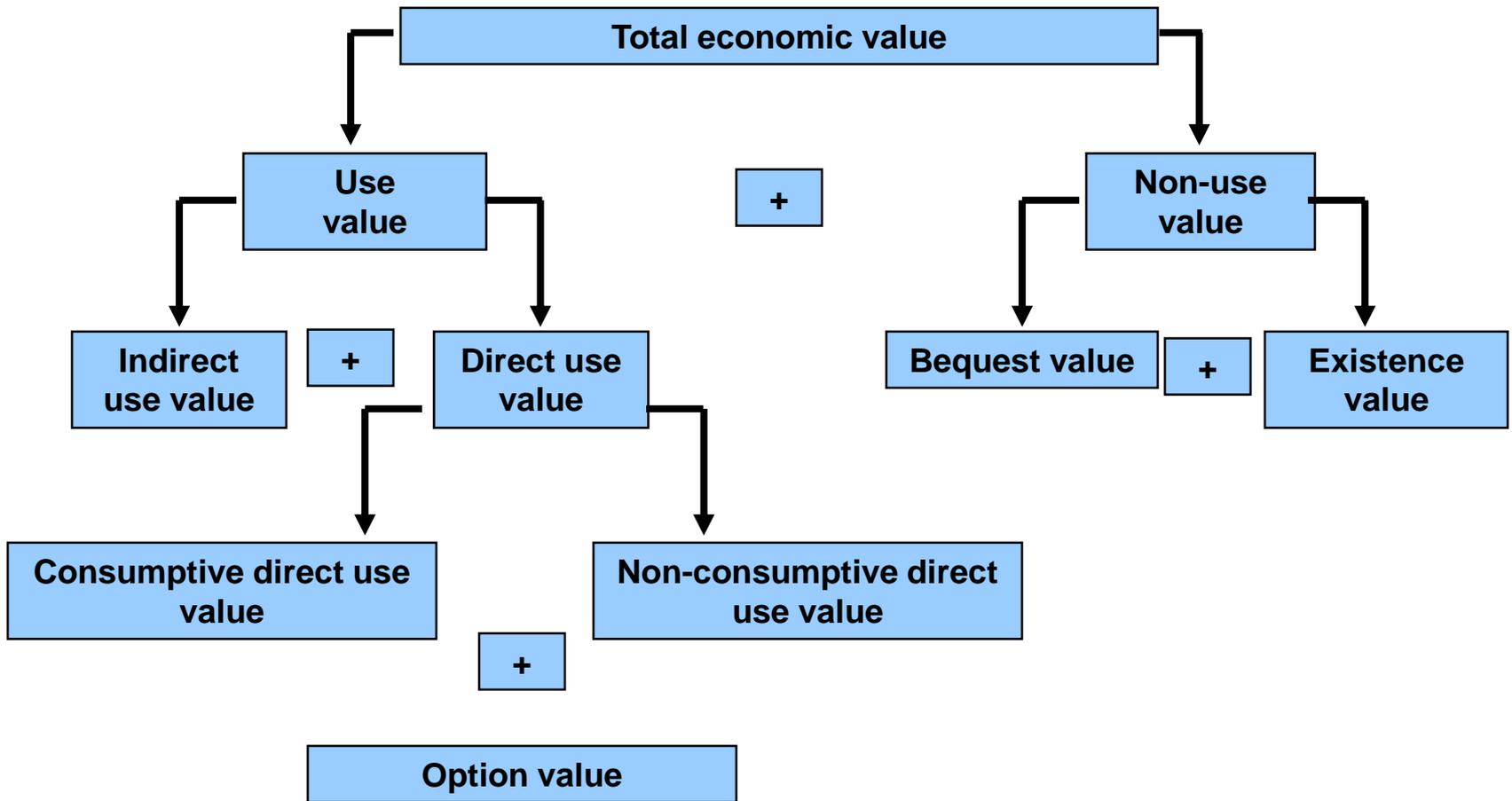
Selected Challenges

Expertise challenge: Economic analysis

Many positive impacts of EBA may involve goods and services for which there is no readily available economic value (e.g. carbon sequestration services, water regulation services, etc.). Hence, we don't "readily" know the benefit of improving the flow or quality of those goods and services.

A challenge, but not a methodological difficulty.

Selected Challenges



Selected Challenges

Methodology	Approach	Application	Data required	Limitations
Change in Productivity	Impact of change on produced goods	Any impact influencing goods production	Change in service; impact on production, value	Data scarce
Cost of Illness (human capital)	Impact on health indicators	Any impact influencing health	Change in service; impact on health, value	Dose-response functions often lacking
Replacement Cost	Market costs of replacing lost goods, services	Any loss of goods or services	Extent of loss; costs of replacing them	Tends to over-estimate costs
Travel Cost	Derived demand curve	Recreation	Survey to record travel costs, locations	Limited to recreational benefits
Hedonic Pricing	Discrete contributions of environmental factors	Air quality, aesthetics, cultural benefits	Prices, characteristics of composite goods	Requires huge, high quality data sets
Contingent Valuation	Ask WTP for specific services	Any service	Survey presenting scenario, recording stated WTP	Many sources of bias in responses; hypothetical;
Choice Modeling	Ask preferences among options	Any service	Survey	As above
Benefits Transfer	Transfer from one context to another	Wherever suitable analogues exist	Valuation exercise at a similar site	Misleading if analogue not appropriate

Source: World Bank/UCN, 2004

Selected Challenges

A challenge, but not a methodological difficulty.

There is now a very large literature on the economic value of various types of ecosystems (of the goods and services produced by various types of ecosystems).

Selected Challenges

For example:

	Total Economic Value (USD per ha)		
	Min	Mean	Max
Evergreen forest	7,241	17,578	27,916
Deciduous forest	6,665	13,306	19,946
Mangroves	9,692	20,324	30,956
Wetland	9,906	12,776	15,646

Source: USAID. 2015. *Ecosystem Value Estimation*.

The above estimates include the economic value of carbon sequestration:

Economic value of carbon sequestration =

Number of hectares of ecosystems x Tons of carbon per hectare x
Social cost of carbon



Selected Challenges

For example:

	Mangrove Sediment	Unvegetated Marsh	Salt / Brackish Marsh	Freshwater Woodland	Freshwater	Total
North America						
Quantity (1)	510	16,906	2,575	192	3,258	22,931
Value (2)	30,014	550,980	29,810	1,728	64,315	676,846
Value per ha	59	33	12	9	20	30
Latin America						
Quantity	4,224	9,223	1,707	289	1,010	12,230
Value	8,445	104,782	3,129	531	6,125	123,012
Value per ha	2	11	2	2	6	10
Europe						
Quantity	0	2,374	500	66	330	3,271
Value	0	268,333	12,051	253	19,503	300,141
Value per ha	0	113	24	4	59	92
Asia						
Quantity	1,439	8,011	1,027	2	657	9,697
Value	27,519	1,617,518	23,806	29	149,597	1,818,534
Value per ha	19	202	23	15	228	188
Africa						
Quantity	3,686	4,632	487	48	310	5,477
Value	84,994	159,118	2,466	334	9,775	256,687
Value per ha	23	34	5	7	32	47
Australasia						
Quantity	2,253	4,641	461	167	4,090	9,361
Value	34,696	147,779	2,120	960	83,907	269,462
Value per ha	15	32	5	6	21	29
World						
Quantity	12,112	45,788	6,758	765	9,657	62,967
Value	185,667	2,848,575	73,382	3,836	333,223	3,444,682
Value per ha	15	62	11	5	35	55

Selected Challenges

For example:

The economic value of oyster reef services other than oyster harvesting (e.g. wave attenuation and water quality improvement) have been estimated to range between \$13,585 and \$244,530 per acre per year.¹

TEEB approach; World Bank WAVES; InVEST, etc.

Numerous sources of information can be used.

Issue:

Using numbers from other studies to apply to specific project site.

This is a well-known challenge with any benefit-transfer exercise, and there is a wide literature providing guidelines on how to do benefit-transfer.

¹Grabowski, J.H. et al. 2012. Economic valuation of ecosystem services provided by oyster reefs. *BioScience*, 62(10), 900-909.

Selected Challenges

A potentially important gap:

IPCC's Fifth Assessment Report warns:

“In urban areas, climate change is projected to increase risks for people, assets, economies and ecosystems, including risks from heat stress (...)”

As the region is increasingly urbanizing, heat stress is likely to be a significant issue.

The positive impacts (e.g. reduced incidence of heat strokes) - and therefore the economic benefits - of green spaces in urban settings are not well documented.

However, we do have the tools to undertake such documentation.



Selected Challenges

Overall message on the economic side:

Do we know everything?

Definitely not.

Selected Challenges

Overall message on the economic side:

Do we know everything?

Definitely not.

Would we like to know more?

Definitely yes.

Do we know enough to populate an economic analysis?

Definitely yes.

Selected Challenges

Expertise challenge: Scientific

Challenge 1

Engineers sign off on designs of adaptation options and their performance. Precision is needed (liability issues, etc.). For many “hard” solutions (e.g. seawalls) engineering guidelines are available (materials, designs, siting, etc.). The lack of guidelines for designing EBA limits incentives to engage with such approaches.

The scientific challenge is slowly being addressed.

Living Shorelines Academy (www.livingshorelinesacademy.org)

EcoShape Consortium (www.ecoshape.nl/en_GB/guidelines.html)



Selected Challenges

Expertise challenge: Scientific

Challenge 2

While precision is not necessarily needed, nonetheless scientific empirical evidence of the impacts of EBA have to be identified and to some extent quantified.

In other words, the (positive) impacts of EBA cannot be monetized and assessed against alternatives if those impacts have not been identified and to some extent quantified.

Selected Challenges

Expertise challenge: Scientific

Challenge 2

“Monetary values of project benefits and costs, associated with outputs and inputs, must be identified in the years in which they arise. Any external effects affecting the rest of the economy but not reflected in market transactions by the project itself—such as adverse or beneficial environmental impacts—where they can be identified**, must also be included.” (ADB. 2017. *Guidelines for the Economic Analysis of Projects*).**

Selected Challenges

Challenge: Institution (Conduct of CBA)

Time horizon for CBA is generally set to coincide with the duration of a loan or the duration of a concession. It is rarely set to coincide with the duration of the impacts of the project. The benefits of EBA extending beyond this time horizon will not be captured.

“Project benefits and costs should be identified to cover both the implementation period of major investments and operating years known as the project operating life. The number of operating years to be included in the analysis is usually determined by the technical life of a project, which is the number of years of normal operation before a project is fully worn out.” (ADB. 2017. *Guidelines for the Economic Analysis of Projects*).

Selected Challenges

Challenge: Institution (Conduct of CBA)

The use of a high discount rate is conducive to selecting project or adaptation options which deliver benefits in the short term rather than in the longer term. To the extent that the co-benefits of EBA may take place many years after implementation, those benefits may be small in present value terms.

Selected Challenges

Challenge: Institution (Conduct of CBA)

“ADB uses a discount rate of 9% as the minimum required EIRR to accept or reject a project and to choose the least-cost (or most efficient) project option for all investment projects (...).

But for (...) projects that primarily generate environmental benefits (such as pollution control, protection of the ecosystem, flood control, control of deforestation, and disaster risk management), a lower discount rate of 6% can be applied as the minimum required EIRR. When the lower rate is used, a clear rationale should be provided.” (ADB. 2017. *Guidelines for Economic Analysis of Investment Projects*).

Selected Challenges

Challenge: Institution (Conduct of CBA)

Typically, the economic analysis of a project is performed *after* project design, and does not inform project design.

A Final Thought

The economic analysis of an investment project, including of climate-proofing option, provides information solely about the economic efficiency of the investment, and about nothing else.

If economic efficiency must (arguably) be among the criteria used to guide decision-making pertaining to investments, it is certainly not the only criterion that should be used.



Economics (Cost-benefit analysis) of Ecosystem-based Adaptation

**By. Dr. Benoit Laplante, Consultant
Climate Change Adaptation Economist
PPCR Countries Meeting
Manila, May 21-24**

