PHILIPPINES
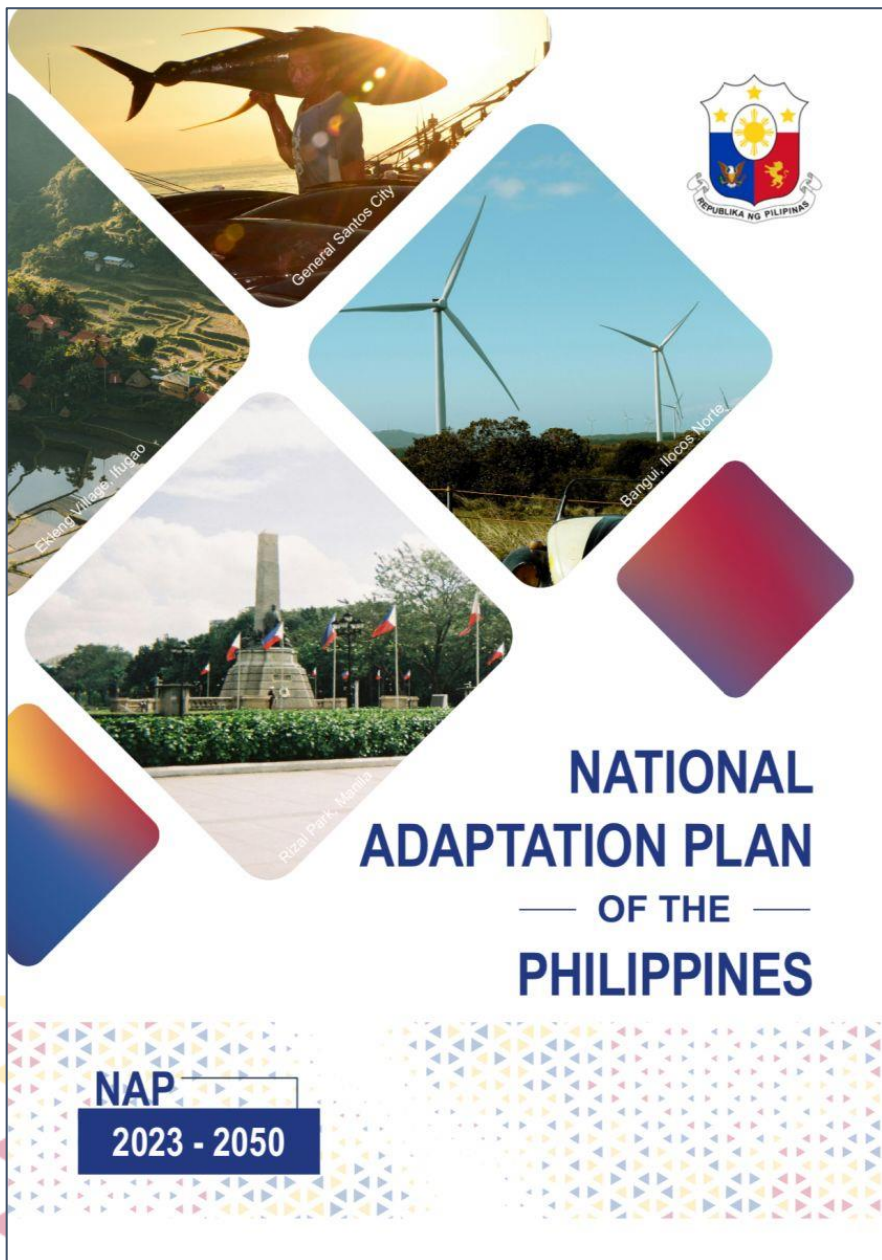
NATIONAL LONG-TERM ROADMAP TO SYNERGIZE MITIGATION AND ADAPTATION

KEY FINDINGS AND POLICY RECOMMENDATIONS

DAMASA M. MACANDOG

NATIONAL ADAPTATION PLAN

NATIONAL ADAPTATION PLAN OF THE PHILIPPINES

NAP
2023 - 2050

Vision:

- Establish national adaptation priorities.
- Enhance adaptive capacities and resilience against natural hazards and climate change.
- Reduce climate-related losses and optimize mitigation opportunities.
- Promote transformative adaptation and sustainable development.

Objective:

- Reduce vulnerability to climate change impacts.
- Bolster adaptive capacity and resilience.
- Integrate adaptation into relevant policies and programs.
- Define an adaptation pathway aligned with sectoral and national development priorities.
- Provide guidance for effective public spending and access to funding.

Approach and Guiding Principles:

- Developed in compliance with UNFCCC guidelines, tailored to Philippine challenges.
- Emphasizes a data-driven approach using the best available climate science for informed decision-making.
- Builds on existing knowledge and mechanisms, acknowledging ongoing adaptation efforts.
- Promotes active stakeholder involvement through extensive consultations and workshops.
- Focuses on national-level analyses, with plans for downscaling at local and sectoral levels.

Eight Adaptation Priorities

Addressing the increasing frequency of climate impacts and uncertainties, the plan focuses on strategies to enhance resilience. The sectors include **Agriculture and Fisheries**, **Water Resources, Health, Ecosystems**, **Cultural Heritage**, **Land Use and Human Settlements**, **Livelihoods and Industries; and Energy, Transport and Communications.** Adaptation priorities for eight key sector outcomes essential to the Philippines' economic and social development.

Agriculture and fisheries are vital for food security in the Philippines, producing 75% of local food and contributing 8.9% to GDP.


Water resources are critical for the Philippines, where 12.4 million lack drinking water and 26 million lack basic sanitation, worsened by climate change.

Over 110 million Filipinos rely on a healthcare system with only 56% of facilities stocked adequately, struggling against climate-related **health** impacts.

The Philippines, a **mega-biodiverse country,** generates billions annually from ecosystems like coral reefs and mangroves but faces significant exploitation risks.
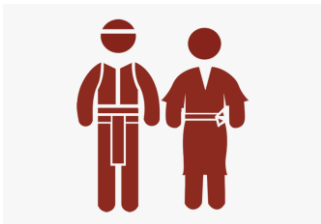
From 2020 to 2022, over 15 million Filipinos were displaced by 245 climate disasters, impacting **cultural heritage** and affecting 14 to 17 million indigenous people.

In the context of **Land Use and Human Settlements**, 60% of Philippine cities are coastal, affecting 5.4 million people, with 2.45 million in vulnerable informal settlements.

To ensure resilience in **Livelihoods and Industries**, protecting key sectors like Manufacturing (17.2%) and Tourism (6.2%) safeguards over 12 million jobs.

The Philippines faces infrastructure challenges in **Energy, Transport, and Communications**, with low energy capacity and high telecom density, necessitating climate change mitigation and adaptation efforts.

# Sectoral Priority Outcomes and Adaptation Solutions

Agriculture & Fisheries & Food Security	**Water Resources**	**Health**	**Ecosystems and Biodiversity**
Securing Food Supply: Nurture Nature, Sustain Livelihoods	Safeguard Water Security: Secure and Sanitary Water For All	Climate-Adaptive Healthcare for All: Protecting Health & Well-Being of Filipinos	Safeguard Biodiversity: Restore Natural Assets
Cultural Heritage, Population Displacement & Migration	**Land Use and Human Settlements**	**Livelihoods and Industries**	**Energy, Transport, & Communications**
Safeguarding Communities & Culture: Durable Solutions for Climate-Induced Mobility	Data Driven Land Use: Robust, Evidence-Based Planning	Climate-Proofing Economies: Fortifying Industry for Economic Prosperity	Protect Critical Infrastructure Systems: Secure Sustain Access & Connectivity

STRENGTHEN INFRASTRUCTURE RESILIENCE — 01

SAFEGUARD LIVELIHOODS WITH SOCIAL PROTECTION & REGULATIONS — 02

EMPOWER LOCAL GOVERNMENTS & COMMUNITIES — 03

MAINSTREAM INTEGRATED ADAPTATION GOVERNANCE — 04

SCALE NATURE-BASED SOLUTIONS — 05

■ Pillars for well-being and stability   ■ Factors underpinning economic resilience

- **Strengthen infrastructure resilience:** Reinforce critical infrastructure across sectors to withstand climate change impacts, minimizing service disruptions in water, power, transportation, and production facilities.
- **Safeguard livelihoods with social protection and regulations:** Implement mechanisms and safety nets to protect vulnerable populations' livelihoods from unpredictable climate events through climate-responsive regulations.
- **Empower local governments and communities:** Enable local governments and communities to take adaptation actions by providing access to climate data, tools, and capacity-building initiatives.
- **Mainstream integrated adaptation governance:** Foster coordinated collaboration among stakeholders across sectors, emphasizing the inclusion of vulnerable groups like women, children, and indigenous peoples in adaptation discussions.
- **Scale nature-based solutions:** Prioritize nature-based solutions over traditional infrastructure to enhance climate resilience, leveraging the Philippines' natural assets while avoiding maladaptation impacts.

NAP IMPLEMENTATION
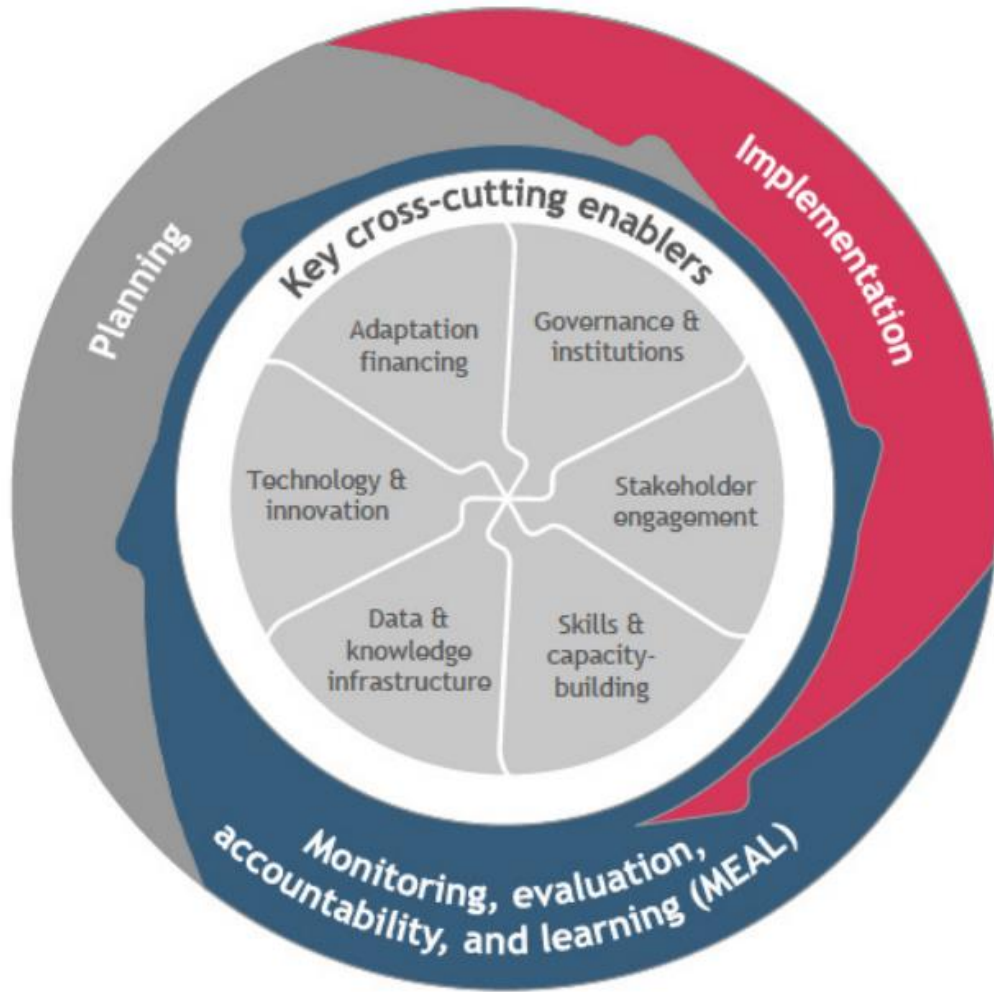
The NAP implementation framework follows five (5) key guiding principles:

1. Based on international guidelines and local priorities in the strategic framework.
2. It embraces a whole-of-nation approach, fostering collaboration across government and nongovernment entities, including local communities and diverse demographic groups.
3. It integrates with existing plans, policies, strategies, and mechanisms to prevent redundancy and incorporates adaptation into ongoing initiatives.
4. It calls for regular evidence-based review, rooted in local context and informed by the latest scientific knowledge.
5. It prioritizes a fair transition and inclusivity

NAP IMPLEMENTATION- KEY CROSS-CUTTING ENABLERS

Enabler	Key Success Factors
1. Governance and Institutions	1. Clear roles and responsibilities across government entities to strengthen ownership and commitment. 2. Shared vision and objectives among government entities. 3. Adaptation lens integrated across government operations. 4. Resilient horizontal and vertical coordination with fully engaged LGUs in NAP process.
2. Stakeholder Engagement	1. Inclusivity, collaboration, transparency, and participation across government and non-government entities, guided by a whole-of-nation approach. 2. Focus on vulnerable groups for equitable adaptation outcomes. 3. Defined roles and tailored communication for non-government stakeholders, ensuring meaningful engagement.
3. Skills and Capacity Building	1. Comprehensive evaluation and ongoing monitoring of capacity gaps among stakeholders. 2. Inclusive capacity-building programs tailored to key stakeholders. 3. Sufficient human, institutional, financial, and organizational capacity to facilitate programs. 4. Best practices and localized discoveries shared among stakeholders. 5. Robust partnership networks to enable capacity transfer.

NAP IMPLEMENTATION- KEY CROSS-CUTTING ENABLERS

Enabler	Key Success Factors
4. Data and Knowledge Infrastructure	1. Climate change information is easily accessible, stored in a universal format, and tailored to stakeholder needs. 2. Usable analytical models for adaptation, generating actionable insights. 3. Well-defined ownership of climate change information across its lifecycle. 4. Mechanisms in place to capture real-time learnings through feedback channels.
5. Technology and Innovation	1. Adequate funding and incentives for novel adaptation technologies. 2. Continuous learning and innovation cycle, embedded in national frameworks. 3. Open mechanisms for collaborative innovation. 4. Accessible technology development, catering to marginalized communities. 5. Operationalizing both national and international technology transfer mechanisms.
6. Adaptation Financing	1. Co-benefit approach to mobilize adaptation financing. 2. Mainstreaming adaptation in public finance management and budgeting. 3. Facilitating private sector investments in adaptation projects. 4. Leveraging innovative funding instruments. 5. Active engagement of public sector and communities in financing strategies. 6. Partnering with MDBs and DFIs for additional funding and technical support.

IMPLEMENTATION ROADMAP

Level of Implementation	Initiative
National	1. Clearly define roles, responsibilities, and institutional arrangements for NAP to mainstream adaptation and resilience in the national agenda.
	2. Enhance stakeholder engagement and communication strategies to amplify NAP awareness and understanding.
	3. Downscale climate analytics and enhance adaptation data management and application.
	4. Translate adaptation strategies into a sectoral-level program/project portfolio, prioritizing based on social, economic, and ecosystem benefits for informed decision-making.
	5. Develop a national adaptation investment strategy to mobilize resources needed for adaptation programs.
National and Local	6. Translate adaptation strategies into a provincial-level program/project portfolio, prioritizing based on social, economic, and ecosystem benefits for informed decision-making.
	7. Enhance capability building, research, and innovation on climate change adaptation.
	8. Develop an effective MEAL system for climate change adaptation.
International	9. Align the National Adaptation Plan with the Glasgow-Sharm El-Sheikh Work Programme on the Global Goal on Adaptation.

MONITORING, EVALUATION, ACCOUNTABILITY, AND LEARNING (MEAL)

Component	Description
Monitoring	Continuous data collection and analysis to measure progress against key NAP objectives.
Evaluation	Objective assessment of adaptation programs and policies, measuring their impact and outcomes.
Accountability	Ensures ownership and responsibility through tracking, reporting, and clear role definition.
Learning	Sharing and applying lessons learned to improve future actions and strategies.

MEAL System Action Plan

- **Guided by 10 Key Principles**:
    1. **Fit-for-purpose**: Clear objectives.
    2. **Participatory**: Inclusive stakeholder engagement.
    3. **Strong government alignment**: Integration with key agencies.
    4. **Ownership**: Clear roles and responsibilities.
    5. **Social inclusion**: Focus on vulnerable groups.
    6. **Built from existing frameworks**.
    7. **Transparency**: Open sharing of results.
    8. **Comprehensive**: Use of select indicators to show progress.
    9. **Resource-efficient**: Maximizing with minimal resources.
   10. **Progressive**: Incorporating learnings and innovations.

Philippines: Nationally Determined Contribution Implementation Plan 2020-2030

Mitigation as a Function of Adaptation

- **The Philippines has committed to reducing its greenhouse gas emissions by 75% from 2020 to 2030, with 2.71% of this reduction unconditional and 72.29% conditional, as outlined in its Nationally Determined Contribution (NDC) to the UNFCCC.**

- **The NDC Implementation Plan sets out a roadmap for achieving this goal, with policies and measures (PAMs) to reduce emissions in five sectors (agriculture, waste, industry, transport, and energy), overseen by four sector departments, and developed through a bottom-up approach to drive national-level action.**

Figure ES 2: Delivery of the Philippines Nationally Determined Contribution
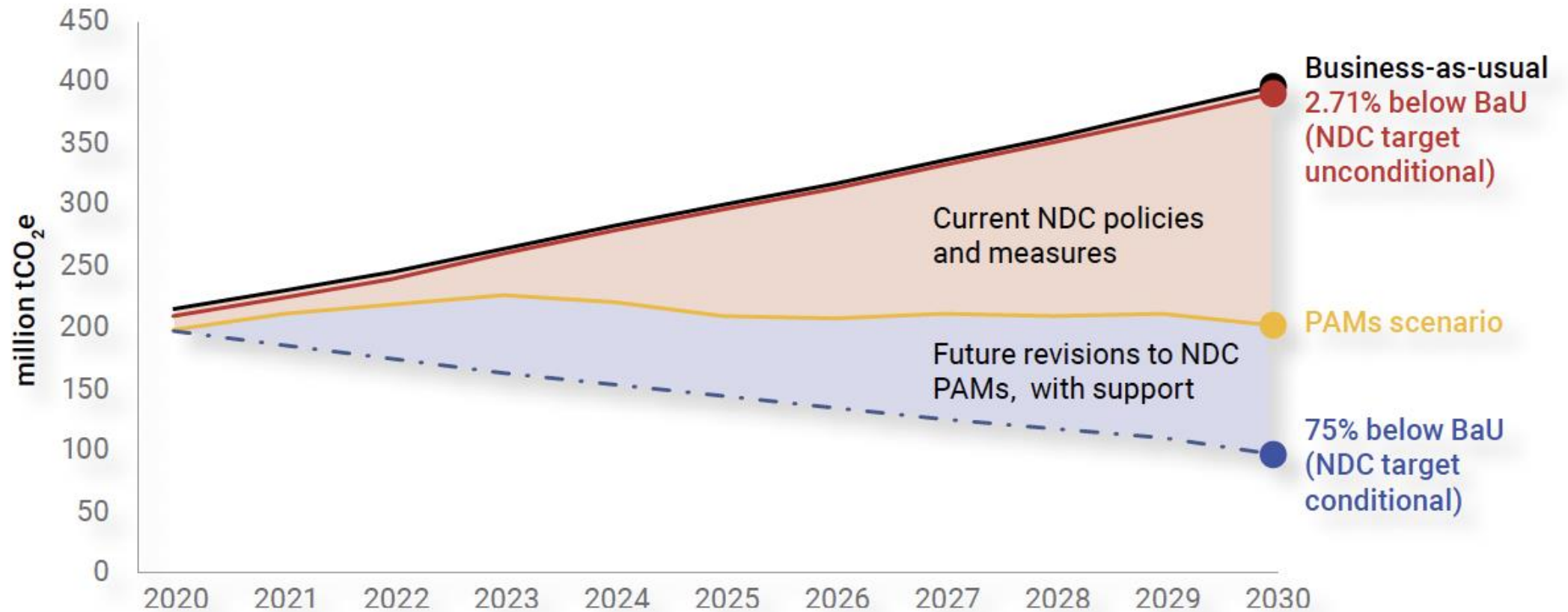
BaU = business-as-usual, NDC = nationally determined contribution, PAM = policies and measures. tCO$_2$e = ton of carbon dioxide equivalent.
Source: Government of the Philippines.

Figure ES 1: Commitments and cost of NDC policies and measures

GHG REDUCTION
67 MtCO$_2$e
INVESTMENT COST
USD **32.8 BILLION**
· Greening of PUVs
· Expand railways
· Improve mass transit and active travel

Transport — 7%

GHG REDUCTION
66 MtCO$_2$e
INVESTMENT COST
USD **1.6 BILLION**

Waste — 7%
· Expand wastewater treatment facilities in HUCs
· Improve solid waste materials recovery
· Cut methane emissions through organic waste composting

Agriculture — 21%
GHG REDUCTION
211 MtCO$_2$e
INVESTMENT COST
USD **1 BILLION**
· Adopt innovative practices in paddy rice cultivation for flood control and water management
· Promote biodigesters for livestock manure management

IPPU — 6%
GHG REDUCTION
59 MtCO$_2$e
INVESTMENT COST
USD **194 MILLION**
· Substitute SCMs for clinker in cement
· Shift to low GWP refrigerants for RAC
· Establish dedicated ODS/HFCs destruction facilities

PAMs TOTAL GHG REDUCTIONS
990 MtCO$_2$e
—
TOTAL INVESTMENT COST
USD 72 B

Energy — 59%
GHG REDUCTION
587 MtCO$_2$e
INVESTMENT COST
USD **36.5 BILLION**
· Boost energy efficiency across all sectors
· Improve the grid
· Increase RE capacity
· Switch to EVs

Source: Government of the Philippines.

Implementation Arrangements and Milestones: Actions

Table 10: Key Actions for Implementation

Pillar	Actions	
	Initial Actions	**Mid-term Actions**
1. Delivering conditional and unconditional NDC action	• Deliver PAMs Actions in accordance with technical appendices. • Establish/formalize inter-departmental coordination groups for cross-sectoral delivery. • Identify gaps in sector programs. • Continuous develop sector PAMs. • Integrate PAMs into budget and planning processes.	• Establish continuous monitoring of NDC delivery at project level and above through an integrated MRV framework. • Utilize data gathered to strengthen future iterations of PAMs. • Develop department-level mid-term strategies that can help define future PAMs revisions.
2. Advancing co-operation with international partners	• Prioritize PAMs actions for international funding support. • Develop a mid-term program for international support to 2030 and regularly update it.	• Deepen MDB/DFI partnerships. • Structure engagement with development partners around NDC delivery
3. Develop market-based action	• Clearly identify sectors/actions that can be traded, and those in which no trading is possible. • Develop required policies and regulations to enable trading.	• Work with partners interested in trading. • Participate in international standard setting. • Ensure MRV systems are robust enough for trading activities

Implementation Arrangements and Milestones: Actions

4. Strengthen resilience and adaptive capacity	• Clearly identify resilience/adaptation co-benefits in PAMs.	• Integrate NDC and NAP MRV and Planning and use resilience as a driver for PAMs revisions. • Elaborate the national concept for a Just Transition.
5. Cascading the subnational level actions	(To be developed further - indicative) • Identify responsibilities, capacities and needs at LGU level. • Assess existing initiatives at the LGU level, to be covered with a holistic MRV system. • Develop capacity-strengthening program as required in response to the assessment.	(To be developed further-indicative) • Identify and address legislative and regulatory barriers (e.g. in municipal solid waste (MSW) management) to encourage long-term investment, among others.
6. Ensuring private sector participation	(To be developed further – indicative) • Identify and address required incentives and legislative/regulatory/institutional actions to promote private sector participation. • Develop an approach to green procurement in support of the NDC.	(To be developed further – indicative) • Implement green procurement through targeted measures supporting the NDC PAMs, e.g., by promoting use of blended cement by DPWH, or setting purchase targets for electric vehicle purchases for public fleets, subject to appropriate mechanisms to be issued.

DFI = development financing institution; DPWH = Department of Public Works and Highways, LGU = local government unit; MDB = multilateral development bank; MRV = measurement, reporting, and verification; NAP = national adaptation plan; NDC = nationally determined contribution; PAMs = policies and measures.

Implementation Progress Tracking

NDC and NDC-PAMs progress tracking will include the status of PAMs activities and associated mitigation impacts expressed in tCO2e, with minimal time lag. Priority will be placed in the short term on building up capabilities for tracking the status of PAMs activities on an annual basis, considering institutional capacity. A range of institutional strengthening actions will be carried out, tailored to sectoral needs:

- Agriculture sector: Technical assistance will be sought for short-term annual tracking due to the sector's focus on adaptation.
- Energy sector: Minimal action is necessary due to the availability of highly accurate data; the process can be replicated by DOE annually.
- IPPU sector: Some institutional strengthening will be carried out, with modifications to systems like ECC and SCMAR for closer monitoring.
- Transport sector: Minimal institutional strengthening is needed as PAMs are large public projects easily tracked and reported.
- Waste sector: Institutional strengthening will be carried out, given the complex setup involving LGUs, water districts, and private contractors, with modifications to systems like ECC and SCMAR for better tracking.

Mitigation Impact Quantification

○ **CCC Guidance:**

    ■ **The CCC will guide sector lead agencies on methodologies and standardized emission factors where necessary.**

    ■ **Activity-level data, equivalent to implementation progress data, will be collected at the sectoral level.**

○ **Quantification of Mitigation Impacts:**

    ■ **Ideally, quantification should be coordinated with tracking implementation status.**

    ■ **However, since accurate quantification can occur later using a common baseline, it is considered a lesser priority.**

○ **Addressing the Gap:**

    ■ **In the medium term, technical assistance will be sought to strengthen institutional capabilities within sectoral agencies.**

    ■ **Capacity building may focus on adopting a higher-tier IPCC approach for better quantification of PAM impacts.**

Preliminary Results of the Questionnaire Survey on National Long Term Roadmap to synergize Adaptation and Mitigation

PHILIPPINES

Part I. Long-term Development Vision and Climate Goals

Long-term national development vision for 2100 (N=128)

Development priorities in 2100

➢ Highly scored (top two): 1. Protecting environment, 2. Ending poverty
➢ Moderately scored: 3. Quality education, 4. Healthy lives, 5. Affordable, reliable, sustainable energy

1.1.2.
What development elements do you hope to achieve as a long-term development vision of your country? (Around the year 2100).

Not enough sample
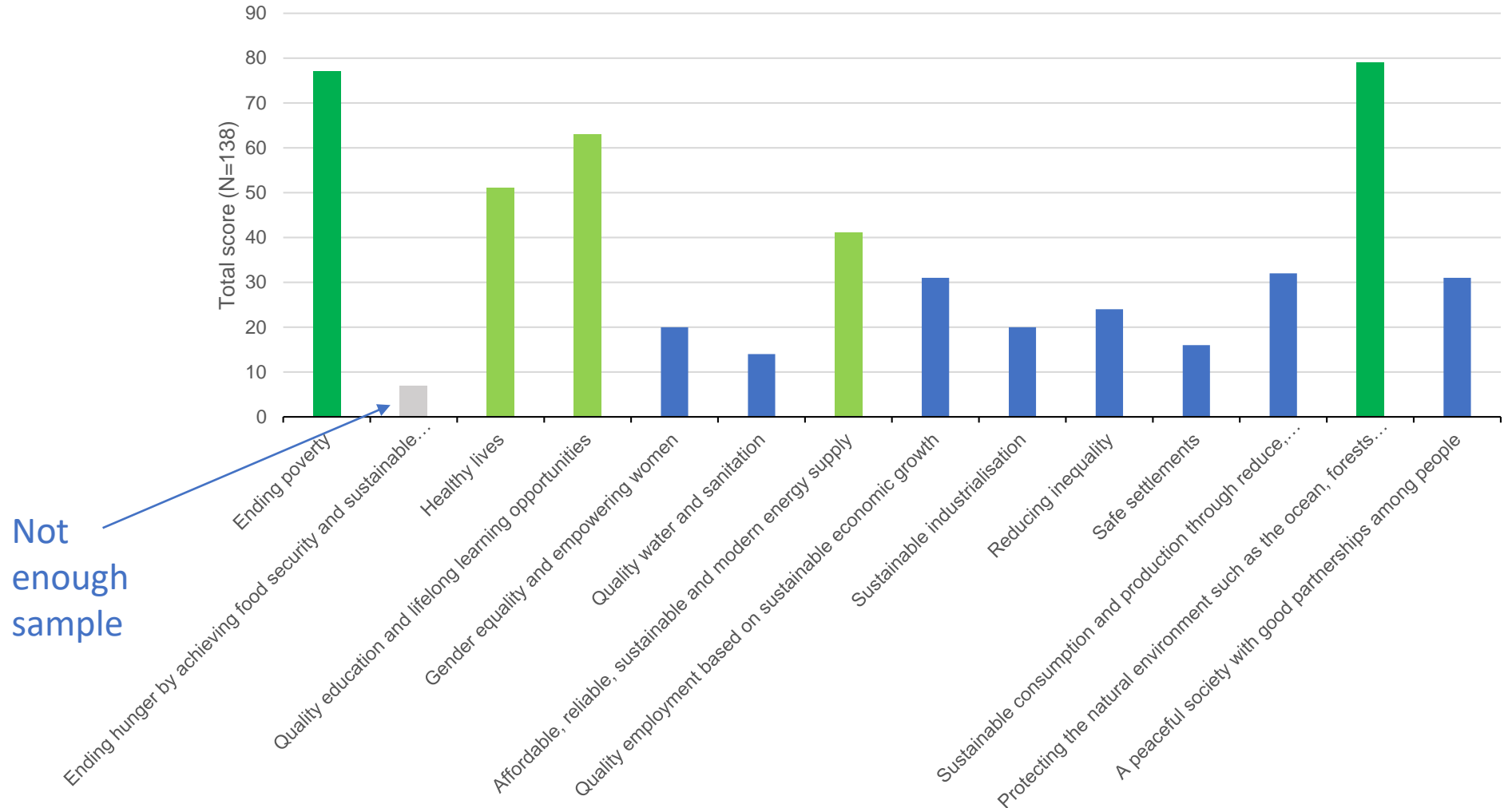
Climate goals for 2100:
Net-zero clean energy system

1.2.1. *What kinds of **net-zero clean energy systems** do you hope to achieve in your country in the long-term by around the year 2100?*

All energy sources (incl. CCS, Nueclear, Hydrogen)

All RE sources

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

RE (Solar & wind)

All sources incl. RE CCS, nuclear, H$_2$

RE (balanced sources)

■ Affordability (economic costs)

■ Technological feasibility (availability in markets)

■ Energy reliability (flexibility and stability of energy system) and / or energy security (securing self-dependency of energy resources)

■ Recyclability of materials used (circular economy)

■ Manufacturing industry formation and/or protection

■ Resource exploitation industry formation and/or protection

■ Resilience to natural disasters and climate change

■ Benefit / co-benefit on sustainable development

■ Personal value or belief

■ Unclear

- Hope for net-zero energy sys. is mainly RE-centered.
- RE-centered net-zero energy system is more favored than all energy sources, because of energy reliability, affordability, benefit/co-benefit on sustainable development, and recyclability of materials (circular economy).

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Climate goals for 2100:
Net-zero/net-negative forest

1.2.4. *What kinds of **forest** do you hope for in your country by around the year 2100?*
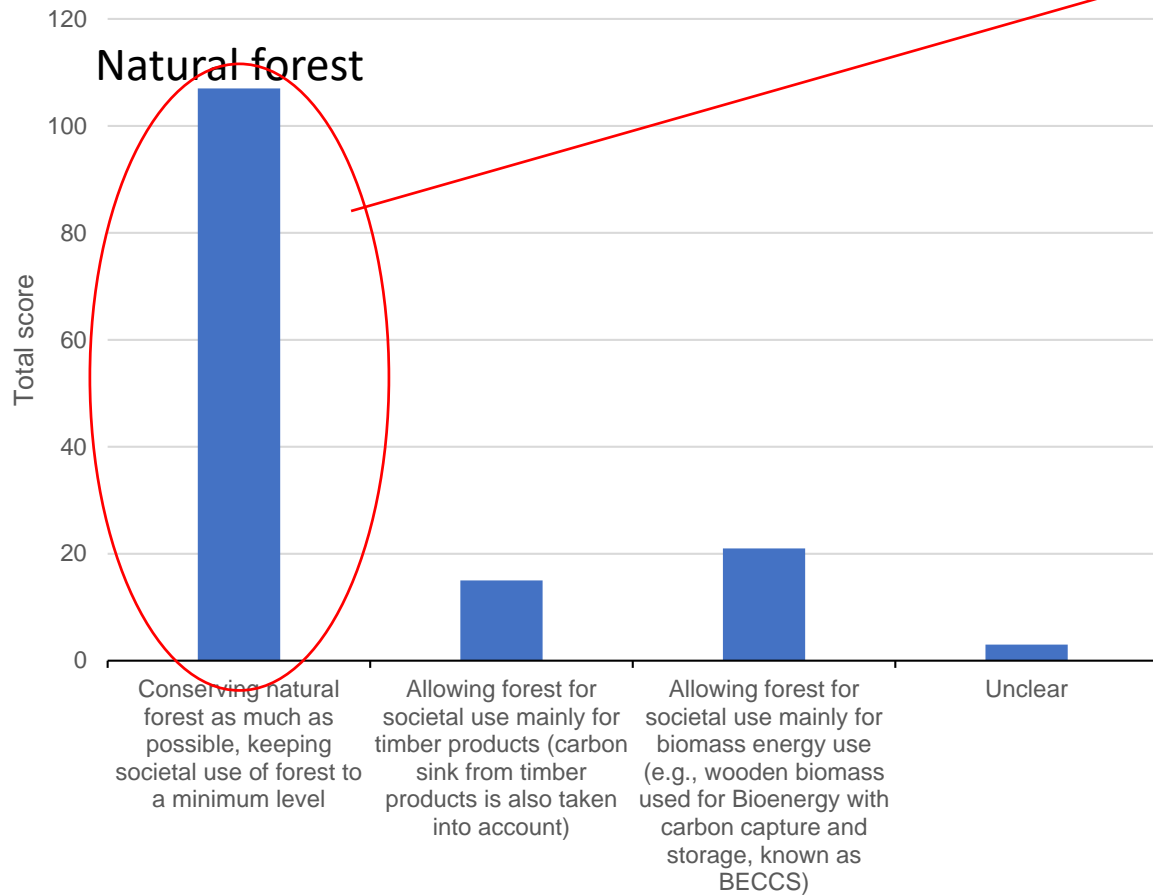
1.2.5. ***Reasons*** *of the selected net-zero/net-negative forest*
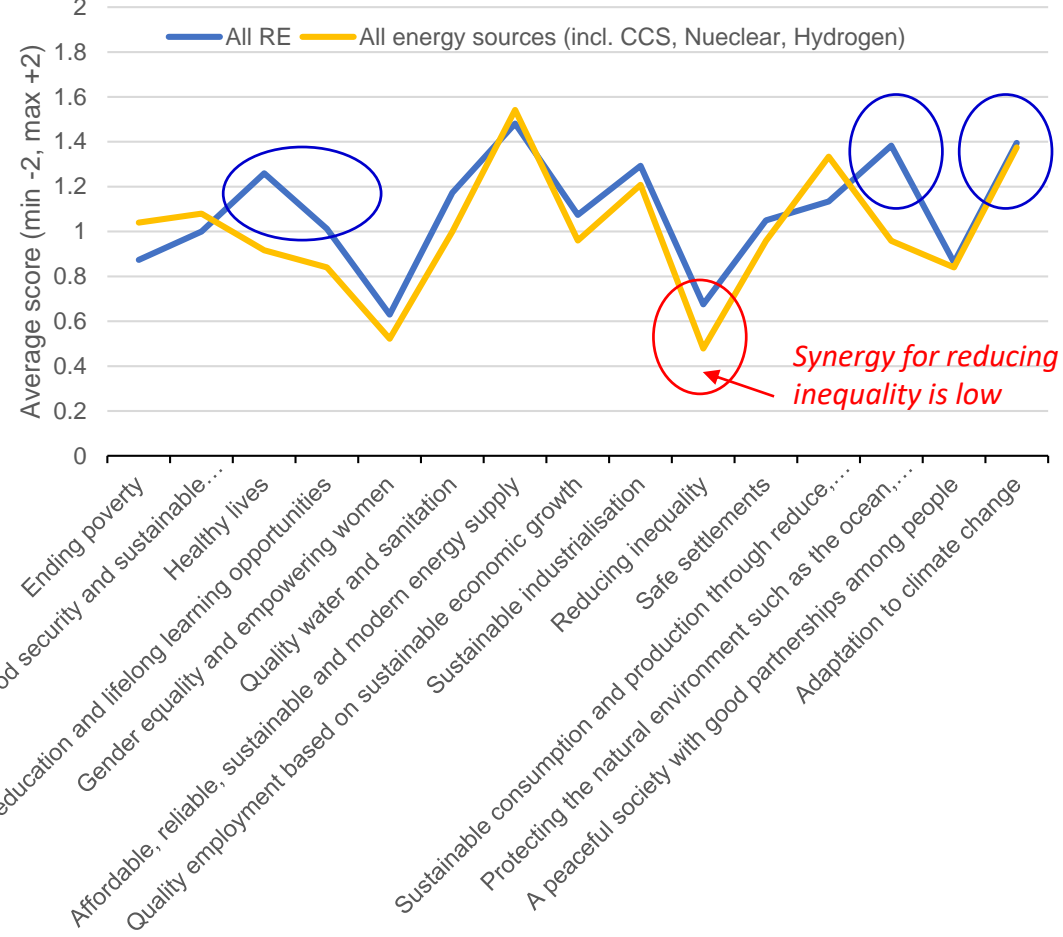
Natural forest

Natural forest

- Biodiversity (preventing species from extinction)
- Life satisfaction from basic needs met (e.g., food and water)
- Disaster risk reduction (security)
- Timber production
- Cultural use (recreation, tourism)
- Indigenous rights
- Unclear
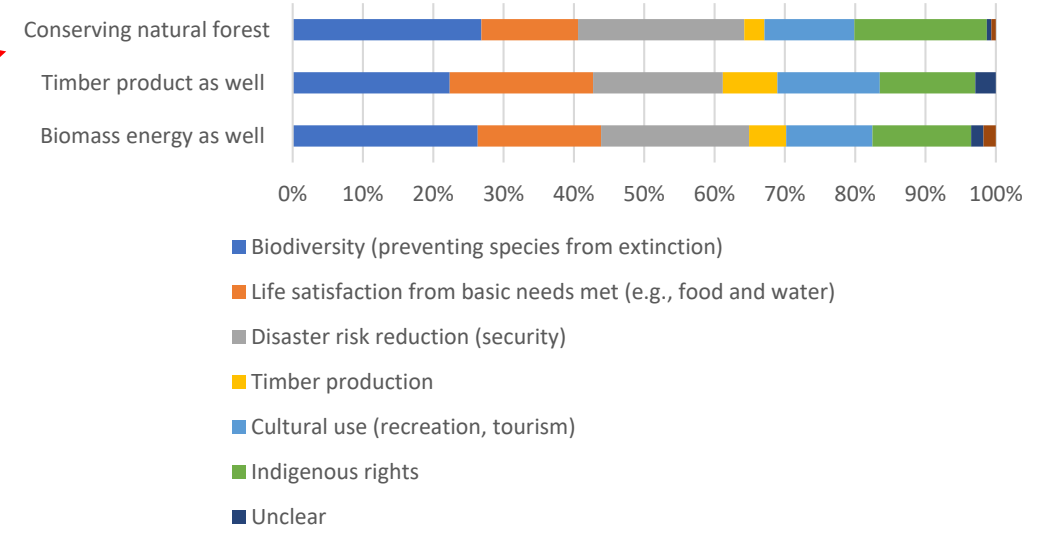
- Most respondents favors the natural forest
- The main reasons of those who prefer natural forest are biodiversity, DRR, and indigenous rights.

Synergy of net-zero energy and forest systems for development

- RE-centered systems' synergies are high for affordable, reliable and sustainable and modern energy; and protecting environment; and healthy lives; Almost all items are slightly higher than those of all energy sources case. Both systems' synergy with climate change adaptation is high.
- Natural Forest synergies are high for CC adaptation, protecting the environment, healthy lives, and quality water & sanitation
- The patterns of the synergies of natural forest are different from those of energy systems.
- Net-zero energy and forest systems need to be designed to complement with each other to achieve development vision

Net-zero **energy** system: RE-centered vs. all sources

Net-zero/-negative **forest** system: natural forest
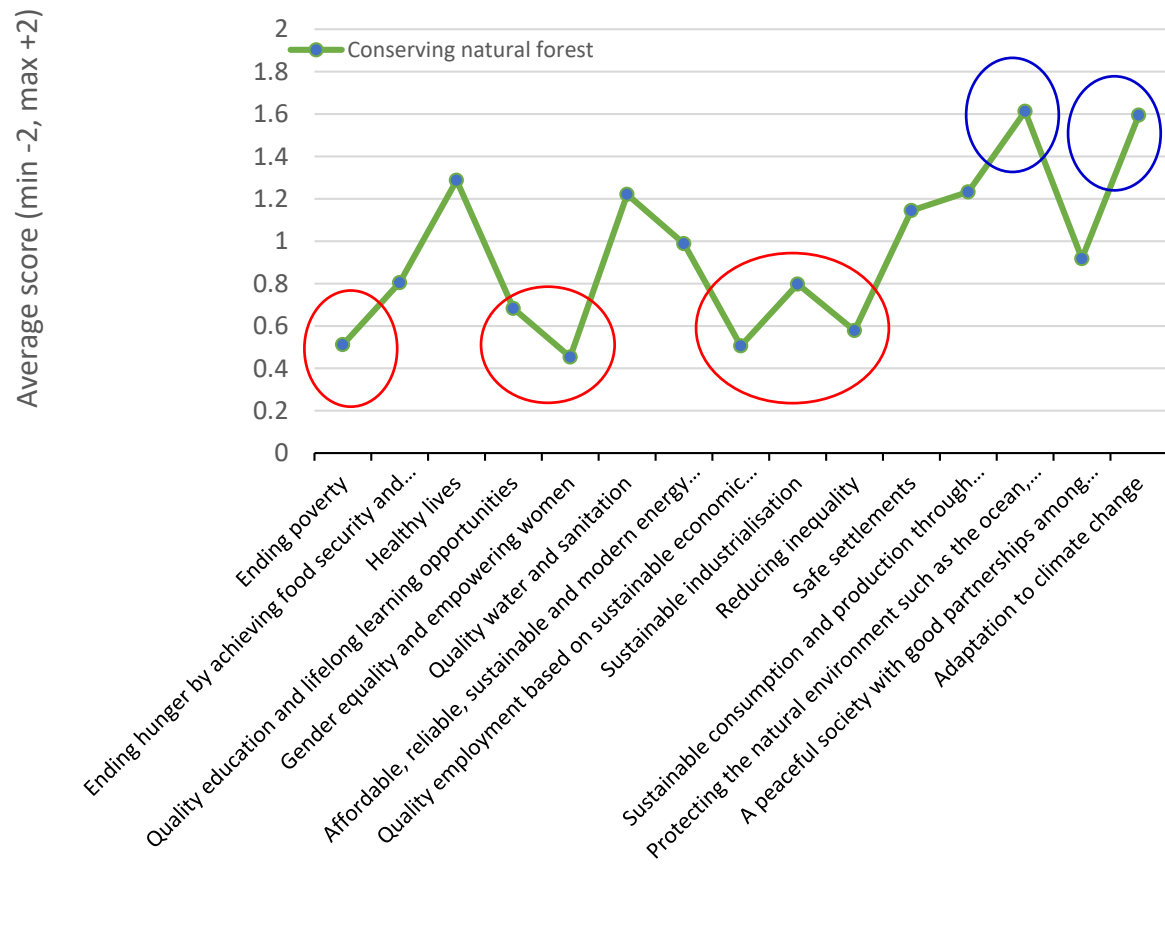
National development priorities vs. climate goals' synergy for development

- Overall, national development priorities and climate goals' synergies with development have a moderate positive correlation. Ending poverty requires additional policy or intervention other than energy and forest policies due to their limited synergies to ending poverty.
- Net-zero energy and forest systems need to be designed to strengthen the synergy especially for priority development components
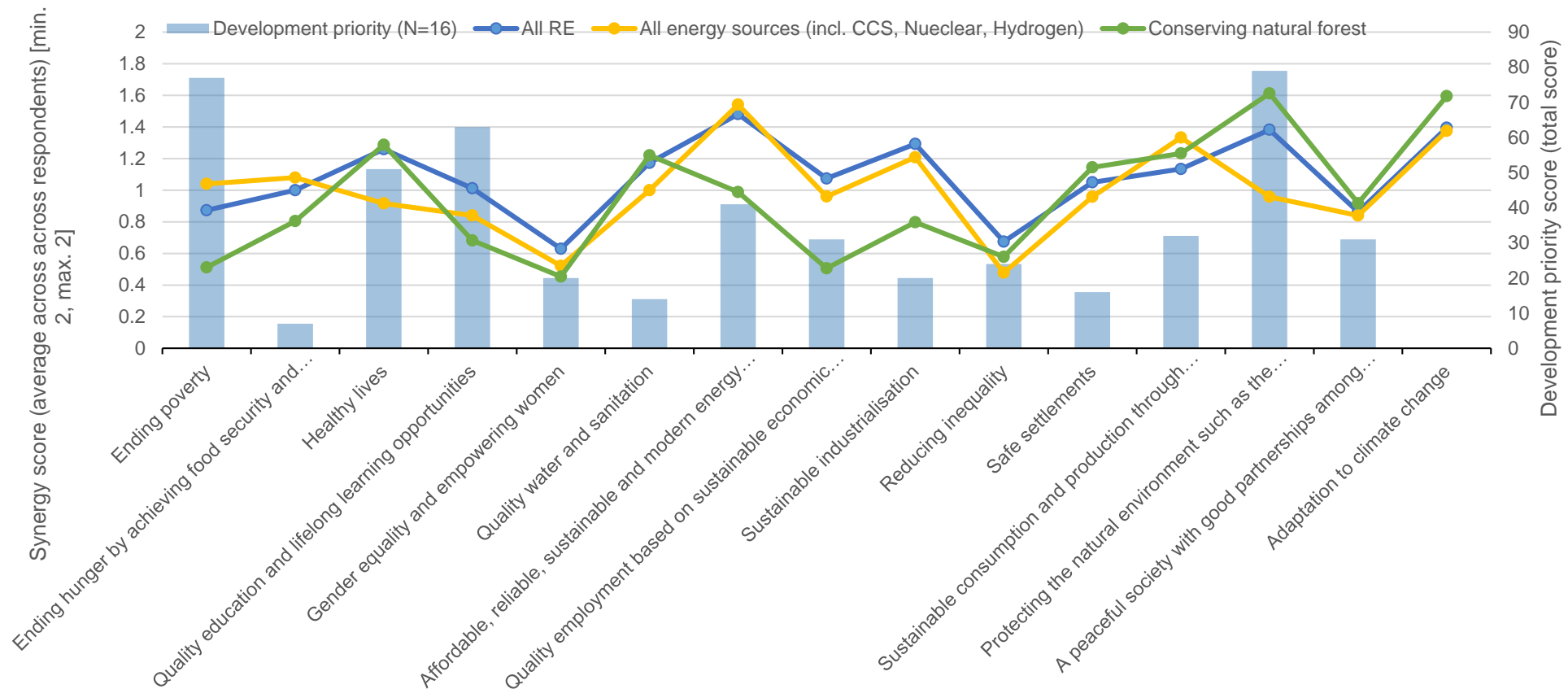
Climate goals:
National adaptation goals (N=7)

Highly requested: 1. scientific based on long-term climate risk projections, 2. near-term goals to avoid maladaptation and lock-in, 3. long-term goals beyond 2050 in line with development vision

Moderately requested: 4. time-bound such as 2030, 2040, and 2050, 5. "transformative" adaptation to cope well with higher-than-expected warming cases, 6. adaptation goals in line with multiple temperature rise
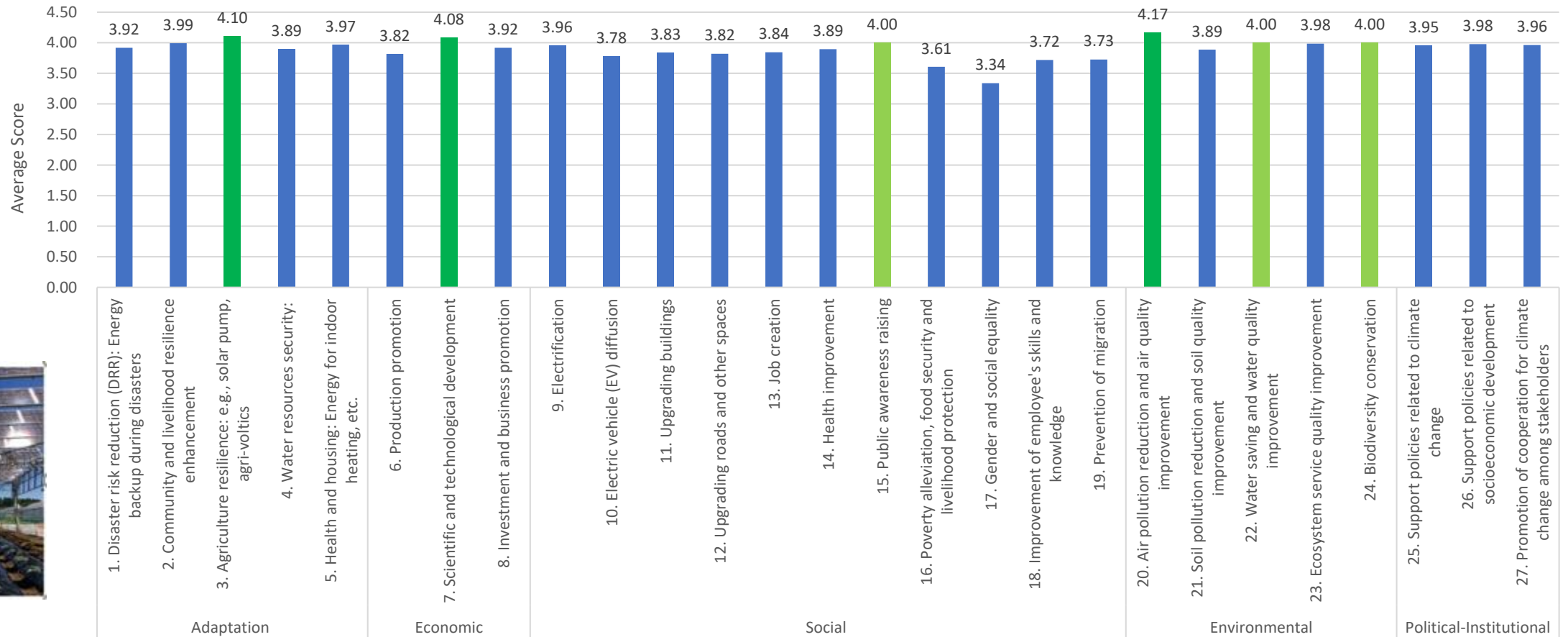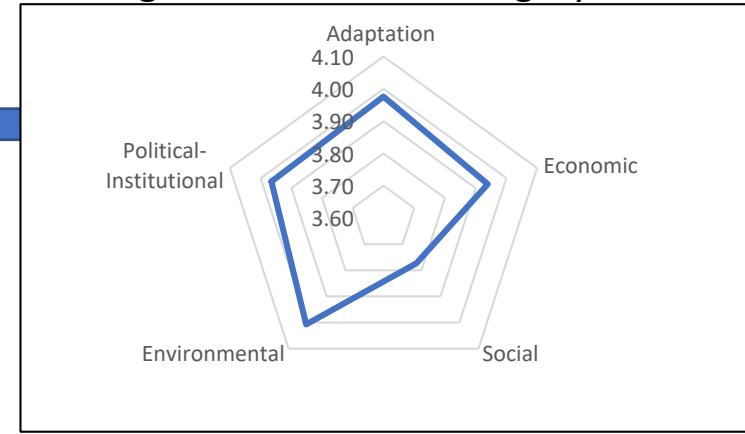
1.2.7. What do you hope for national adaptation goals.

Average score (scores of 1, 2, 3, 4, 5)
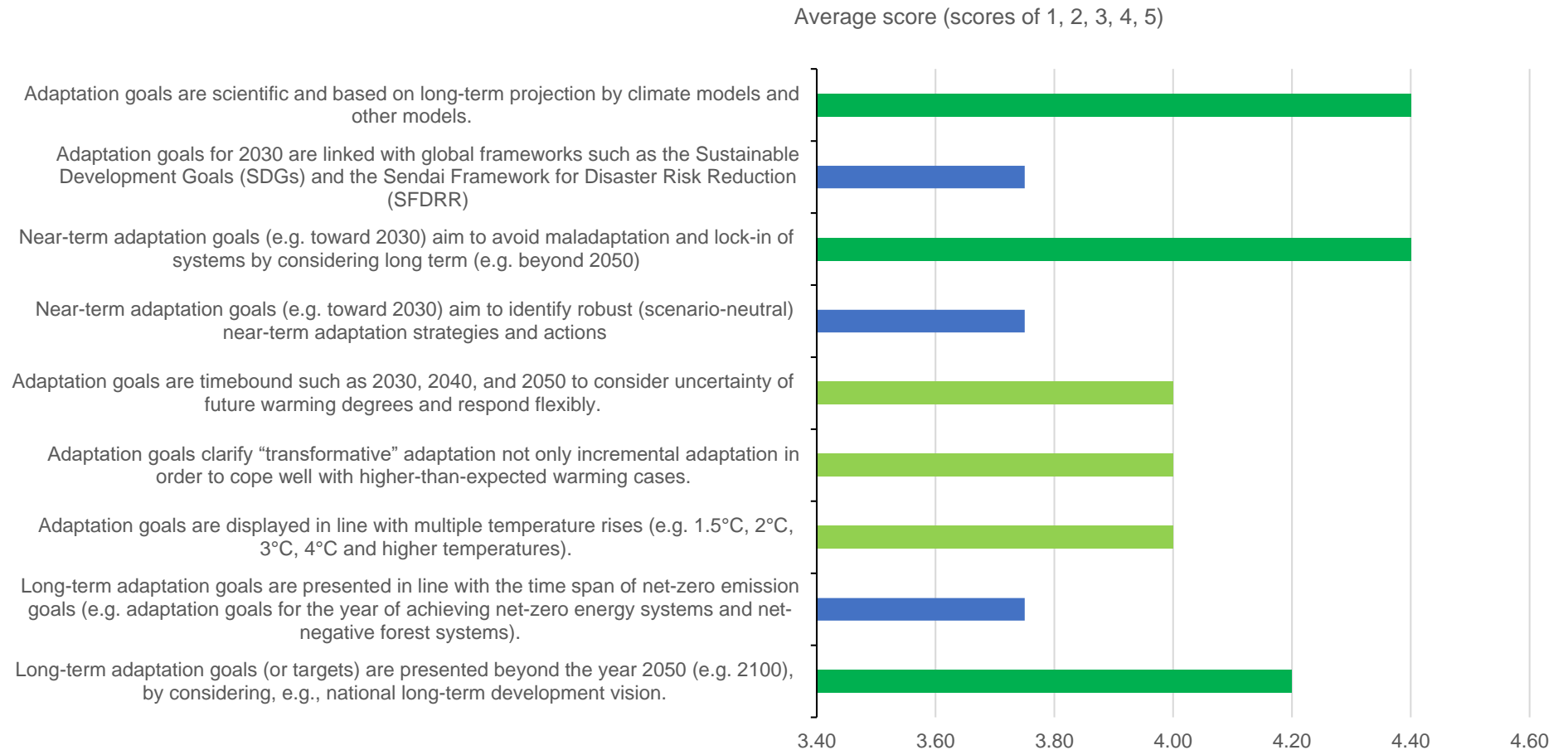
Co-benefits of solar power system (N=138)

- High co-benefits on political-institutional, environmental, economic and adaptation areas.
- High co-benefits (green coloured):
Air pollution prevention; agriculture resilience; scientific and technological development, public awareness raising, water saving and quality, biodiversity conservation

Average scores in each category

Category	Item	Average Score
Adaptation	1. Disaster risk reduction (DRR): Energy backup during disasters	3.92
	2. Community and livelihood resilience enhancement	3.99
	3. Agriculture resilience: e.g., solar pump, agri-voltics	4.10
	4. Water resources security:	3.89
	5. Health and housing: Energy for indoor heating, etc.	3.97
Economic	6. Production promotion	3.82
	7. Scientific and technological development	4.08
	8. Investment and business promotion	3.92
Social	9. Electrification	3.96
	10. Electric vehicle (EV) diffusion	3.78
	11. Upgrading buildings	3.83
	12. Upgrading roads and other spaces	3.82
	13. Job creation	3.84
	14. Health improvement	3.89
	15. Public awareness raising	4.00
	16. Poverty alleviation, food security and livelihood protection	3.61
	17. Gender and social equality	3.34
	18. Improvement of employee's skills and knowledge	3.72
	19. Prevention of migration	3.73
Environmental	20. Air pollution reduction and air quality improvement	4.17
	21. Soil pollution reduction and soil quality improvement	3.89
	22. Water saving and water quality improvement	4.00
	23. Ecosystem service quality improvement	3.98
	24. Biodiversity conservation	4.00
Political-Institutional	25. Support policies related to climate change	3.95
	26. Support policies related to socioeconomic development	3.98
	27. Promotion of cooperation for climate change among stakeholders	3.96

PART II: Mitigation Pathway with Renewable Energy Diffusion and Coal Power Decarbonisation

# Evaluation about the feasibility of future power system

Fig.3: Feasibility of power system decarbonization scenarios (N=128).
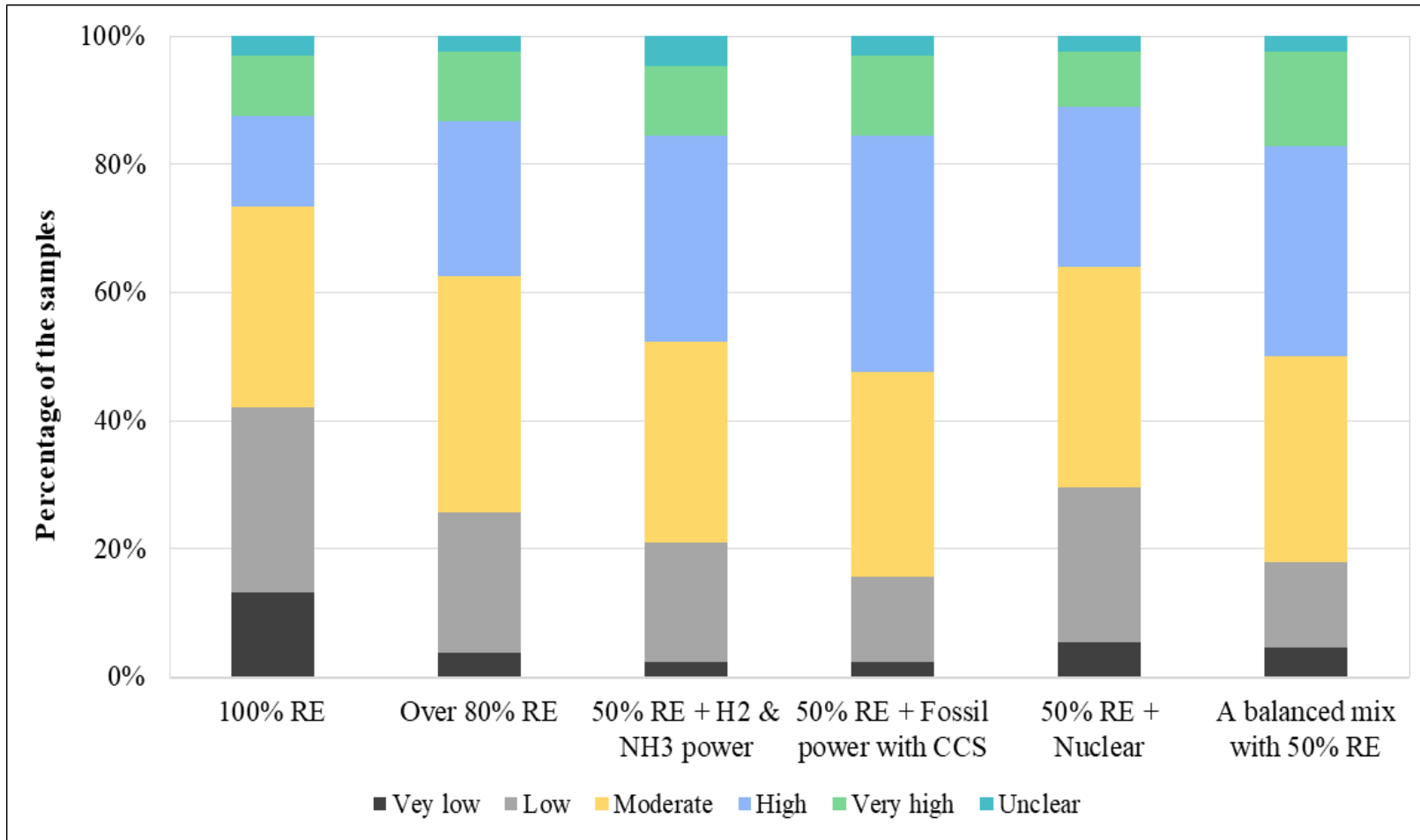
- Result of question No.2.1.5.
- **A balanced electricity mix with 50% renewables and the other carbon-free power sources is viewed to be more feasible for the Philippines.**
- Lower feasibility given to the option of 100% renewables, over 80% renewables, and 50% RE plus nuclear.
- The feasibility of fossil power with CCS is higher than the options like power from hydrogen and ammonia.

Agreement level of power technology options

Fig.4: Agreement of technology options for power sector transition (N=128).
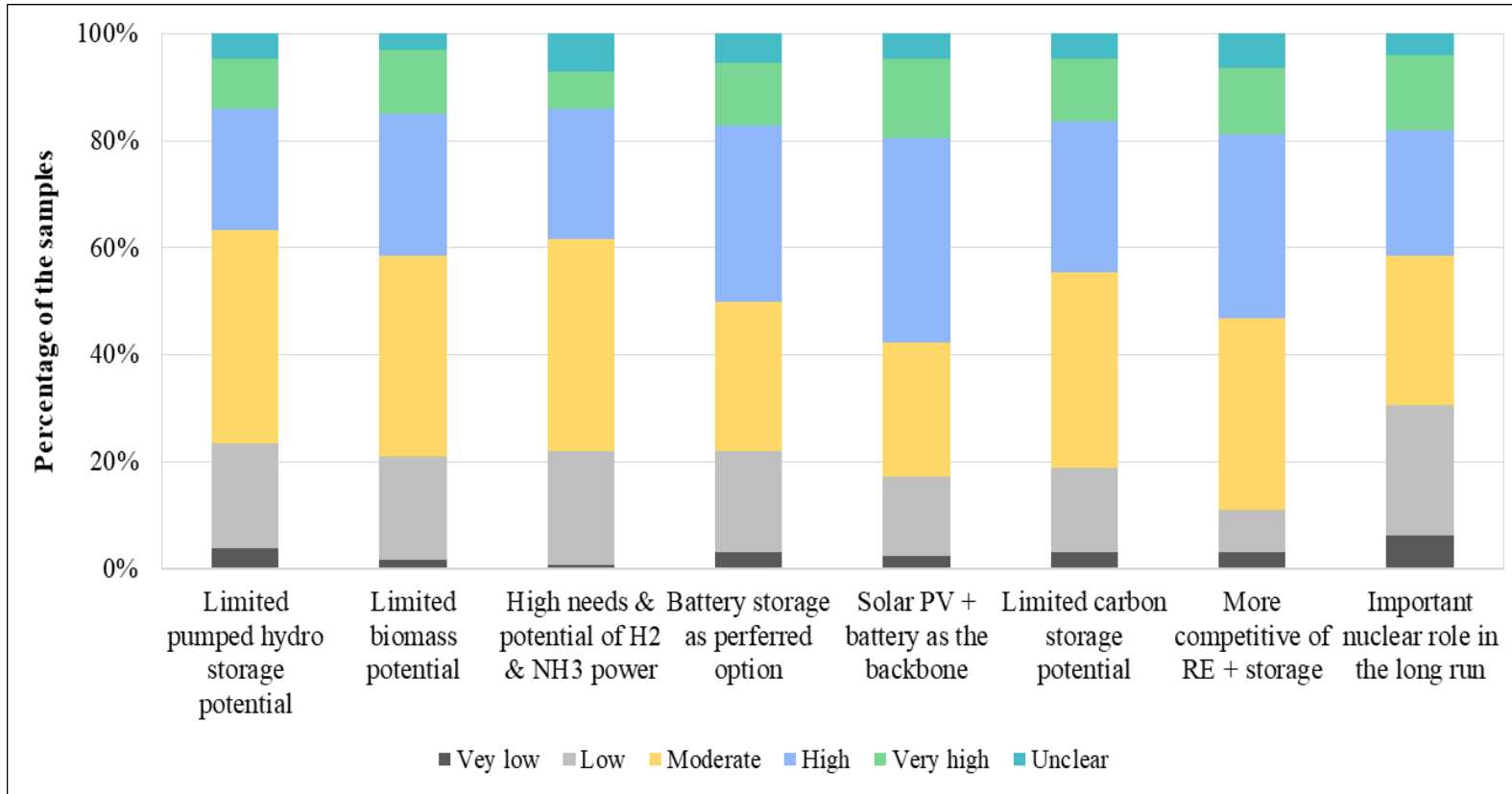
- Result of question No.2.1.6.
- The samples highly agree that **solar PV plus battery would become the backbone of future power supply system**; battery as preferred option; and, renewables plus storage would be more competitive.
- On the other hand, the less agreed items include: limited potential of pumped hydro storage, biomass and carbon storage; high needs and potential of hydrogen and ammonia; and, role of nuclear power.

Evaluation of the target for renewables development

Fig.5: Evaluation result of renewables development targets (N=128).
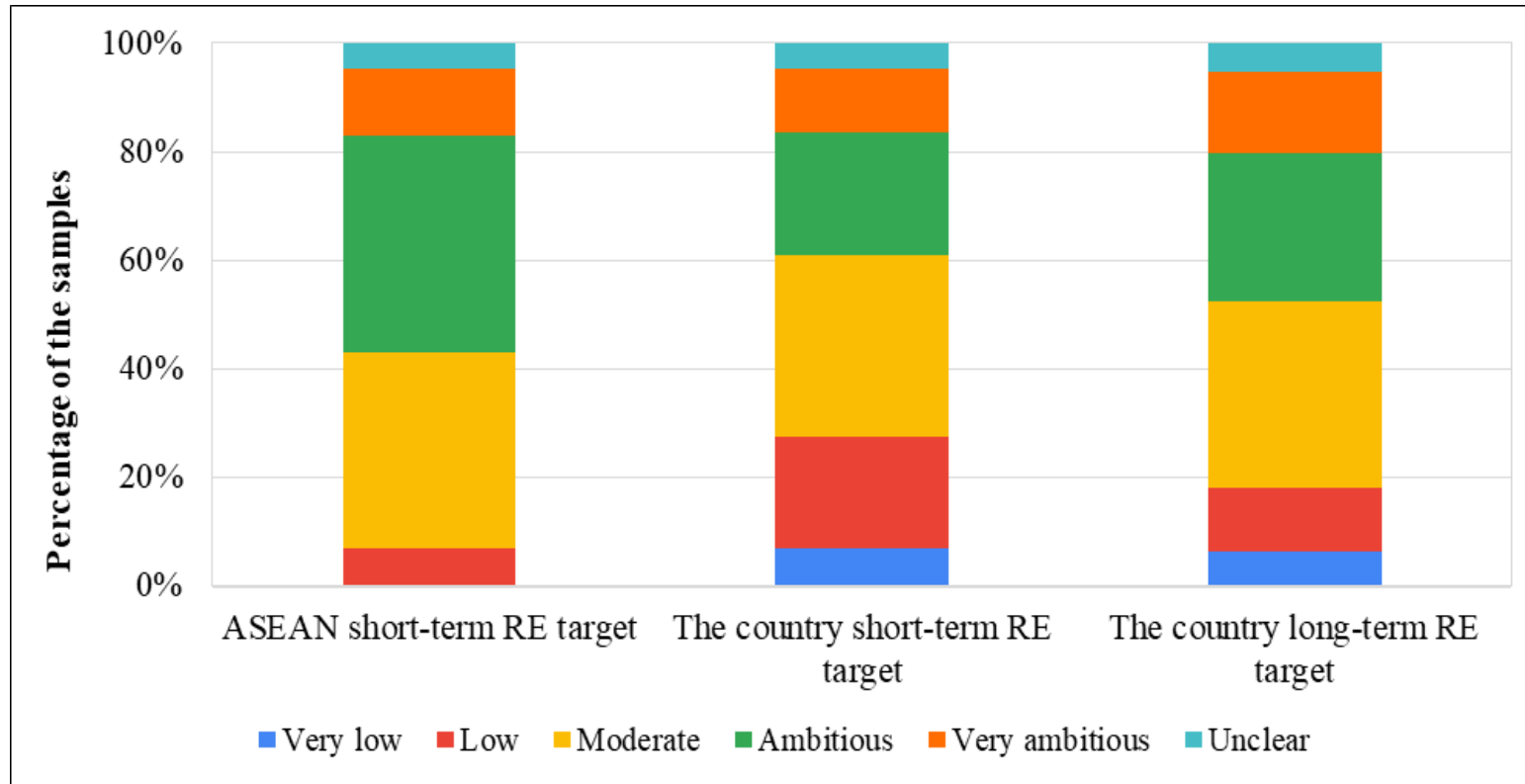
- Result of question No.2.2.1.
- Around 3/4 of the samples give either moderate or ambitious evaluation to the short-term target for renewables development in ASEAN as a whole. For the Philippines, this ratio is around 55%.
- For the long-term renewables development target, the ratio of samples is around 34%, 27% and 15% with moderate, ambitious and very ambitious evaluation.
- **Overall, the samples think the Philippine's long-term target for renewables development is relatively ambitious.**

Evaluation about the technical potential of renewable energy

- Result of question No.2.2.2.

- **Around 60% samples give either huge or very huge evaluation to the potential of hydro, solar energy (urban and rural) and geothermal.**

- The evaluation on potential of onshore and offshore wind is moderate on average.

Fig.6: Evaluation result of the technical potential of renewables (N=128).
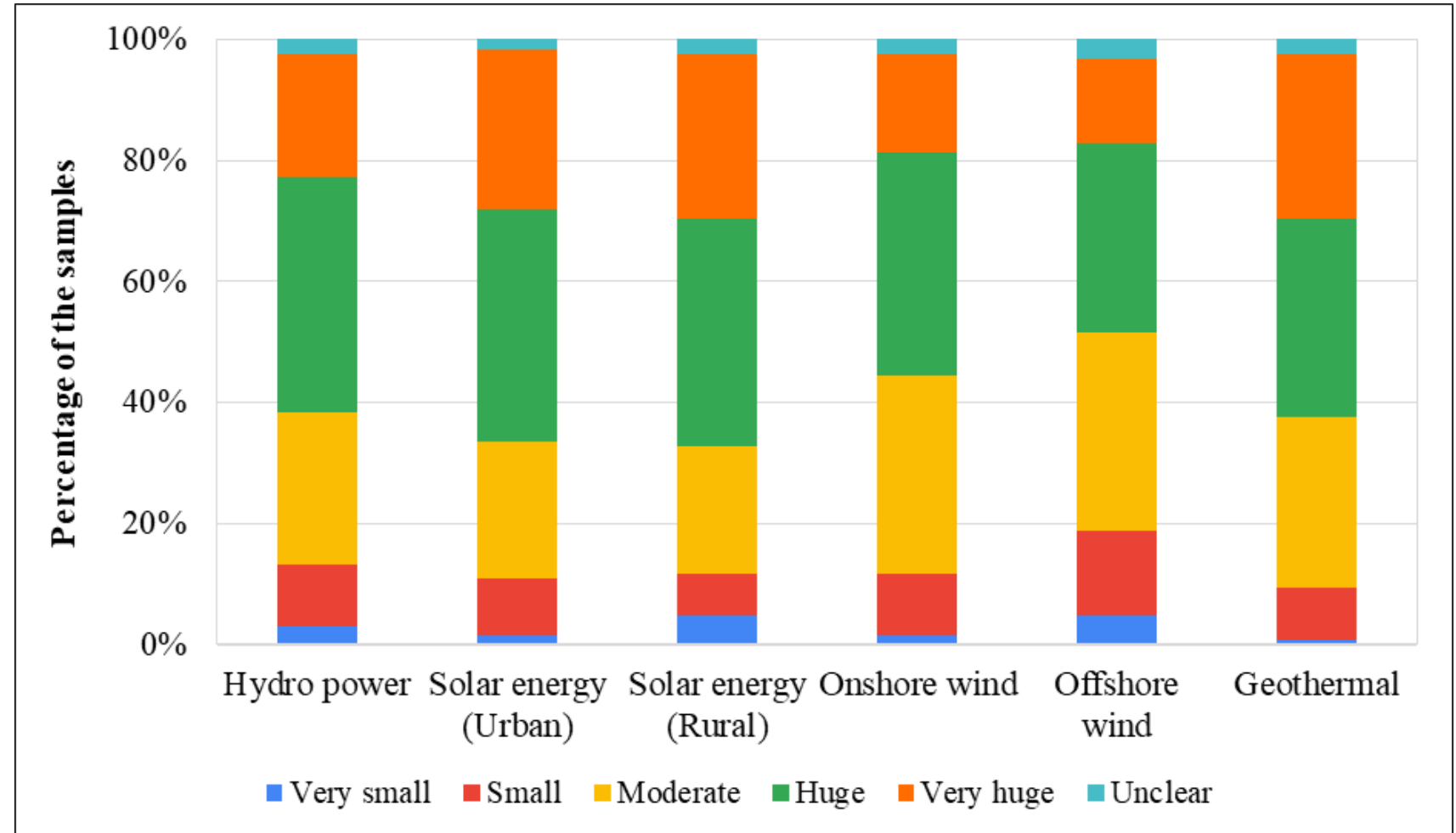
Criteria for early phase-out and retrofit

Air pollution, CO2 emission and land recovery are among the top criteria for early phase-out of coal

CO2 emission, water stress and air pollution are the top criteria for the low emission retrofitting

Average score for the criteria of early coal phase-out
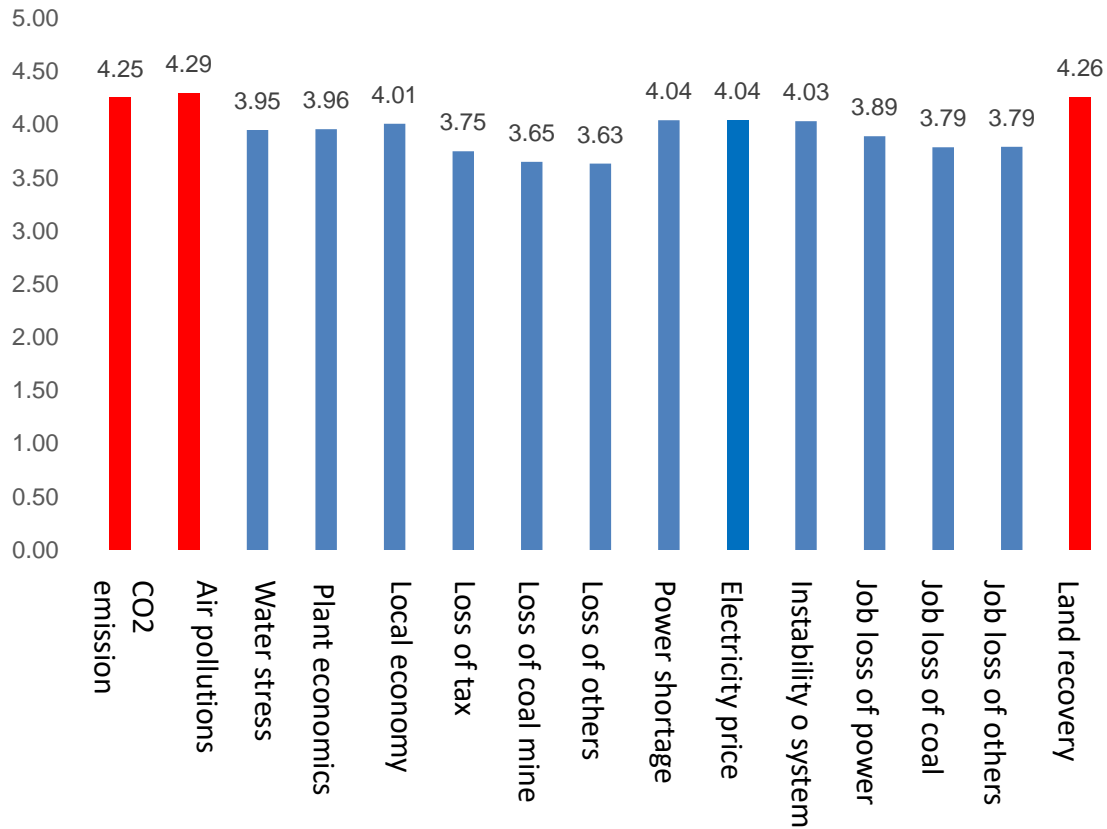
Average score for the criteria of of low emission retrofitting
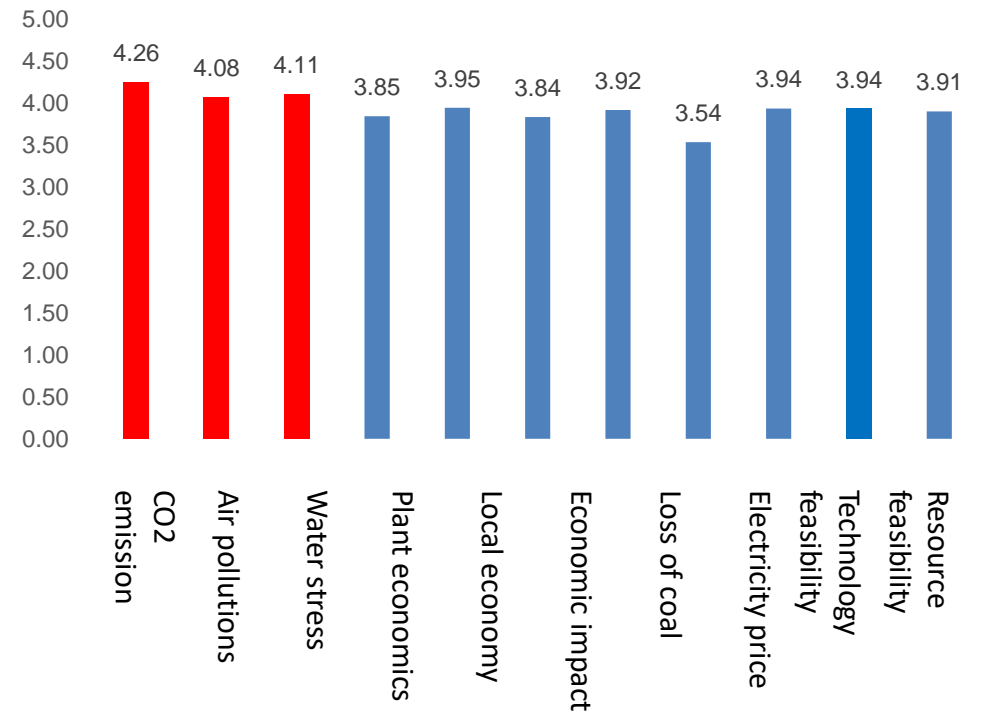
WORKSHOP on Scaling Solar PV for a Resilient and Sustainable Net-Zero Transition: Enhancing Climate Adaptation and Community Benefits in the Philippines

- Takeaways from Solar Photovoltaic (PV) Diffusion and Synergies with Resilience and Adaptation Workshop. University of the Philippines Los Baños (UPLB), College, Laguna Philippines, 27-28 February 2024.

PRIMARY ENERGY MIX

Total Primary Energy Supply Mix

2022

Net Imported Ethanol 0.3%

Net Imported Coal 18.6%

Net Imported Oil 31.6%

Indigenous Energy 49.4%

Oil, 0.6%
Natural Gas 4.2%
Coal 12.4%
Hydro, 4.1%
Geothermal 14.6 %
Biomass 12.6%
Wind/Solar, 0.4%
CME/Ethanol, 0.6%

Total: 61.6 MTOE
Self Sufficiency - 49.4 %

2021

Net Imported Ethanol 0.3%

Net Imported Coal 19.6%

Net Imported Oil 29.4%

Indigenous Energy 50.8%

Oil 0.7%
Natural Gas, 4.8%
Coal 12.6%
Hydro 3.9%
Geothermal 14.7%
Biomass 13.1%
Wind/Solar 0.4%
CME/Ethanol, 0.6%

Total: 58.8 MTOE
Self Sufficiency - 50.8 %

Total Energy and Self-Sufficiency Level

Source: Department of Energy. 2022 Key Energy Statistics

Figure 8. Philippines' Power Generation Mix, 2020-2040 Under RE35-High Demand Scenario

Source: DOE Power Development Plan 2020-2040
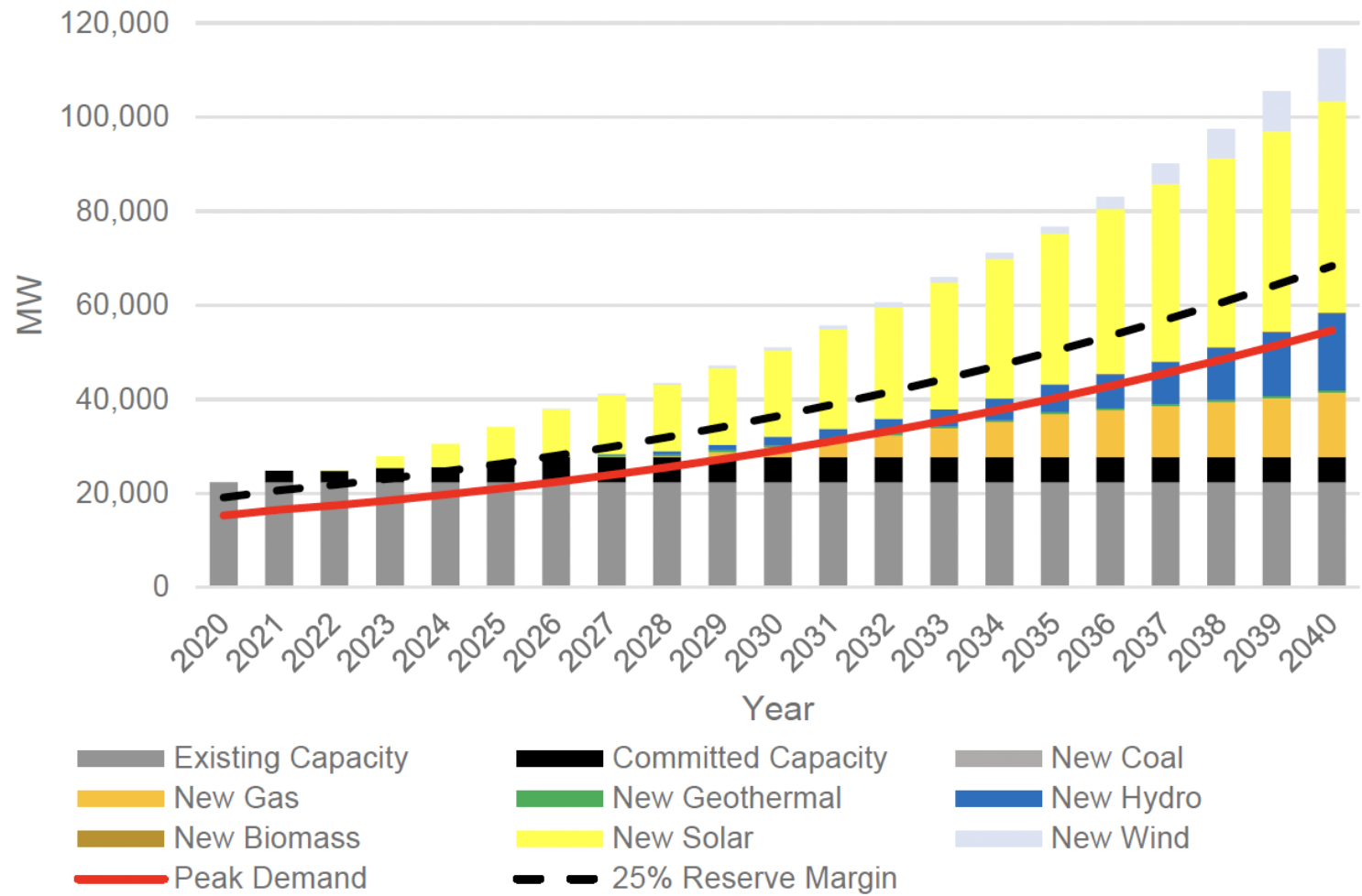
Figure 9. Philippines' Power Demand and Supply Outlook, 2020-2040 Under RE50-High Demand Scenario

Source: DOE Power Development Plan 2020-2040

FGD: Solar PV diffusion potential and associated co-benefits on land use, resilience, adaptation, and sustainable development in the local communities and industries of agriculture, aquaculture, and fishing

- **Solar PV installations generally offer more co-benefits than risks for farmer income (I), climate adaptability (A), and green development level (E).**
- Co-benefit scores range from low (0-8) to high (9-16), while risk scores are consistently low (0-8).
- Specific factors (P13, I4, A5, A12, E2, E8) show high co-benefits and low risks. (P13 –working hours for all products; I4 – agricultural productivity; A5 – clean energy; A12 – new technologies and equipment; E2 – agricultural equipment; E8- water saving irrigation technologies)
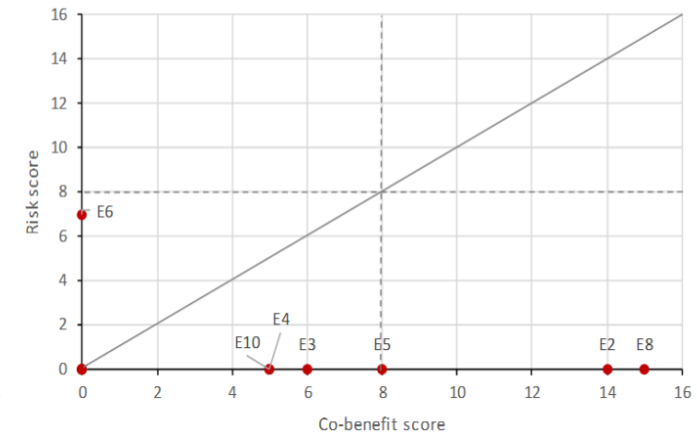
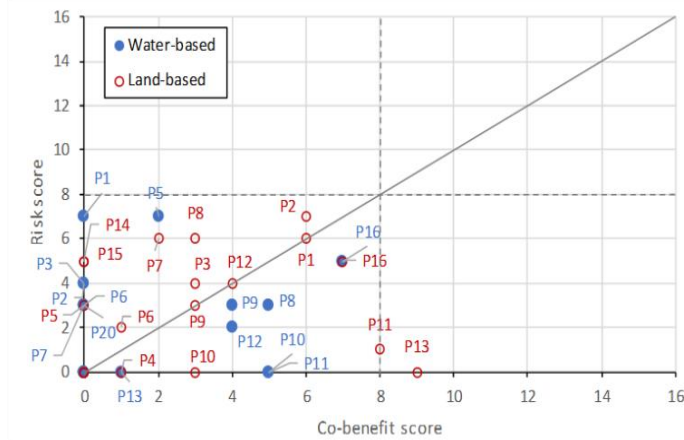Relationship between co-benefits and risks of land-based solar PV measured by impacts on CRA indicators

FGD: Relationship between co-benefits and risks of water-based solar PV as compared to that of land-based solar PV

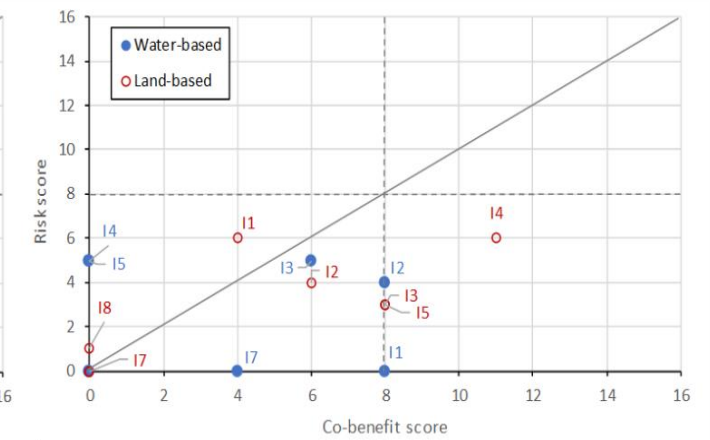Co-benefits and risks change for water-based solar PV.

Only climate adaptability (A) sees a slight change of risks reduced.

Water-based solar PV systems may generate relatively higher co-benefits of climate change adaptation than land-based PVs.
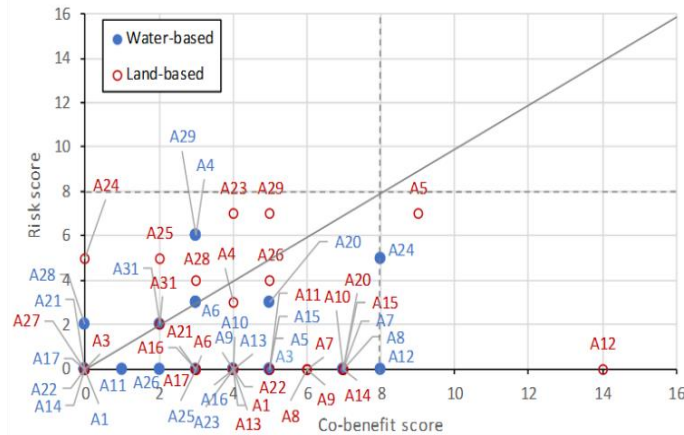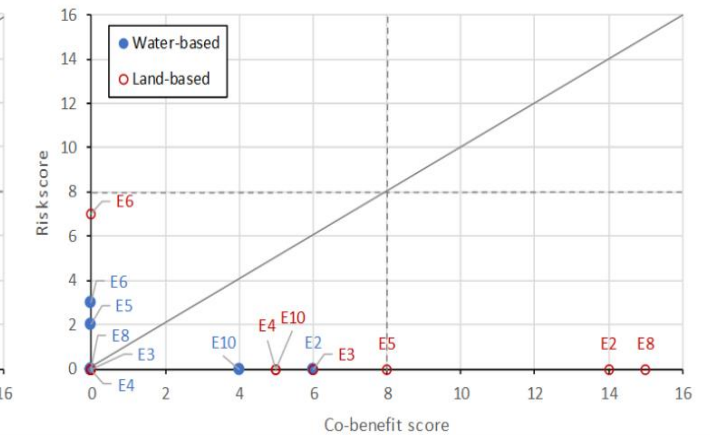

Relationship between co-benefits and risks of water-based solar PV as compared to that of land-based solar PV

POLICY RECOMMENDATIONS

- Integrate adaptation and climate goals in sectoral and national development priorities.
- Protect, conserve and rehabilitate natural forests and ecosystems for CC adaptation, food security, biodiversity, healthy lives and quality water and sanitation.
- Scale the development of Renewable Energy-centered systems for affordable, reliable and sustainable and modern energy; environmental protection and healthy lives.
- Design and plan human settlements to include Green building designs adapted to flooding and higher temperature (stilts in coastal and riverine areas, ventilation, energy-efficient lighting and appliances)
- Mainstream circular economy to reduce wastes, capture CH_4 from landfill

POLICY RECOMMENDATIONS

- Adopt best practices in rice farming (alternate wetting and drying, precision agriculture, organic farming, integrated pest management)
- Holistic policies and interventions to end poverty.
- Design net-zero energy and forest systems to strengthen the synergy to achieve development vision.
- Implementation of Adaptation Solutions outlined in the NAP 2023-2050.

THANK YOU!