CLIMATE CHANGE, HEALTH, TRADE: Addressing the Technology Gap

Vicente Paolo Yu

Senior Legal Adviser, TWN
Founding Partner, CEIP

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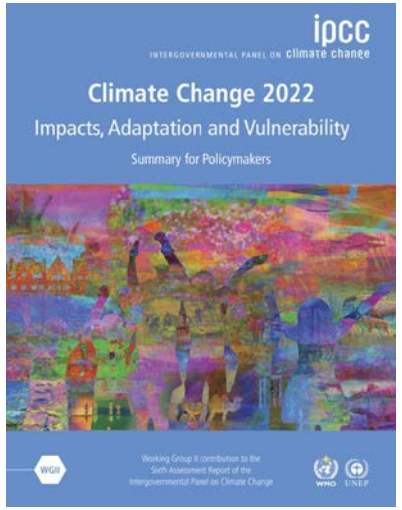
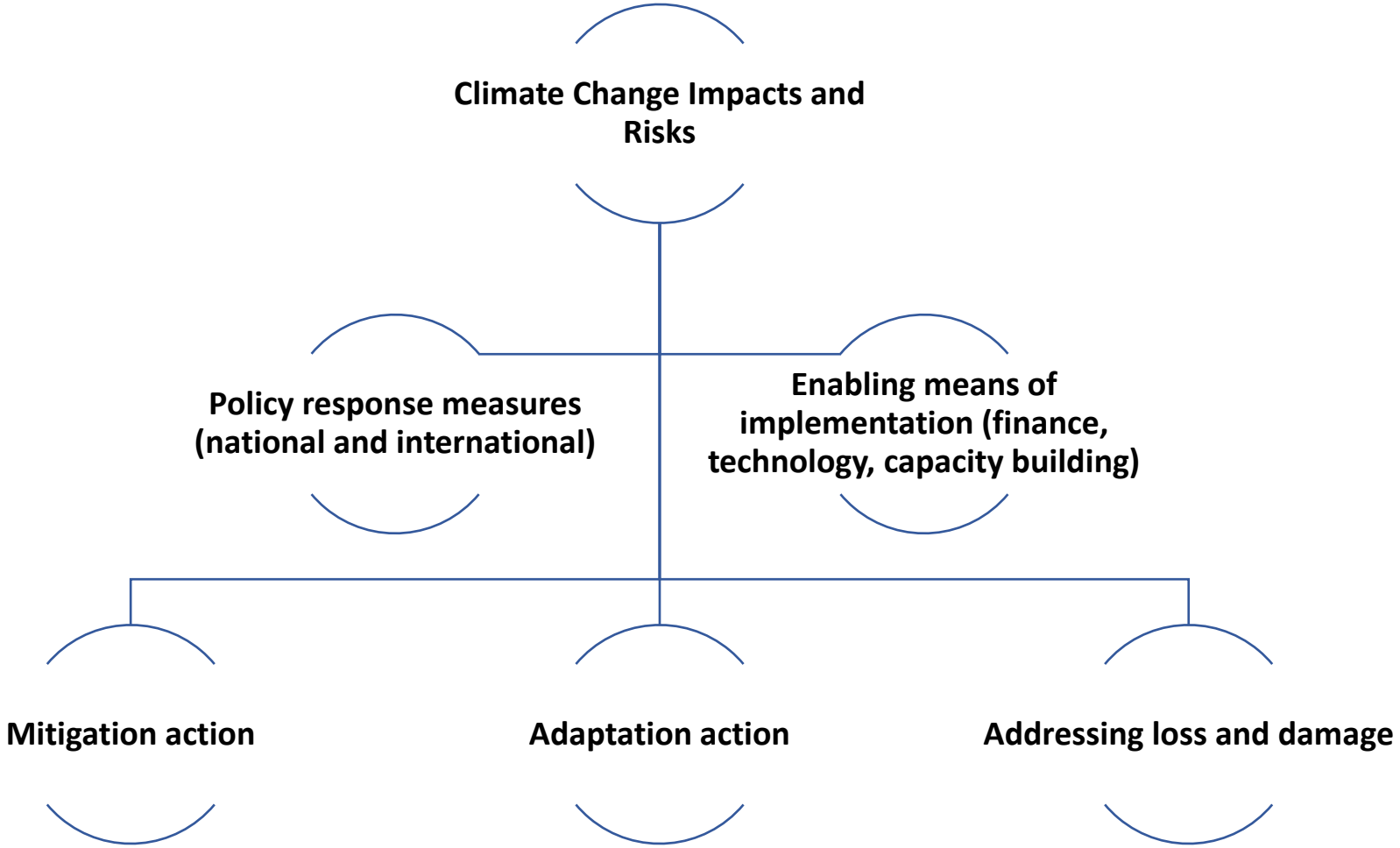
Climate Change Crisis and Health: Interactions and Projected Impacts



@/> 1.5C above pre-industrial levels, health-related impacts = Increased mortality and global burden of non-communicable and infectious diseases

- Mortality - >+250k/yr by 2050 (mostly in developing countries) to >9M/yr by 2100 from heat, infectious diseases (due to vector range expansion and increased trigger event - rainfall, flood, drought - incidence), NCDs (cardiovascular and respiratory risk expansion), food system breakdown and food scarcity (agricultural system loss), zoonotic diseases (ecosystem and habitat loss combined with population expansion), health system infrastructure breakdown (EWEs and SOEs) under moderate to high warming scenarios and limited to medium adaptation scenarios
- Mental health impacts on vulnerable populations due to climate change impacts and associated emotional and psychological distress
- Greater strain on national health systems infrastructure and global health cooperation

Addressing Health Impacts and Risks of Climate Change



Enabling Means of Implementation under the UN Framework Convention on Climate Change

Article 4.3: Developed countries…shall provide new and additional … financial resources, including for the transfer of technology, needed by developing country Parties to meet the agreed full incremental costs of implementing climate change actions under the UNFCCC

Article 4.4: Developed countries…shall also assist the developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation…

Article 4.5: Developed countries … shall take all practicable steps to promote, facilitate and **finance** … the transfer of, or access to, environmental sound technologies and know-how to … developing country Parties to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties.

Article 4.7: The extent to which developing countries will effectively implement their commitments under the Convention will depend on the effective implementation by developed countries of their commitments under the Convention related to financial resources and transfer of technology

Climate Finance in Paris Agreement

- **Article 9.1:** Developed countries shall provide financial resources to assist developing countries wrt. mitigation and adaptation in continuation of their existing obligations under the Convention
- **Article 9.2:** Other Parties are encouraged to provide or continue to provide such support voluntarily.
- **Article 9.3:** Developed countries should continue to take the lead in mobilizing climate finance from a wide variety of sources…noting the significant role of public funds

WHAT ABOUT ART. 2.1(c)? "This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by: …(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development."

Developing countries

Developed countries

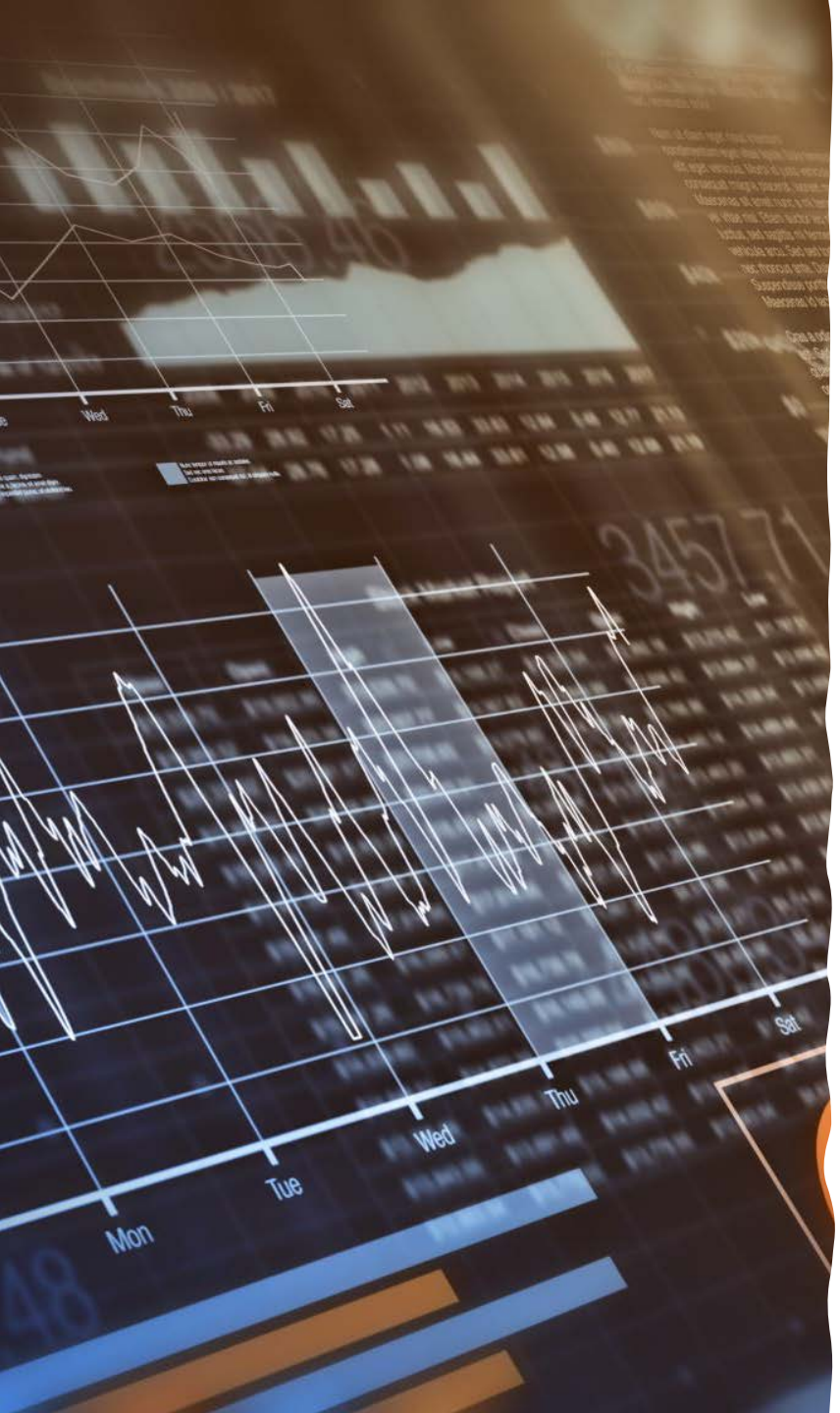
International cooperation on technology transfer: Enabler for climate action

UNFCCC Articles 4.1(c) and 4.5

Art. 4.1(c)	1. All Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances, shall: … (c) Promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors
Art. 4.5	5. The developed country Parties and other developed Parties included in Annex II shall take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies and knowhow to other Parties, particularly developing country Parties, to enable them to implement the provisions of the Convention. In this process, the developed country Parties shall support the development and enhancement of endogenous capacities and technologies of developing country Parties. Other Parties and organizations in a position to do so may also assist in facilitating the transfer of such technologies.

Paris Agreement Article 10.6

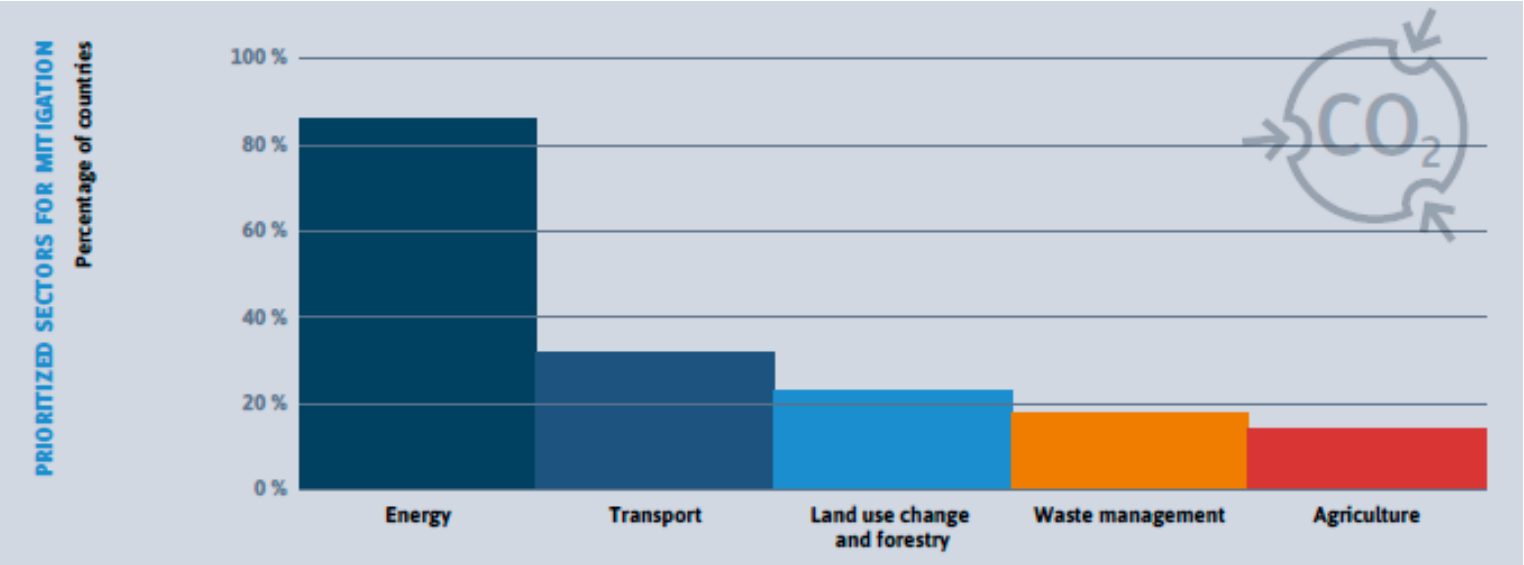
Art. 10.6	6. Support, including financial support, shall be provided to developing country Parties for the implementation of this Article, including for strengthening cooperative action on technology development and transfer at different stages of the technology cycle, with a view to achieving a balance between support for mitigation and adaptation. The global stocktake referred to in Article 14 shall take into account available information on efforts related to support on technology development and transfer for developing country Parties.



Climate-related technology transfer priorities of developing countries

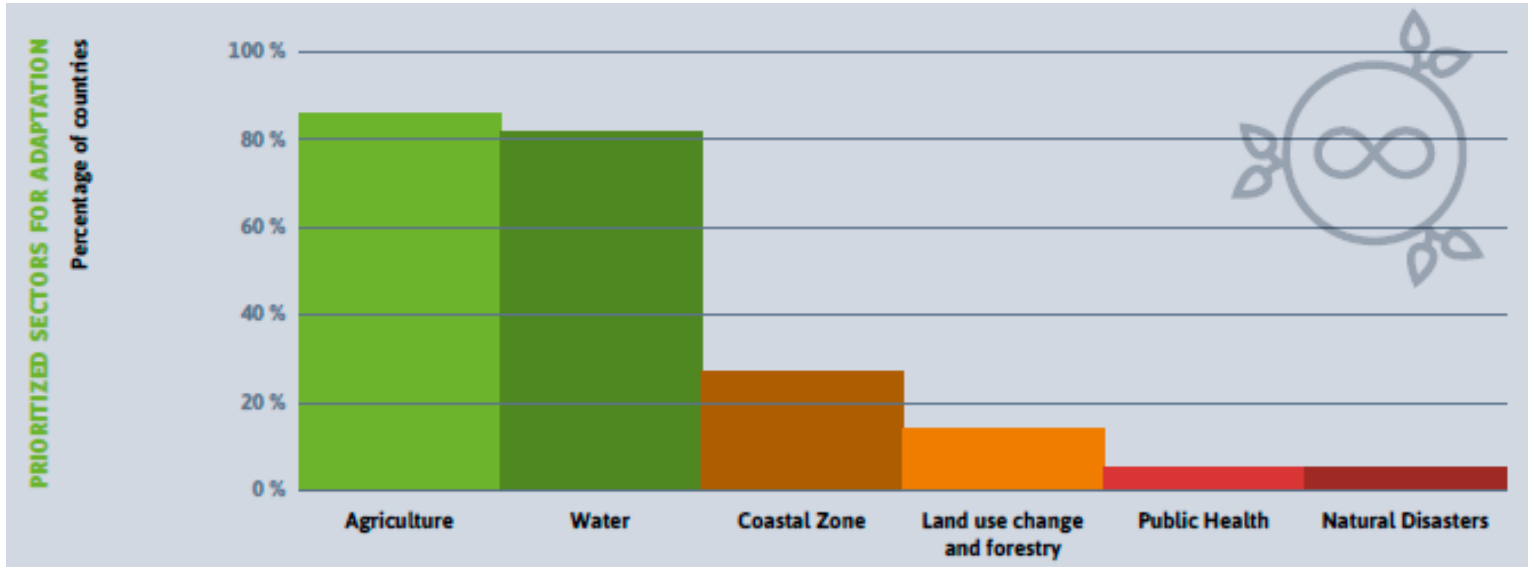
- Two objectives:
  - ❑ Support the implementation by developing countries of their climate change actions (mitigation, adaptation, loss and damage), including NDCs under Paris Agreement
  - ❑ Development and enhancement of endogenous capacities and technologies of developing countries (in environmentally sound technologies and know how)
- Context-specific
- Nationally-appropriate
- Country-driven
- Needs-based

Technology Priority Sectors from TNAs



These are all sectors relevant to health-related outcomes

UNFCC, Summary of Country Priorities: Technology Needs Assessments (2018), https://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNA_key_doc/137ce42be33c4341a9b9e6679f7f8539/4a057ad243164ac6bbaa62bcb96bc39a.pdf



Technology prioritization exercises under the UNFCCC: Developing countries have been proactive since 2001

- Undertook Technology Needs Assessments (TNAs) - - > 90 TNAs done, >39 underway

	Africa	Asia-Pacific	Latin America and the Caribbean
Mitigation	Solar energy technologies Forest management, reforestation and forest conservation technologies Mechanical-biological waste treatment, waste recycling, and composting technologies	Solar energy technologies, such as solar minigrids, solar irrigation pumps, solar lanterns and solar water-heating technologies Clean transport sector technologies Waste management sector technologies	Energy-efficient buildings and lighting systems, bioenergy and solar energy technologies Clean transport sector technologies Sustainable agriculture sector technologies
Adaptation	Technologies for the management and diversification of crops, the development of new crop varieties, drip irrigation, soil management and food conservation Water storage and harvesting, water management and water catchment technologies Coastal zone management and restoration, climate monitoring and forecasting, and hard coastal protection technologies	Technologies for the development of salt-, pest- and drought-tolerant crop varieties, drip irrigation systems, precision farming and windbreaker rehabilitation Water sector management technologies Coastal zone management technologies Technologies to address climate-induced natural disasters such as tsunamis, typhoons and cyclones	Technologies for rainwater-harvesting, storm-water reclamation and reuse, water mapping and modelling, and water-quality monitoring Technologies for irrigation and farming systems, such as drip irrigation, micro-sprinklers, soil nutrition, soil conservation and the introduction of climate-resilient crops

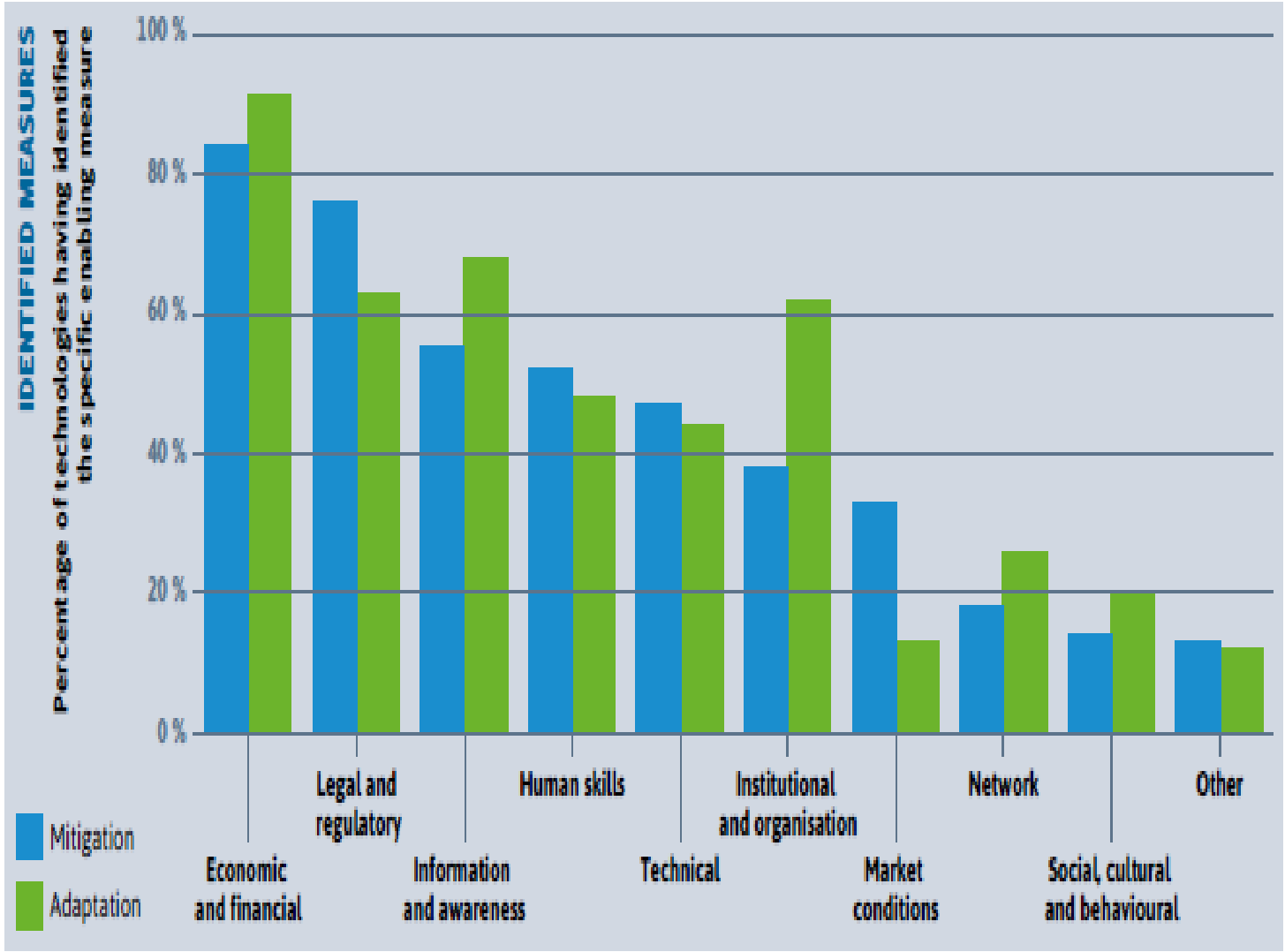
Technology Needs to Address Loss and Damage: Coastal Zones Case Study

Technology Sector	Risk Assessment	Risk Retention	Recovery and Rehabilitation
Hard technologies	▪ Ocean/coastal observation ▪ Geospatial technology ▪ Numerical simulation models ▪ Socioeconomic information generation ▪ Ecosystem risk assessment	▪ Structural/engineered technologies (seawalls, barriers, dams, dikes, riprap) ▪ Natural ecosystem-based solutions ▪ Hybrid technologies ▪ Early warning systems	▪ Ecosystem restoration technologies and approaches ▪ Data collection ▪ Emergency measures and response technologies
Soft technologies	▪ Finance ▪ Stakeholder engagement ▪ Technology knowledge	▪ Finance, including insurance, social protection safety nets ▪ Adaptation management tools and methods	▪ Finance, for insurance recovery, for repair or reconstruction of infrastructure ▪ Resilience-building assessment frameworks
Organizational technologies	▪ Policies for risk assessment ▪ Institutional arrangements and governance ▪ Data and information partnerships	▪ Integrated cross-sectoral approaches ▪ Integrated policy approaches ▪ Capacity building ▪ Community-based adaptation ▪ Risk preparedness ▪ Infrastructure flood proofing policies and regulations	▪ International mechanisms for resilience building (e.g. Sendai, regional frameworks) [also Santiago Network and LDF] ▪ Support for local communities

UNFCCC, Policy Brief: Technologies for Averting, Minimizing and Address Loss and Damage in Coastal Zones (July 2020), https://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/2020_coastalzones/b9e88f6fea374d8aa5cb44115d201160/3863c9fabdf74ea49710189acbf6907a.pdf

Identified enablers to effective climate technology transfer

- UNFCC, Summary of Country Priorities: Technology Needs Assessments (2018), https://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNA_key_doc/137ce42be33c4341a9b9e6679f7f8539/4a057ad243164ac6bbaa62bcb96bc39a.pdf



Global trade dynamics and trade-environment linkages

Trade in climate-relevant technologies goods reached USD1.9 trillion in 2022, with electric and hybrid vehicles, non-plastic packaging and wind turbines performing especially well; UNCTAD projects that the global market for electric cars, solar and wind energy, green hydrogen and a dozen other green technologies will reach USD2.1 trillion by 2030 (UNCTAD, Global Trade Update (March 2023), at [https://unctad.org/system/files/official-document/ditcinf2023d1_en.pdf)](https://unctad.org/system/files/official-document/ditcinf2023d1_en.pdf)

Climate-relevant technology divide

- "Developed economies are seizing most of the opportunities, leaving developing economies further behind."

- Developed countries are largely remaining ahead of and dominating the curve (particularly with respect to so-called "frontier technologies", including climate-relevant technologies) while developing countries in Latin America, the Caribbean and sub-Saharan Africa are the least ready to harness such technologies and hence more at risk of missing technological opportunities

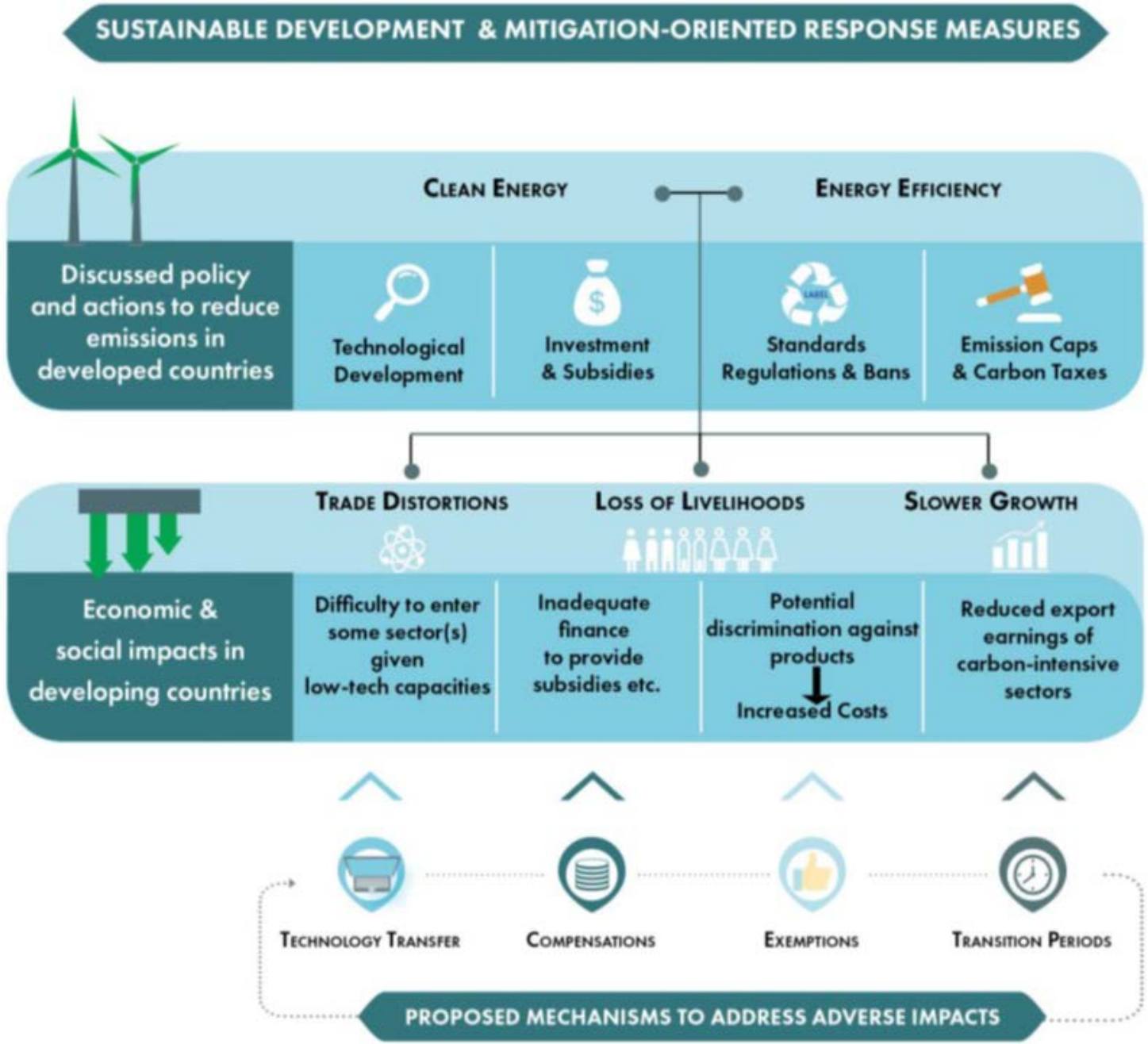
	Developed countries (16% of world population)	Developing countries (84% of the world population)
Percentage of low-carbon technological inventions between 1990-2015	80%	20%
Percentage of total global exports of climate-relevant technologies in 2020	69.82%	30.16% MICS 0.02% LICs
Value of total climate-relevant technology exports between 2018 to 2021	From USD 60 billion to USD156 billion	From USD 57 billion to USD75 billion

UNEP, Technology Transfer for Climate Mitigation and Adaptation: Analysing needs and development assistance support in technology transfer processes (UNEP, 2022), p. 5, at https://unepccc.org/wp-content/uploads/2022/11/finalproof-tech-transfer-policy-brief-oecd.pdf

UNCTAD, Green technologies: Coherent policy action needed for developing countries to reap the benefits (UNCTAD, 16 March 2023), at https://unctad.org/news/green-technologies-coherent-policy-action-needed-developing-countries-reap-benefits

UNCTAD, Technology and Innovation Report 2023: Opening green windows – Technological opportunities for a low-carbon world (2023), p. 111, at https://unctad.org/system/files/official-document/tir2023_en.pdf

Miria Pigato et al., Technology Transfer and Innovation for Low-Carbon Development (World Bank, 2020), pp. 63-66, at https://documents1.worldbank.org/curated/en/138681585111567659/pdf/Technology-Transfer-and-Innovation-for-Low-Carbon-Development.pdf


SUSTAINABLE DEVELOPMENT & MITIGATION-ORIENTED RESPONSE MEASURES
CLEAN ENERGY
ENERGY EFFICIENCY
Discussed policy and actions to reduce emissions in developed countries
Technological Development
Investment & Subsidies
Standards Regulations & Bans
Emission Caps & Carbon Taxes
TRADE DISTORTIONS
LOSS OF LIVELIHOODS
SLOWER GROWTH
Economic & social impacts in developing countries
Difficulty to enter some sector(s) given low-tech capacities
Inadequate finance to provide subsidies etc.
Potential discrimination against products
Increased Costs
Reduced export earnings of carbon-intensive sectors
TECHNOLOGY TRANSFER
COMPENSATIONS
EXEMPTIONS
TRANSITION PERIODS
PROPOSED MECHANISMS TO ADDRESS ADVERSE IMPACTS

Way Forward

- Scale up technical, financial and technology assistance to developing countries to implement climate action and develop endogenous technologies
- Supportive domestic policy measures to absorb imported technology, innovate and adapt such technology to domestic requirements, and eventually develop endogenous climate technologies (e.g., increasing domestic research and development capacity, economic diversification , shifting domestic consumer production and consumption to sustainable or low carbon patterns, green public procurement, development of green regulations or product standards, providing technical assistance and capacity building support to domestic innovators and producers)
- Explore the strategic and maximal use of IPR flexibilities under the TRIPS Agreement to promote and support endogenous learning and follow-on innovation in developing countries with respect to imported and transferred climate-relevant technologies

Way Forward

- Do more domestic mitigation within developed countries (meet their fair share of the historical plus current mitigation budget up to 2050 to show ambition leadership, leverage domestic finance and technology to reduce their carbon footprint and go into negative emissions, and provide carbon space for developing countries to keep within their fair shares)
- Reduce overconsumption and exploitation of natural resources both domestically and overseas
- Moratorium (“Peace Clause”) on WTO dispute settlement over cases involving domestic climate change-related measures by developing countries (such as subsidies to develop domestic green economic sectors)
- Ensure public funds provided to domestic institutions and entities in developed countries doing R&D and production of environmentally sound technologies are subject to terms and conditions obligating their transfer and related know-how to developing countries
- Recognize the importance of developing countries using IP-related flexibilities to address IP-related barriers to EST, to create the freedom to operate for the development and supply of endogenous technologies in developing countries. In particular, recognizing that nothing in the TRIPS Agreement prevents WTO Members from taking measures to deal with the challenges of climate change, including to promote access to climate-friendly technologies and associated know-how. Refrain from asserting political and economic pressure on developing countries to discourage the use of IP-related flexibilities
- Increasing multilateral, regional and bilateral technical assistance, capacity building, and expertise sharing programmes between developed and developing countries on mitigation, adaptation, loss and damage, response measures
- Avoid or withdraw unilateral carbon-based trade measures

Way Forward

- **Implement real and effective technology transfer**, as provided for in Art. 4.5 UNFCCC, Art. 10 PA (including financing), and WTO agreements, of developed country ESTs to developing countries using bilateral or other technology transfer and development cooperation programmes to help with technological retrofitting and jumpstart endogenous technology development in developing countries
- **Increase developed countries' financing support to developing countries for climate change and sustainable development action**:
  - Under the UNFCCC/PA regime through the Financial Mechanism's operating entities (GEF, GCF), the Adaptation Fund, and the Loss and Damage Fund, address the economic and social consequences of response measures, and for technology transfer
  - Immediate debt payment moratorium and cancellation of debt of developing countries
  - Support reform of international tax regimes, including global tax justice
  - Push MDBs to increase grant and provide concessional financing to developing countries to support development and economic diversification-oriented mitigation and adaptation projects and economic sectors
- **Support the integration of economic diversification into sustainable development strategies** and facilitate and support international cooperation efforts to achieve economic diversification and expansion of clean and renewable energy-based energy access in developing countries, including through targeted investments, technical assistance, removal of policy and financial barriers to technology transfer, to support leapfrogging from fossil fuel-dependent development to low carbon development pathways -- including in the development and implementation of environmental protection and climate change mitigation strategies, plans, policies and programs, including NDCs and/or long-term low emissions development strategies that maximize the positive and minimize the negative impacts of response measures.

Thank You

Email: vicentepaolo.yu@gmail.com