

Payment for Ecosystem Services (PES) for Climate Change and Disaster Risk Management

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CONTENT OUTLINE

- I. DRRM Challenges
 - I. Disaster Impact Estimates
 - II. Need for Apt Loss and Damage Accounting
 - III. Inclusivity in DRRM Planning and Budgeting
 - IV. Institutional Platform and Action
 - V. Fiscal Management
- II. Payment for Ecosystems Services for CC and Disaster Risk Mitigation and Adaptation
- III. Key Takeaways and Recommendations

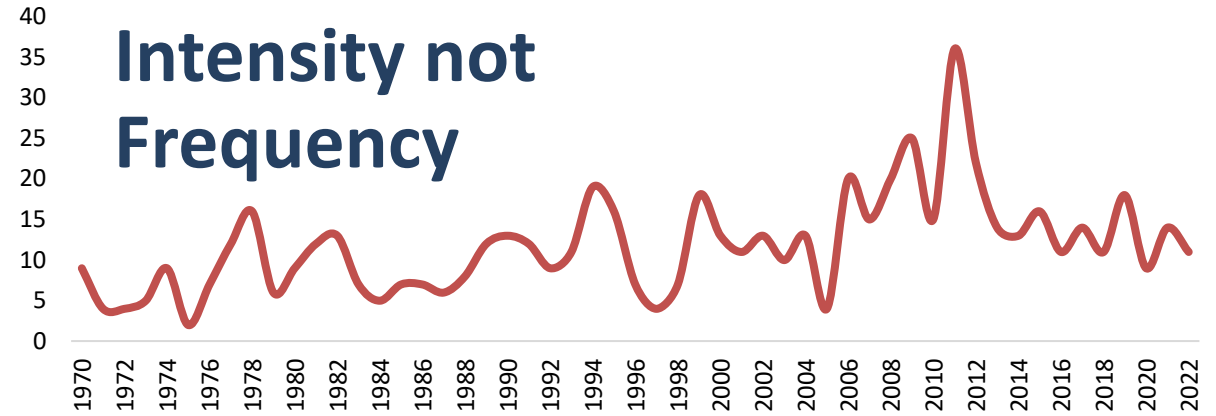
Environment Degradation Increases Climate change and anthropogenic risks

- Ecosystem condition declines by at least 4% per decade (UN 2019)
- PH tops 2022 World Disaster Risk Index (out of 193 countries); Extensive damages and casualties from disaster events
- Inefficient markets anchored on ES provision facilitate emergence of novel approaches, like payments for ecosystem services.

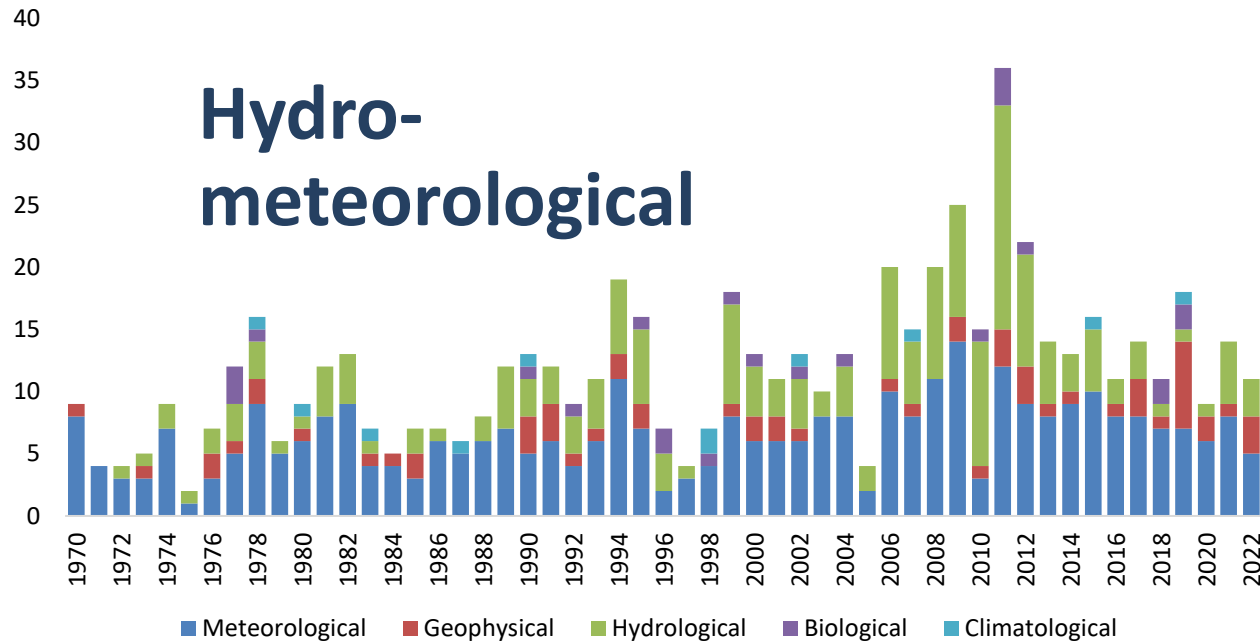


Natural Disasters in the Philippines, 1970-2022

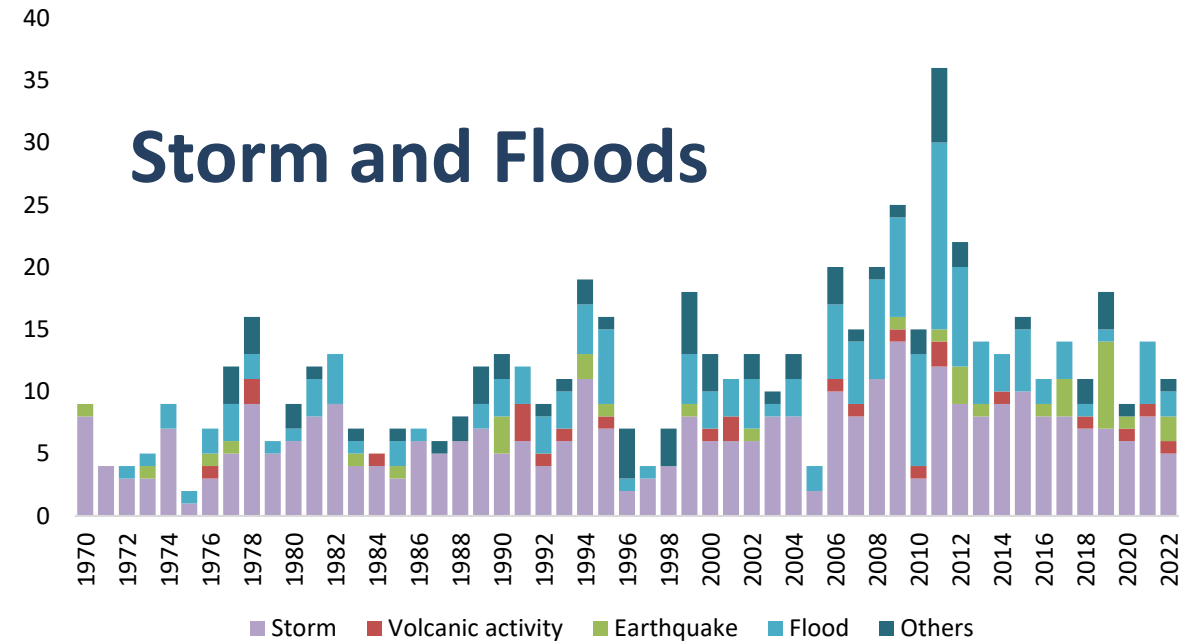
FREQUENCY OF NATURAL DISASTERS IN THE PHILIPPINES



NATURAL DISASTERS BY DISASTER TYPE



NATURAL DISASTERS BY SUBGROUP



Source: EMDAT

Note: Others include landslide, epidemic, drought, mass movement (dry), insect infestation, wildfire

Extensive Disaster Damages in the Philippines, 1905-2022

Greatest Damage from Hydro-meteorological events

Disaster group	Frequency	AID Contri (in '000 USD)	Deaths ('000)	Injuries ('000)	Affected ('000)	Homeless ('000)	Total affected (M)	Total damages (in '000 USD)
Meteorological	381	1,033,851.00	50.8	74.1	198,634.4	5,821.2	204.5	24,821,273.00
Geophysical	75	1,871.00	13.3	18.5	9,774.1	84.0	9.9	973,571.00
Hydrological	190	22,603.00	6.2	1.4	34,215.4	614.9	34.8	3,875,344.00
Biological	23	-	2.6	333.1	25.5	0.0	0.4	-
Climatological	11	-	0.0	0.0	6,751.2	0.0	6.8	148,852.00

Disaster subgroup	Frequency	AID Contri (in '000 USD)	Deaths ('000)	Injuries ('000)	Affected ('000)	Homeless ('000)	Total affected (M)	Total damages (in '000 USD)
Storm	381	1,033,851.00	50.8	74.1	198,634.4	5,821.2	204.5	24,821,273.00
Volcanic activity	30	1,651.00	3.0	1.2	2,570.7	79.3	2.7	301,525.00
Earthquake	42	220.00	9.9	17.3	7,203.4	4.7	7.2	672,046.00
Landslide	32	6,415.00	2.5	0.5	305.8	23.0	0.3	33,281.00
Flood	158	16,188.00	3.7	0.9	33,909.6	591.9	34.5	3,842,063.00
Epidemic	-	-	2.6	333.1	25.3	0.0	0.4	-
Drought	-	-	0.0	0.0	6,750.9	0.0	6.8	148,852.00

Source: EM-DAT

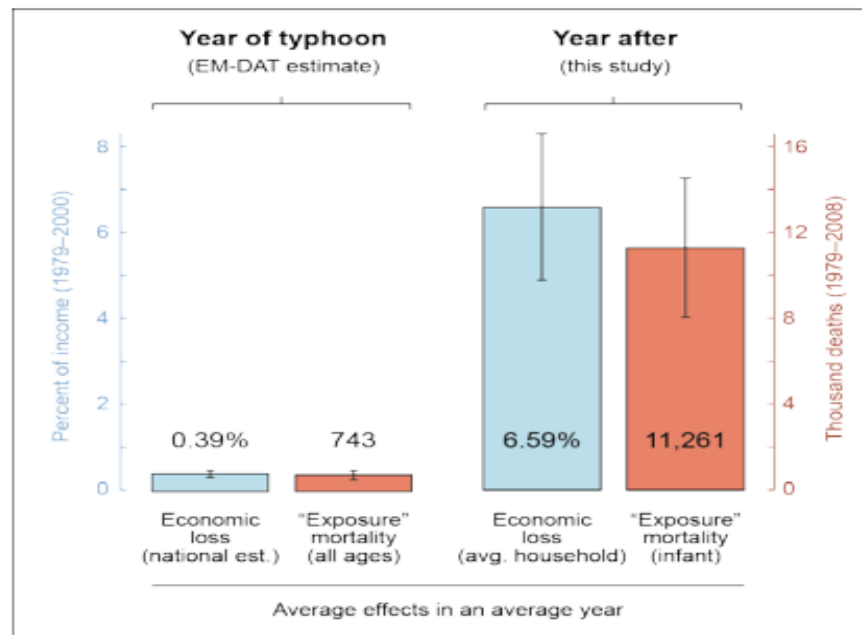
Poor Accounting of Short- and Long-run Socioeconomic Impacts of Disasters

SHORT RUN

- Direct impacts on death, **casualties, and destruction of property**
- Disruption of **productivity and product flows**
- Decrease in short-term **economic activity including residual lags**

LONG RUN

- Evidence vary across beneficial, adverse, or no effect. PH govt do not routinely collect panel **data pre- and post-disaster**.
- **Inter-generational Damages/ Impacts**. Severity of impact depends on nature of disaster, geographical area, economic structure, and population characteristics.
- **Creative / innovative post-disaster improvements and growth**.



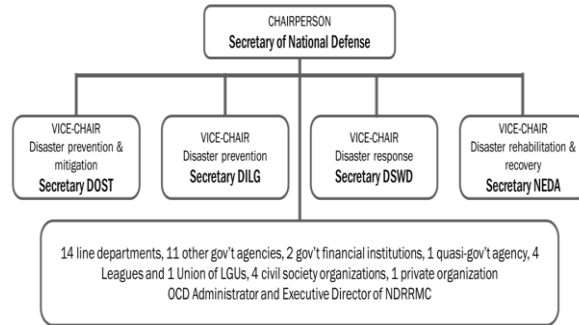
Source: Anttila-Hughes and Hsiang (2013).

Source: Jha, Martinez & Wang 2018; Brings et al. 2022

- **Long-term human and economic losses much larger than immediate losses**. Study posits that over a 25-year period, long-term losses exceeded by a factor of 15.
- World Bank and UN (2010) found that **prevention spending is more effective than post-disaster spending**. Prevented disasters can result to 26 million fewer people in extreme poverty each year (Hallegate et al. 2017)

DRRM paradigm shifted from reactionary to proactivity; major policies devolved functions to LGUs, but institutional structure, processes and action remain wanting

RA 10121 increased NDRRMC members from 19 to 44 members. Council to be replicated at subnational level (regional/province/LGUs)



RA 7160 / LOCAL GOVERNMENT CODE OF 1991

- LGUs utilize 5% of estimated revenue from regular sources during calamities; Enshrines local autonomy

RA 10121 / PHILIPPINE DISASTER REDUCTION AND MANAGEMENT ACT

- Established the National Disaster Risk Reduction and Management Council
- Introduced four thematic pillars: prevention and mitigation, preparedness, response, and rehabilitation and recovery
- Devolved DRRM functions at the local level, designated local DRRM offices
- Identified specific fund sources for DRRM at national and local levels

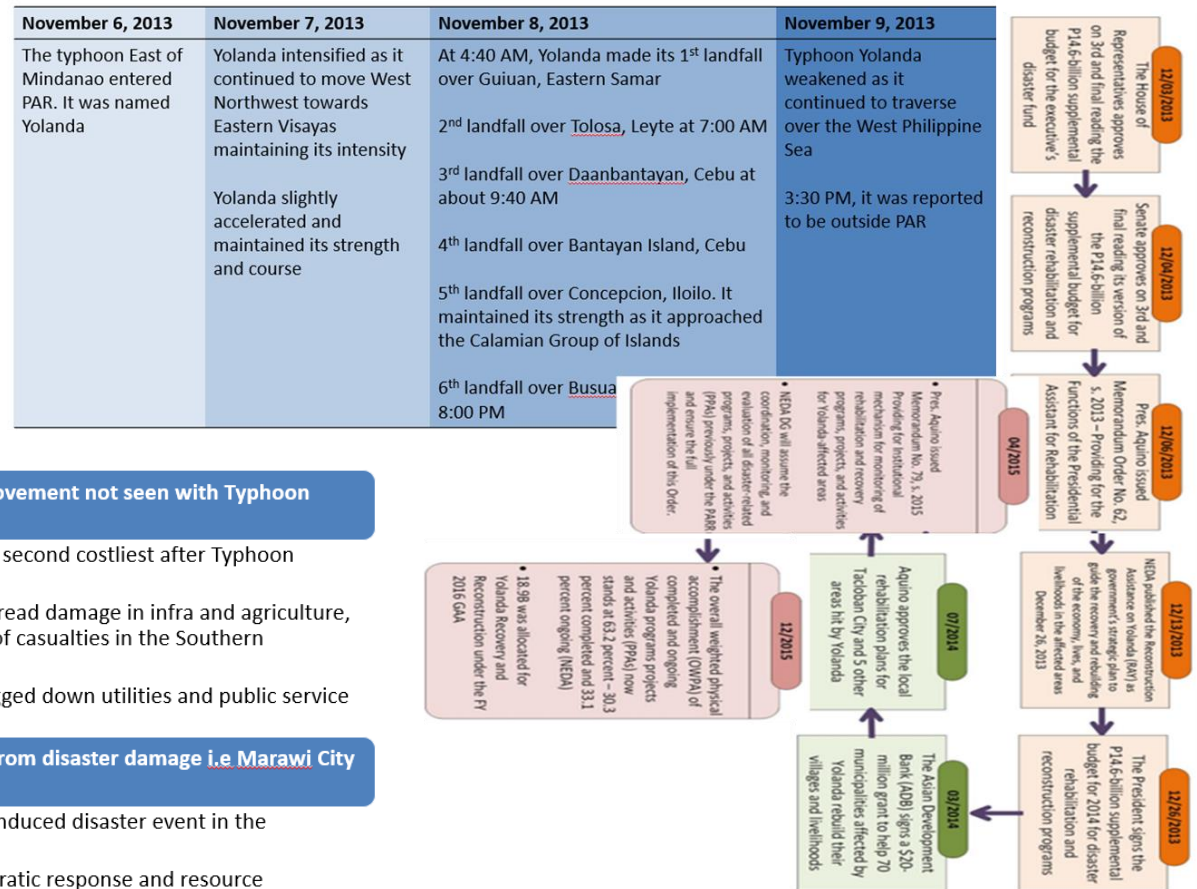
NDRRMC-DILG-DBM JMC 2013-01

- Provided details of allocation and utilization guidelines of LDRRMF

DILG MC 2015-77

- Mainstreaming CCA and DRR in local development planning

Timeline of Typhoon Yolanda



Substantial improvement not seen with Typhoon Odette (2011)

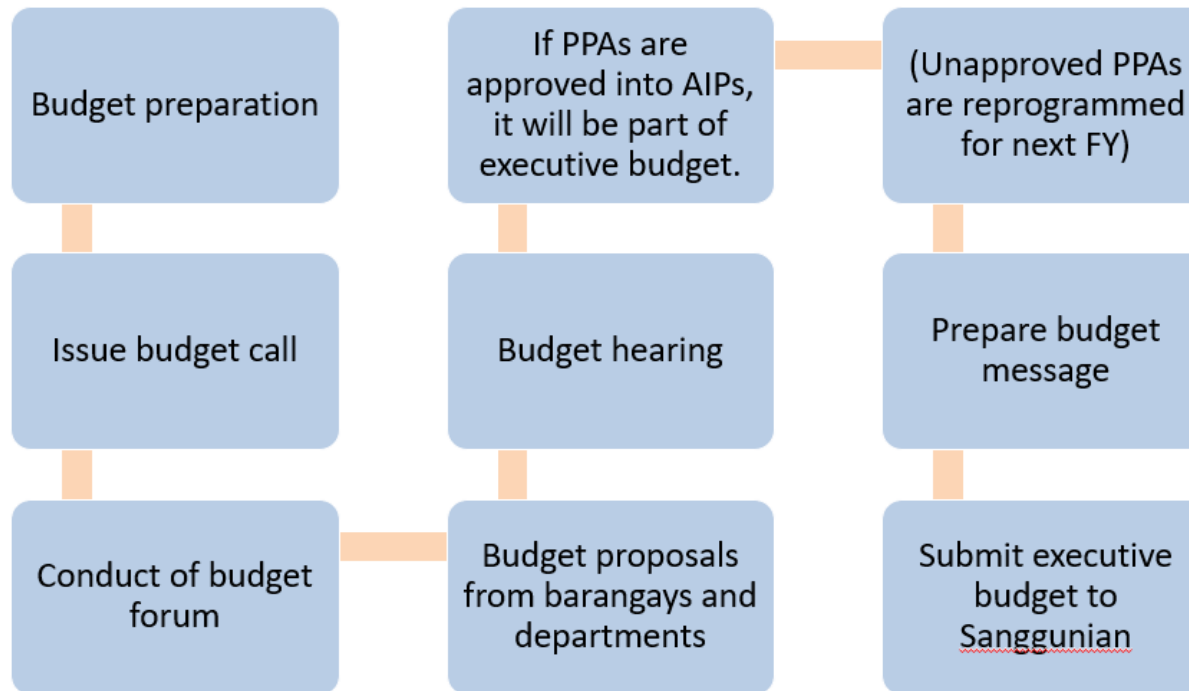
- Typhoon Rai as second costliest after Typhoon Haiyan
- Caused widespread damage in infra and agriculture, and hundreds of casualties in the Southern Philippines
- Extensively bogged down utilities and public service

Slow rebuilding from disaster damage i.e Marawi City Seige (2017)

- Costliest man-induced disaster event in the Philippines
- Tested bureaucratic response and resource mobilization

Weak inclusivity of National and Subnational budgeting processes

City/Municipal Chief Executives have fiscal control and dominate subnational decision-making

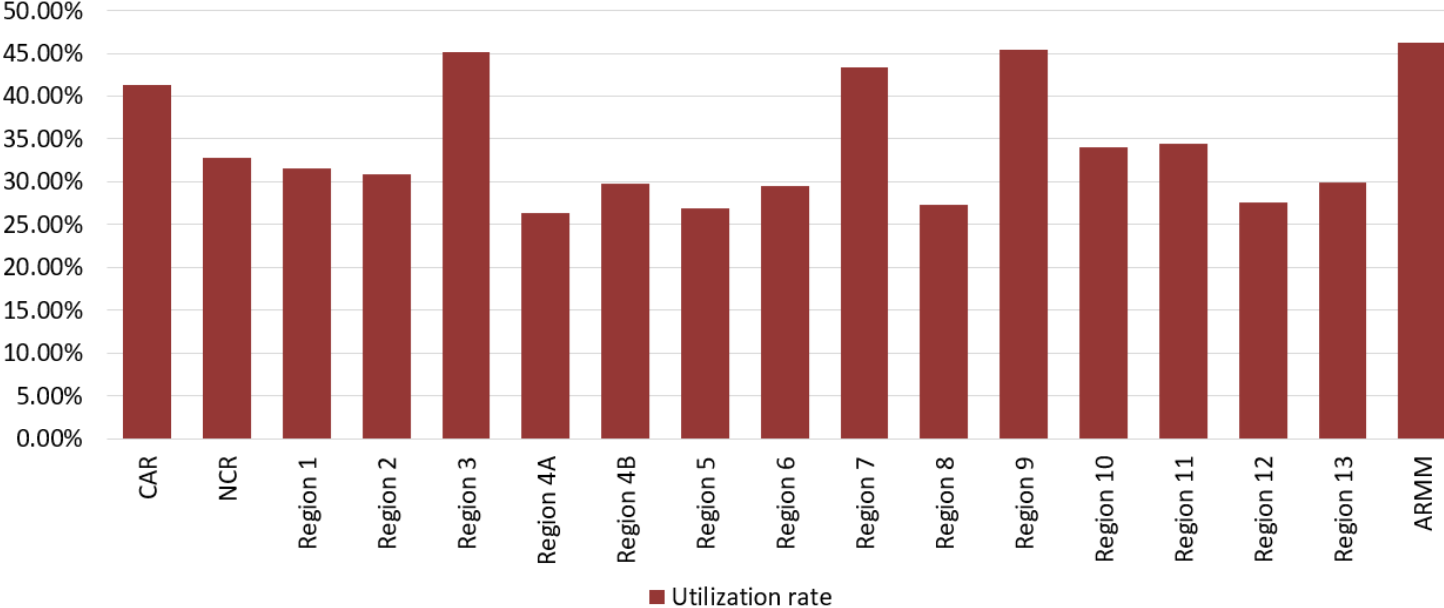


- Barangays may suggest PPAs during consultation. Proposals consolidated for budget hearing by SB.
- LDRRMO can propose DRR-related PPAs
- Local chief executives set the tone of local development plans, and eventual spending priorities
- Need to look at alignment of development plans across bureaucratic levels

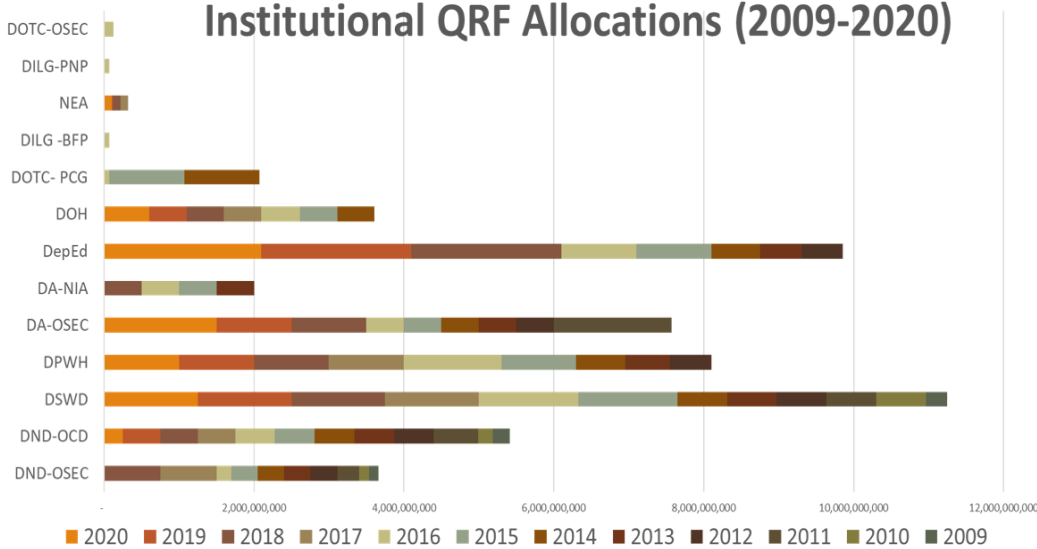
DRRM public investment lodged in various national and local funding

USER	SOURCE	PERCENT	QUALIFICATION	OTHER REMARKS
NGA	Appropriated budget		National DRRM Fund	GAA
			Activities considered under prevention and mitigation, and preparedness pillars	Mitigation fund
			Immediate assistance, relief and response after disasters	Quick response fund
	ODA		Grant or loan from external agencies e.g. ADB, UNDP, World Bank	
LGU	IRA/revenue	5%	Estimated revenue from regular sources during calamities	Local DRRM Fund
		70% of LDRRMF	Should reflect activities indicated in Annual Investment Plan; may be capital outlay or infrastructure (e.g. drainage, seawall)	Mitigation Fund
		30% of LDRRMF	Immediate assistance, relief and response after disasters e.g. relief goods	Quick response fund
	Special Trust Fund		Unexpended LDRRMF from previous years, support DRRM activities for the next five years	STF
	General fund		If STF remains unexpended, the fund will revert to GF	Can be used for non-DRRM programs
	20% Local Development Fund		LGU may program here other DRRM projects	
	People's Survival Fund		Intended for LGUs/NGOs/POs to implement climate adaptation projects	Annual application through CCC

Suboptimal Fiscal Management and Resource Mobilization; and Subnational DRRM Fund utilization is low, 2015-2019



Source of basic data: DILG-FDP



Source of basic data: DILG-FDP, GAA

Related DRRM Challenges

INSTITUTIONAL LEADERSHIP AND SUBNATIONAL STRUCTURE

*Need to strengthen national and subnational institutional platforms.
Augment National Leadership, LDRRMO, Staff*

FISCAL PLANNING AND BUDGETING

*Absence of aligned planning documents
Lack of comprehensive and baseline datasets to guide interventions*

RESOURCE MOBILIZATION AND PROCUREMENT

Availability of resources for DRRM and inefficient procurement process

FUND SOURCING AND UTILIZATION

Suboptimal funding facility and fund use particularly among local governments

WEAK M&E: FUND USE AND REPORTING

Weak reporting, accounting, of fund use and PPA progress

PUBLIC PARTICIPATION AND STAKEHOLDER REPRESENTATION

Insufficient public/stakeholder participation platforms for DRRM

Can PES support DRR CCA/M in the Philippines?

Defining Payments for Ecosystem Services

TRADITIONAL PES DEFINITION (*Wunder 2005, 2014*)



Voluntary transaction



Well-defined ecosystem service



At least one buyer



At least one seller



Conditionality

Wunder (2005) defines PES as a voluntary transaction in which an environmental service (ES) or a form of land use likely to secure that service is bought by at least one ES buyer from a minimum of one ES provider, if and only if the provider continues to supply that service (conditionality)

Muradian et al., (2010, p. 1205) considers “PES as a transfer of resources between social actors, which aims to create incentives to align individual and/or collective land use decisions with the social interest in the management of natural resources”.

Defining ecosystem services

PROVISIONING SERVICES

Products and material benefits obtained from ecosystems

REGULATING SERVICES

Benefits derived from regulating ecosystem processes and functions

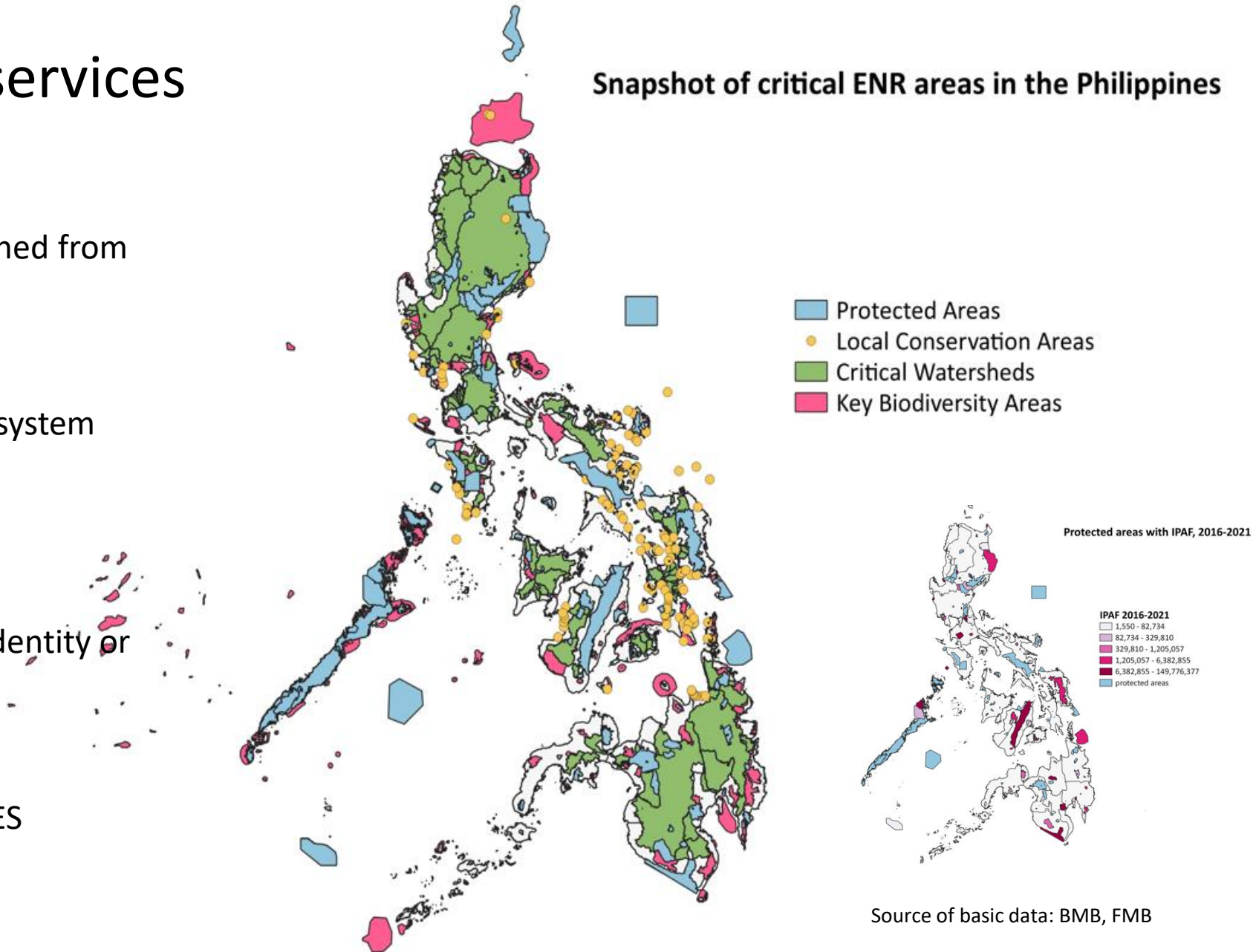
CULTURAL SERVICES

Nonmaterial benefits acquired from ecosystems, for aesthetics, cultural identity or spiritual well-being

SUPPORT SERVICES

Processes needed to produce other ES

Snapshot of critical ENR areas in the Philippines



Defining ecosystem services

	Forests	Oceans	Agricultural lands
Provisioning services	Food, fresh water, fuel, fiber	Food	Food, fuel, fiber
Regulating services	Climate regulation, flood regulation, disease regulation, water purification	Climate regulation, disease regulation	Climate regulation, water purification
Supporting services	Nutrient cycling, soil formation	Nutrient cycling, primary production	Nutrient cycling, soil formation
Cultural services	Aesthetic, spiritual, educational, recreational	Aesthetic, spiritual, educational, recreational	Aesthetic, educational

Source: Millennium Ecosystem Assessment 2005

Motivations and enabling conditions

MOTIVATIONS

SELLERS

- ✓ Natural capital protection
- ✓ IPs to continue traditional practices
- ✓ Local communities to have livelihood

BUYERS

- ✓ Access to ecological services (water supply, aesthetic values, entertainment and recreation)
- ✓ Access to natural capital (land, water resources, forests)
- ✓ Disincentive to policy noncompliance

INTERMEDIARY

- ✓ Knowledge building and management
- ✓ Shared goals and interests (CSOs, NGOs, development organizations)
- ✓ Proper resource stewardship and policy compliance (NGAs, LGUs)

ENABLING CONDITIONS

- ✓ Trust and transparency
- ✓ Capacity to pay and provide service from parties
- ✓ Influential champion as intermediary/mediator
- ✓ Well-defined boundaries
- ✓ Baseline data
- ✓ Governance structure
- ✓ Clear purpose addressing threats or risks

Source: Huber-Stearns et al. 2017

Most domestic arrangements are PES-like

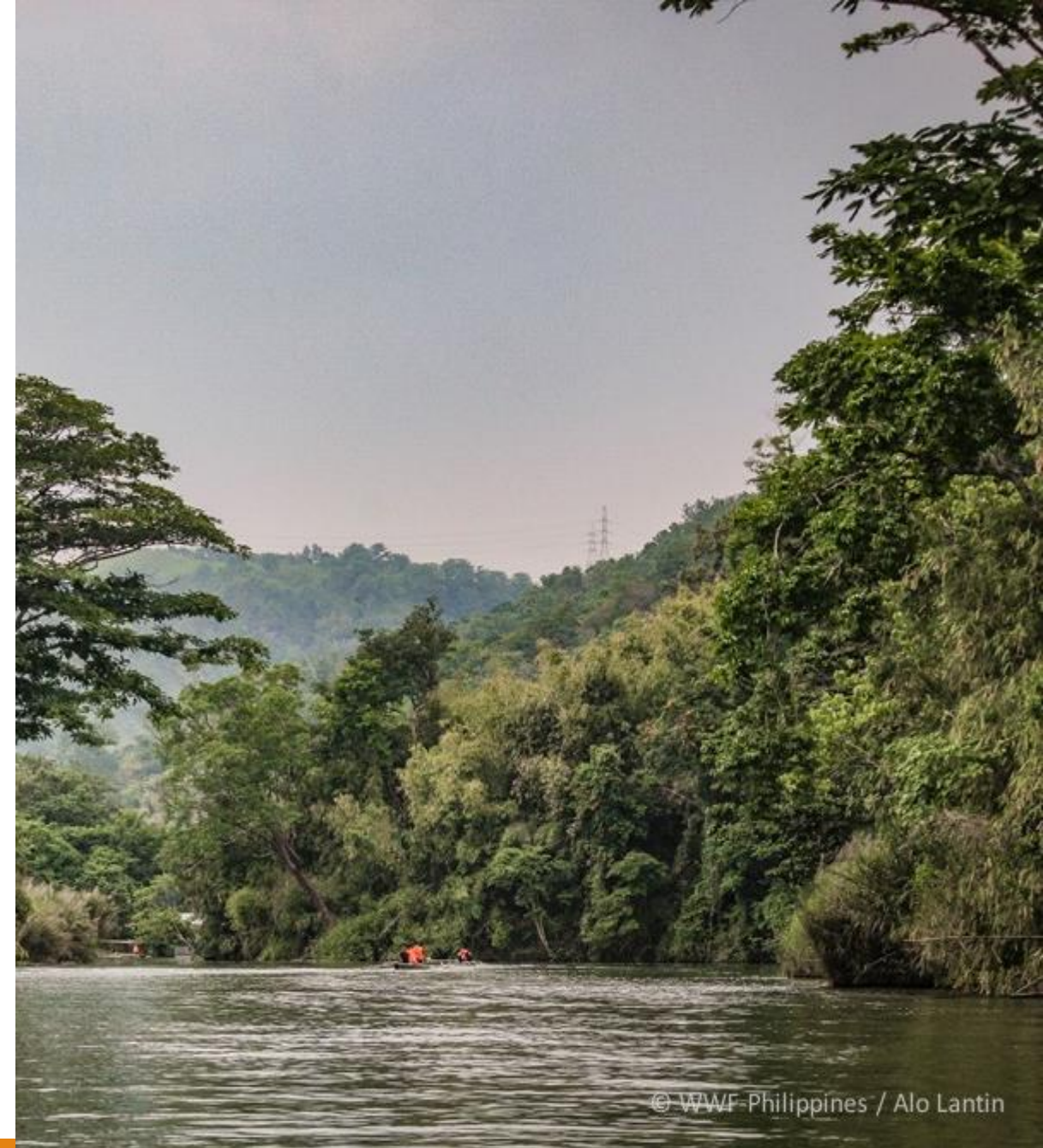
A. PES ARRANGEMENT

When it fulfills PES criteria as traditionally defined (Wunder 2004, 2015)

B. PES-LIKE ARRANGEMENT

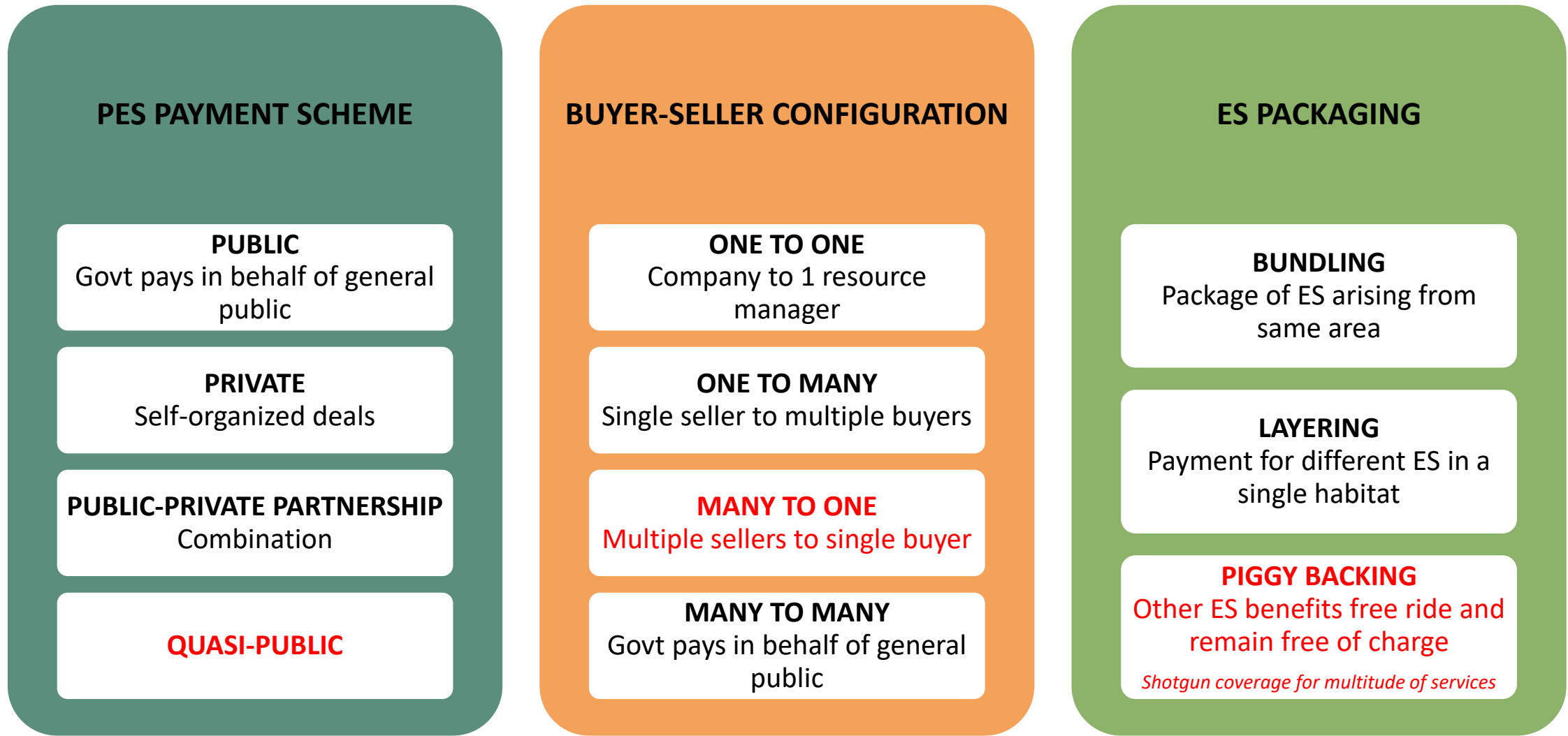
Noncompliance with the criteria in the PES definition

Absence of voluntary transaction and conditionality



© WWF-Philippines / Alo Lantin

Comparison of PES Components in literature



Source: Adapted from Smith et al. 2013, Wertz-Kanounnikoff et al. 2011

PES Actors and Design

BUYERS

- Willing to pay for ES to be safeguarded, enhanced, or restored
- **In terms of PES-like arrangements, compliance payments**
- e.g. government, corporations, consumers, to non-profits

SELLERS OR PROVIDERS

- Private or public; **should have clear mandated authority and property rights; part of stakeholder communities and interest groups**
- e.g. indigenous peoples, CSOs, local communities

INTERMEDIARIES

- Bridge actors and institutions, **may be involved in PES set-up, negotiations, and transactions**
- e.g. NGOs, academe, think tanks, LGU, NGAs

PAYMENT CATEGORIES

(Lasco et al. 2008)

a. TIER 1

Based on established ecological principles and local knowledge, participatory, room for **trial and error** (Willingness To Pay)

b. TIER 2

Based on simulation modelling and limited site information, ecological knowledge used to create transfer mechanisms, for IP areas

c. TIER 3

Site-specific quantitative measurements, actual monitoring possible, payments can be done per unit

Summary of case studies

	Subic	TRNP	PPSRNP	Vietnam PFES
Legal basis	RA 7227, Proclamation No. 926 s. 1992	RA 10067	Proclamation No. 212 s. 1999	Decree 99
ES Packaging	Piggy-backing	Piggy-backing	Layering	Layering
Payment scheme	PPP, Tier 1	Quasi-public, Tier 1	PPP, Tier 1	PPP, Tier 2
Buyer-seller configuration	Many to many	Many to one	Many to one	Many to many
Buyer	HH, Tourists	Tourists	Tourists	Water companies
Seller	Govt, IPs	Govt, CSO/NGO, LGU	CSO/NGO, IPs	Govt, HH
Intermediary	None	WWF	DENR, LGU	Committees, INGOs
CLASSIFICATION	PES-LIKE	PES-LIKE	PES-LIKE	PES-LIKE

Other Examples of Local PES Applications

LGU	Ordinance No.	Title	Ecosystem service	Salient provisions
San Carlos City, Negros Occidental	City Ordinance No. 37 series of 2004	Regulating operation of City Waterworks and creating Watershed Development and Protection Fund	Watershed	Environmental fee of PHP 0.75 charged on every cubic meter water billed. Amount collected for at least 15 years will be transferred to the fund
	City Ordinance No. 8 series of 2012	An ordinance enacting the environment code of the City of San Carlos	Watershed	PHP 1.00 for every cubic meter of water billed, to be transferred to watershed development and environmental protection fund
Bago City, Negros Occidental	City Ordinance No. 16 series of 2015	Imposing environmental protection fee	Watershed	Php 0.50 per cubic water consumed from households connected to BACIWAD, while those that are not, a fixed rate of Php 5 per month
Bauko, Mountain Province	Municipal Ordinance No. 014-C	Bauko Tourism Code of 2015	Multiple, aesthetic/cultural	Minimum Php 100 per tourist, 50% for maintenance of scenic spots, 50% LGU general fund
Cagayan de Oro City, Misamis Oriental	City Ordinance No. 13682 series of 2019	Promotion of environmental rehabilitation and conservation network and creation of ecological services and protection committee (ESPC)	Multiple	Creation of trust fund from financial grants: 80% for watershed conservation, protection and restoration, urban greening, and green pockets; 10% for IEC and research; 10% for administrative expenses

Subic Bay Freeport Zone

PA Inception	1992
Start of PES	2014
Ecosystem Service	Provisioning, regulating, cultural
Buyer and motivation	General Public <i>Aesthetic values, water supply</i>
Seller and motivation	SBMA – mandated by law to protect watershed against disruptive land use Pastolan Aetas – ancestral land and livelihood
Institutions	SBMA Ecology Center: Protected Area Division, Tourism Department
Fee	Environment and Tourism Administrative Fee (ETAF): PHP 20-entrance fees, PHP 100-golf course, PHP 100-hotel
Fund	Environment and Tourism Fund
Benefits	IP livelihood, watershed improvement
Challenges	Outdated, tourism-directed plan



Image source: SubicWater

Puerto Princesa Underground River

PA Inception	1971 (National Park), 1992 (devolved to LGU), 1999 (World Heritage Site)
Start of PES	2014
Ecosystem Service	Provisioning, regulating, cultural
Buyer and motivation	General public <i>Aesthetic and cultural values</i>
Seller and motivation	PPSRNP – mandated by law IPs – ancestral land and livelihood
Institutions	PPSRNP, PAMB, City LGU, PCSD
Fee	PHP 500-envi fee (2016), user fee, royalty shares, PHP 1M-community share (CBSD)
Fund	General fund, trust fund
Benefits	Alignment with SEP/ECAN; facilitation of more CBSD areas
Challenges	Pandemic shocks to ecotourism



Image source: Global Alliance of National Parks

Tubbataha Reefs Natural Park

PA Inception	2009 (TRNP)
Start of PES	1995 (initial fee), 1999 (WWF), 2004 (post-WWF)
Ecosystem Service	Provisioning, regulating, cultural
Buyer and motivation	General public <i>Aesthetic and provisioning values</i>
Seller and motivation	IPs-ancestral land Tubbataha Mgmt Office (TMO) – mandated by law to conserve area Cagayancillo – partner LGU, continued livelihood and provisioning
Institutions	TMO, LGU, DENR/OP (contesting)
Fee	PHP 2k-6k – vessel entry; PHP 5k – dive fee
Fund	Tubbataha Trust Fund (TMO)
Benefits	R&D environment, livelihood support
Challenges	USS Guardian Minesweeper (PHP 1.41M compensated for PHP 56M damages), institutional changes

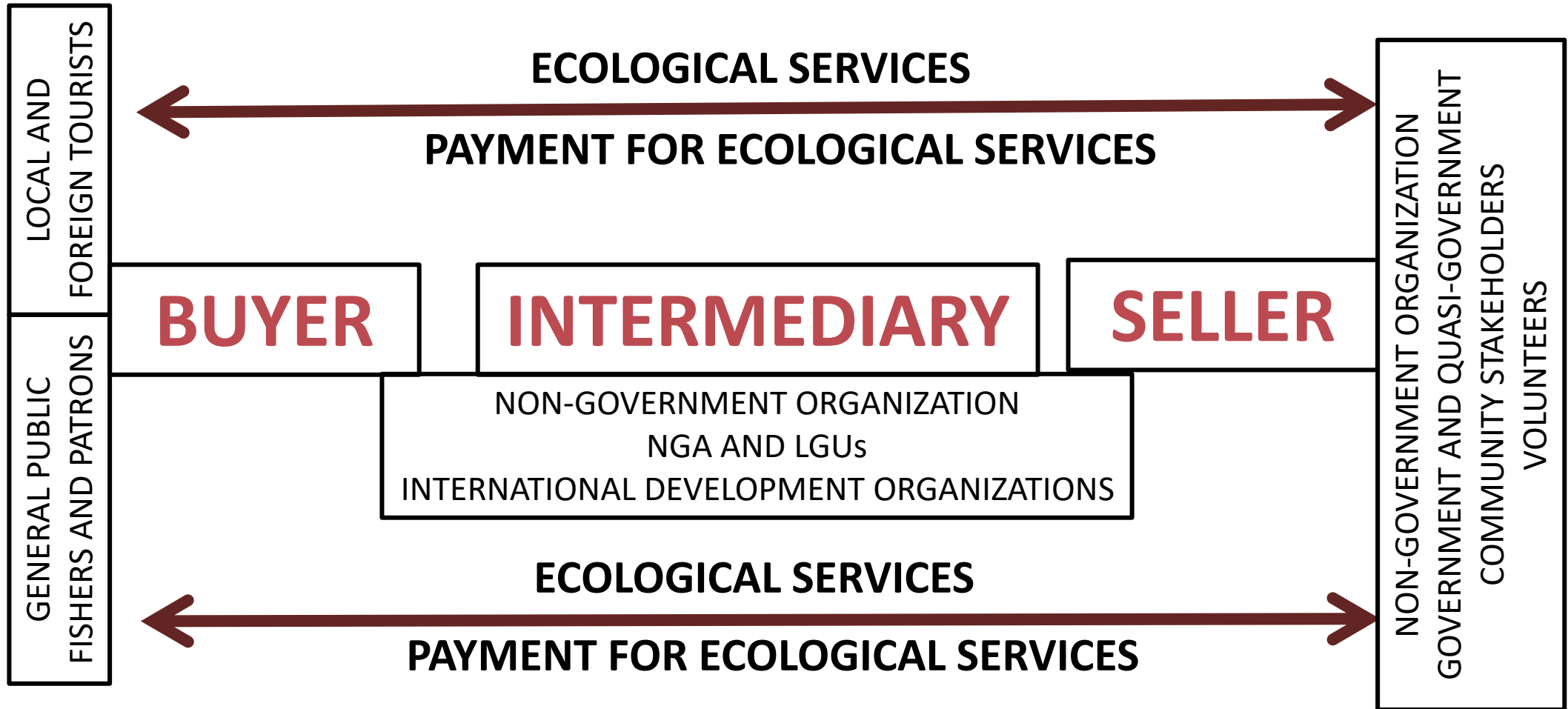


Image source: TRNP FB Page

Case studies and international model do not meet traditional PES components.

	Subic Bay Freeport Zone	Tubbataha Reefs National Park	Puerto Princesa Subterranean River National Park	Vietnam
A voluntary transaction	x	x	x	x
A well-defined environmental service	✓	✓	✓	✓
Being bought by a (minimum) ES buyer	✓	✓	✓	✓
From a (minimum one) ES provider	✓	✓	✓	✓
If and only if the ES provider secures ES provision conditionally	x	x	x	✓

PES TEMPLATE FROM CASE STUDIES



KEY TAKEAWAYS

Case Study Learnings

- PES is a good platform for financial sustainability
- Country lacks a definitive national policy and framework on PES but enabling provisions are lodged in several policies.
- Active engagement and collaboration with IPs and local communities increases onboarding
- Private and CSO/NGO support facilitate

1. PES is a good platform for financial and operational sustainability
2. Country lacks a definitive national policy and framework on PES but enabling provisions are lodged in several policies.
3. Active engagement and collaboration with IPs and local communities increases onboarding
4. Private and CSO/NGO support facilitate self-sustaining arrangements without government resource
5. Legal basis instrumental in enforcing conditionality need to be strengthened; There arbitrary basis for fee setting and increase
6. Weak legal enforcement towards damages, no standard compensation blueprint
7. Agreements fall through without appropriate performance metrics

KEY TAKEAWAYS

Negotiation bottlenecks

- Transaction costs highest during negotiation process
- Buyer/seller /stakeholder identification and intermediation inefficiencies
- Political/bureaucratic inefficiencies in crafting agreements
- Evolving concept and definition require unique case communication and tweaking

Management and Fiscal limitations

- Complementation and capacity building in PAs and ecotourism initiatives
- Government accounting and auditing rules and ES payment/fee structuring
- Transparency and M&E checks;
- Facilitation of buyer and seller interaction

Missing policies and institutions

- Absent vertical and horizontal coordination and bureaucratic oversight
- Unclear policy, and legal accountabilities and ownership
- Legal bottlenecks: Missing regulation and enforcement guide
- Evolving definition and legal frame

KEY TAKEAWAYS

Weak sustainability measures

- Tenure and staff movement; Buyer and seller relationship continuity
- Needs to be institutionalized and mainstreamed
- Institutional knowledge and history retention; Turnover of records and knowledge products as needed
- Payment trace and leakages
- Business models and locally applicable arrangement template
- Sustained authority on natural capital stewardship

Data unavailability

- Reason for understudied ES
- Collected fees difficult to trace
- Increased dependence on literature, proxies, and alternate methods

Evolving definition

- Voluntary mechanisms will not work in PH
- Necessary checks and balance do not exist
- Mandates unaccompanied with guidance and capacity tools

WAYS FORWARD

Capitalize on evolving PES definition and Increased interest from government

Replicate success: PES and ecotourism with natural capital mgmt. and ecological integrity initiatives

Link PES to natural capital management and DRR CCA/CCM efforts

Augment accounting and auditing policy to reflect PES and natural capital accounts

Institute PES transparency platform and data management, explore performance-based M&E

Incentivize mitigation/adaptation shift from doleout/grants/user-based to exchange-based approach like PES

WAYS FORWARD

INCREASE BUY-IN OF PRIVATE SECTOR

incentives for voluntary payments from private sector

STUDY SUSTAINABLE FINANCING SCHEME

Voluntary vs compliance payment

CLEAR TRANSACTION and OPPORTUNITY COSTS

Responsibility to shoulder; Consider NGAs, LGUs, academe, NGOs, CSOs, POs as intermediaries

Opportunity costs for service providers

FRAME SUSTAINABLE PES TEMPLATES

Active collaboration among LGU, private sector, CSO, academe, international development organizations

PURSUE LEGAL PLATFORM

for PES at NGA and subnational levels;
Mainstream PES in planning documents and policy

CONSIDER...

**PAYMENT FOR ECOSYSTEMS SERVICES
(PES) AS A FISCALLY VIABLE AND SUSTAINABLE
SCHEME FOR DRR CCA/M MITIGATION AND
ADAPTATION INITIATIVES**

THANK YOU

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