Accelerating the Imperative: Green Technology Deployment

Identifying opportunities – Capture technology demand systematically
Take stock of public processes & industry-led net zero initiatives
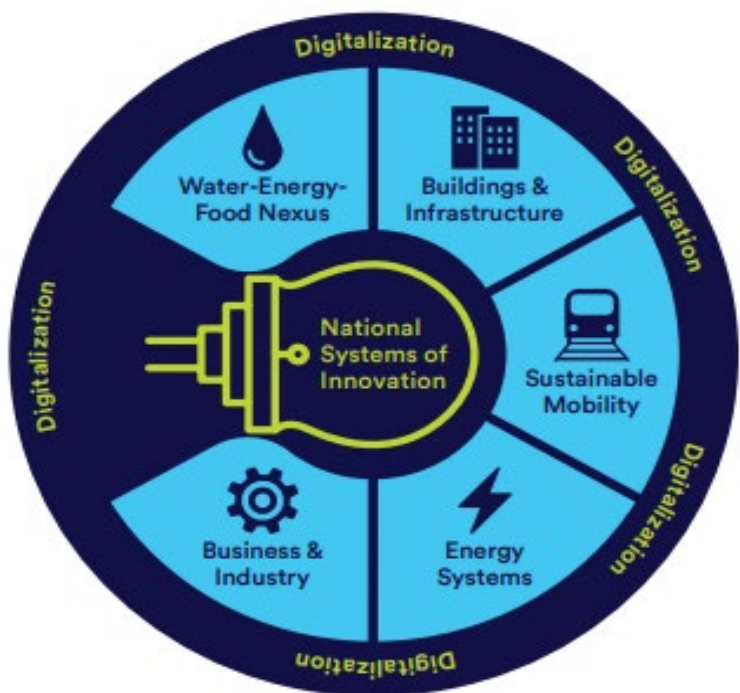
Rajiv Garg
Director of the CTCN

November 1, 2023
Symposium, WIPO GREEN, Geneva

UN environment programme | CTCN
UN Climate Technology Centre & Network

Introduction of the CTCN

" Support Parties to achieve their commitments to the Paris Agreement through technology development and transfer and to implement their NDCs, improve resilience to climate change impacts and mitigate climate change "

Category	Percentage
Decision-making tools and/or information provision	25%
Feasibility of technology options	21%
Technology identification and prioritisation	15%
Sectoral roadmaps and strategies	12%
Piloting and deployment of technologies in local conditions	9%
Recommendations for law, policy and regulations	8%
Financing facilitation	5%
Research and development of technologies	4%
Private sector engagement and market creation	2%

Identifying Opportunities

What can be listed to identify key priorities

- Technology Needs Assessments (TNAs)

- NDCs

- LEDs

- BUR and NCs

- Country Programmes – MDBs/ GCF/GEF etc.

- CTCN TAs

Key Highlights

- An analysis of the latest NDCs and TNAs shows that in practice developing countries already frequently connect their TNA and NDC processes (TEC, 2022b).
- This also confirms the finding of the latest synthesis report on TNAs that most Parties do not consider the TNA process in isolation, but rather as complementary to national policies and plans such as NDCs and NAPs (UNFCCC, 2020e).
- The engagement of key line ministries, for example for finance, the economy and agriculture, was found to be a decisive factor for TNA outcomes to be considered in national strategy formulation processes such as NDC development (TEC, 2019,2022b).

Synthesis Analysis from NDC

- All Parties provided information on the scope and coverage of their NDCs, including sectors and gases covered. The coverage of sectors and gases has increased in the new or updated NDCs compared with the Parties' previous NDCs (see figure 3).

Figure 3
Sectors and greenhouse gases covered by Parties that communicated them in nationally determined contributions
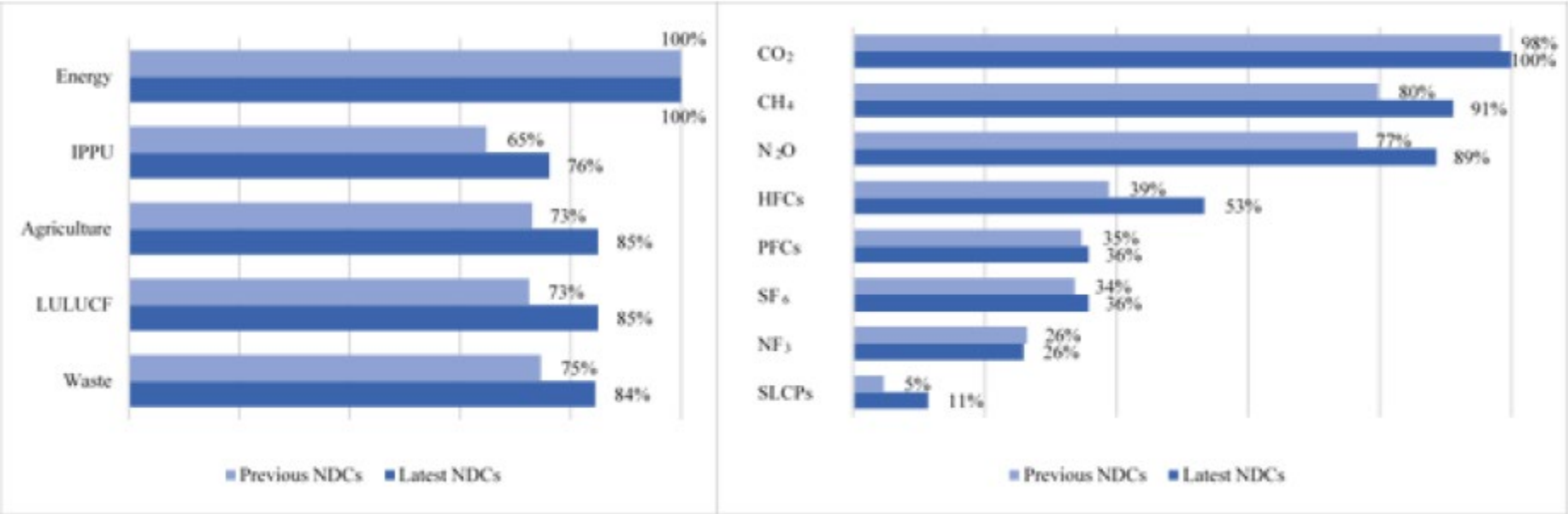
Synthesis Analysis from TNA

- Having identified their primary GHG-emitting sectors, potential national vulnerability to climate change and national development priorities in their TNAs, the majority of the Parties, consistently with the TNA guidance provided by UNEP, began the process of prioritizing certain sectors.

Figure 7
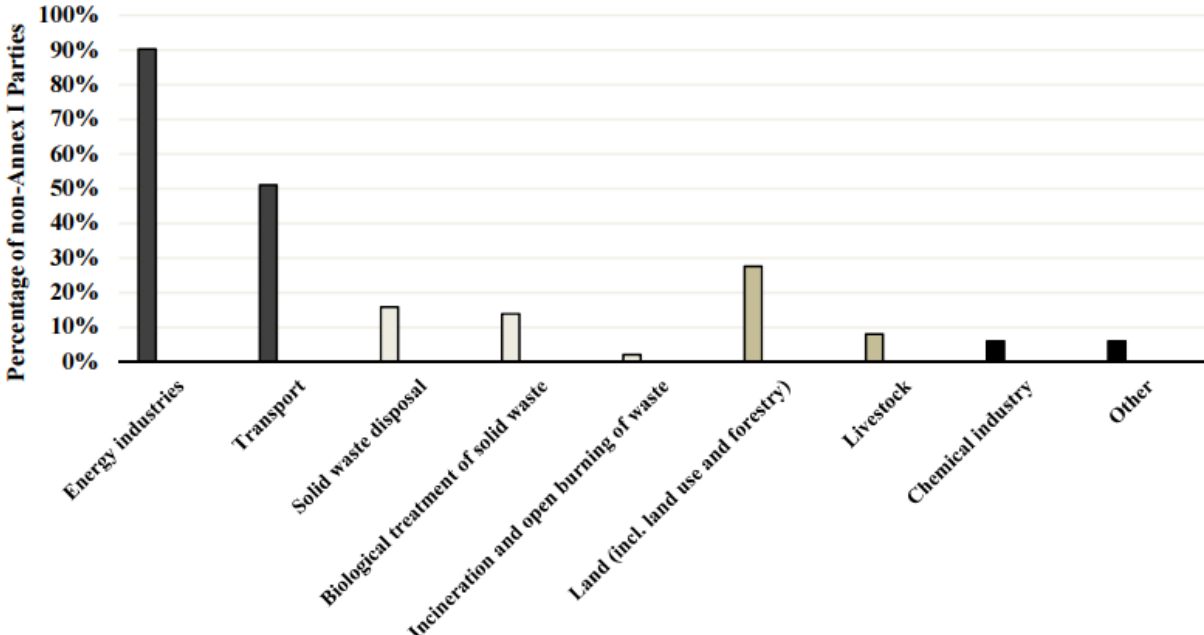**Prioritized subsectors for mitigation reported in Parties' technology needs assessment reports**

Figure 8
Prioritized sectors for adaptation reported in Parties' technology needs assessment reports
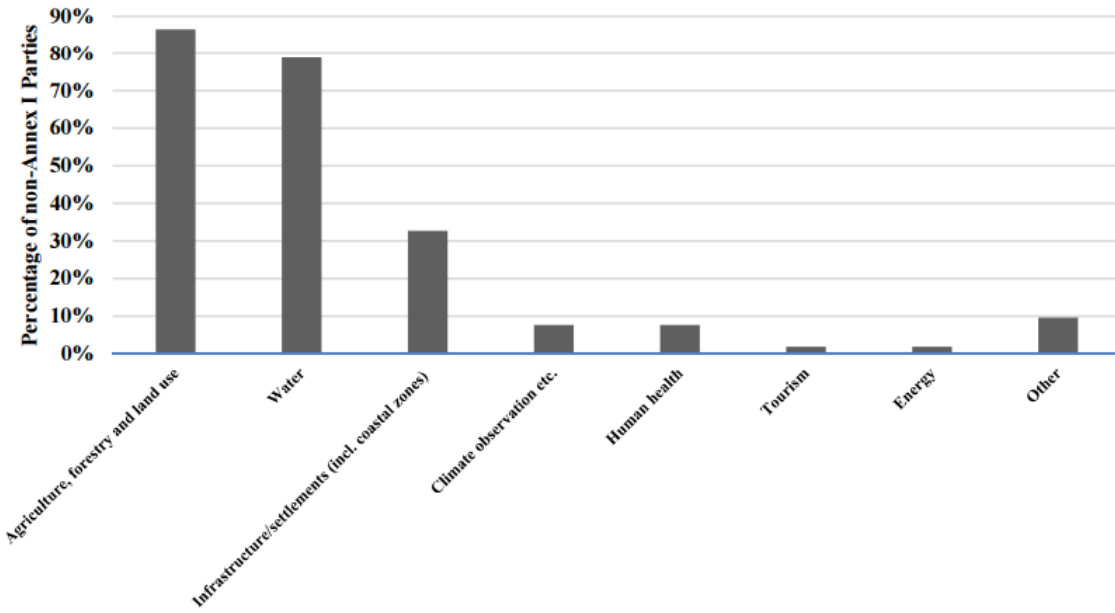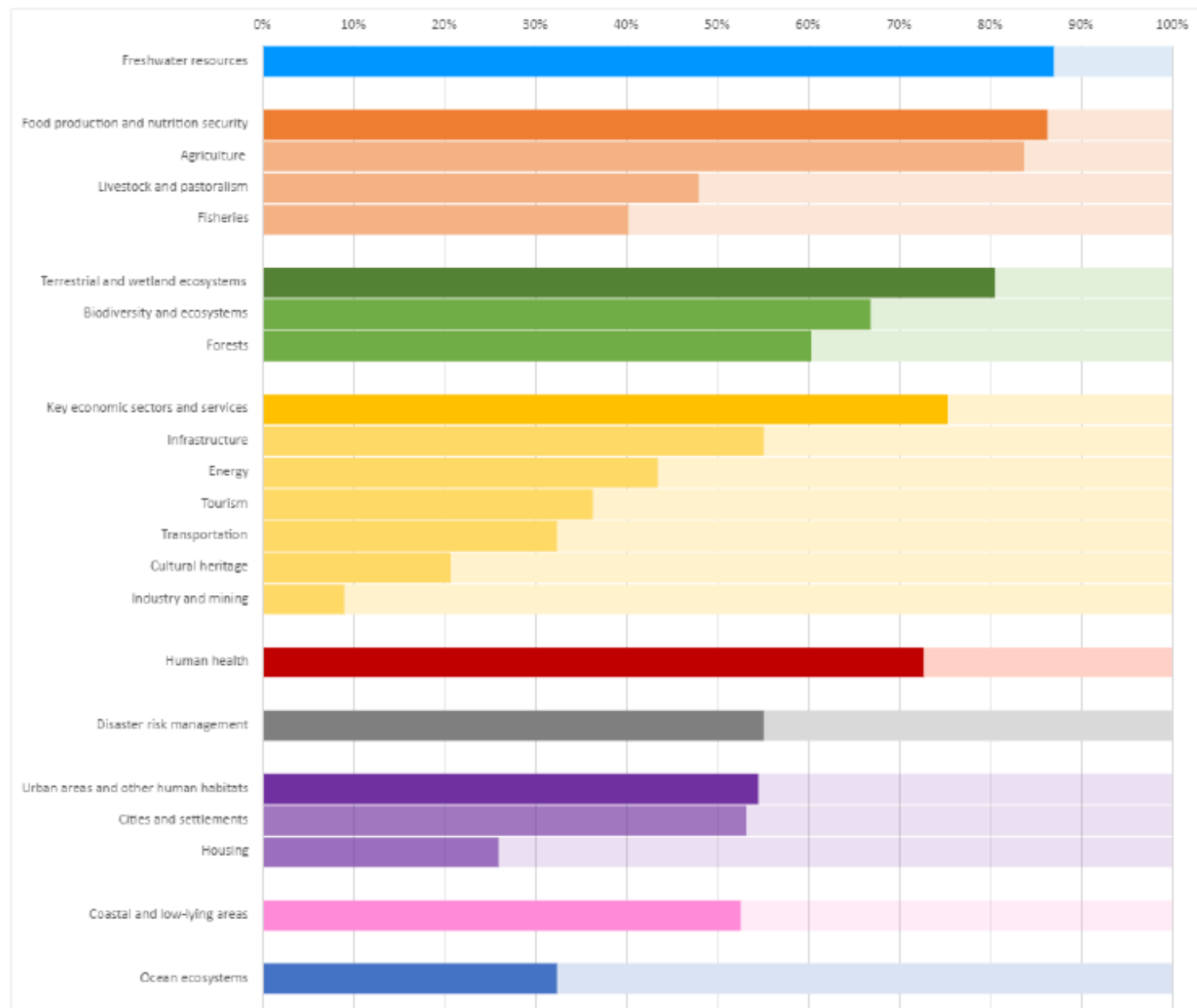
Figure 10
Share of adaptation components of nationally determined contributions referring to specific adaptation priority areas and sectors

Trends
from the CTCN activities

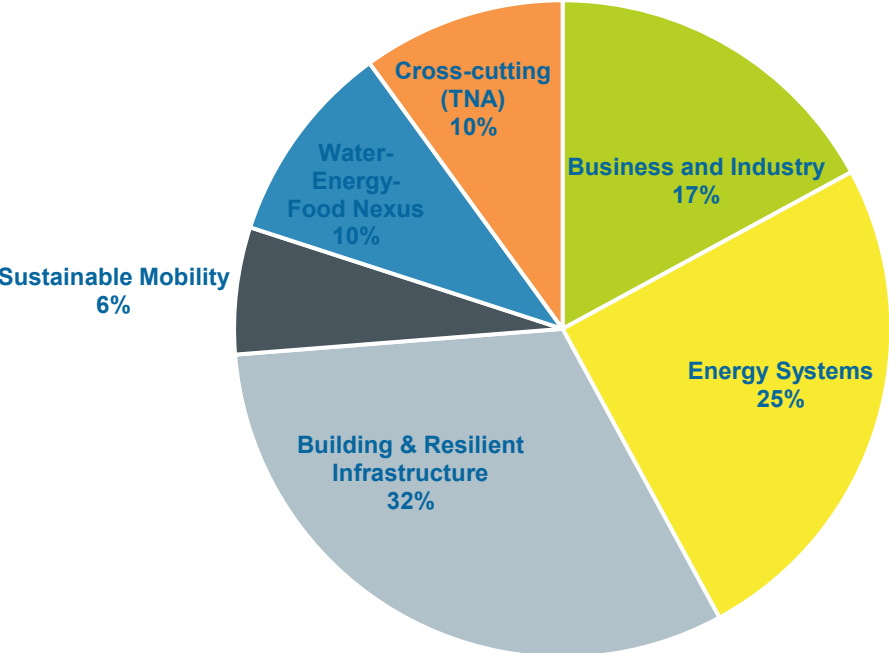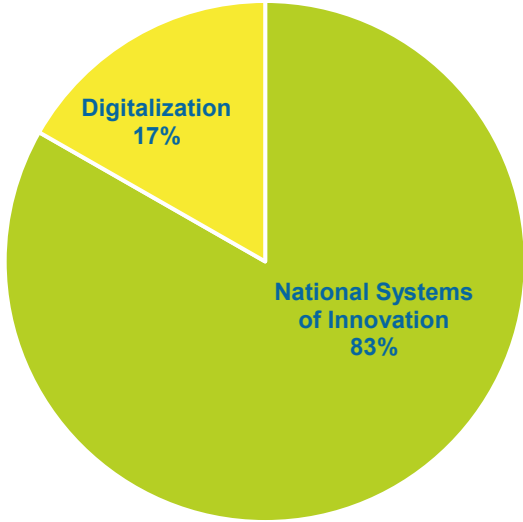# TA grouping to 5 system transformation areas and 2 enablers – global

- TAs by 5 system transformation areas and 2 enablers (Total: 240 active TAs)
  - Building & Resilience Infrastructure (32%) > Energy System (25%) > Business and Industry (17%)
  - National Systems of Innovation (83%) > Digitalization (17%)

TAs grouped into 5 system transformation areas

TAs grouped into 2 enablers

TA grouping to 5 system transformation areas and 2 enablers - regional

- Top 3 system transformation areas with the highest number of Tas by region
  - Total Number of TAs per region : Asia Pacific (73), Africa (114), LAC (51), CIS (2)
- Regional trend:
  - Building & Resilient Infrastructure records the highest in AP and LAC
  - Energy System is the most popular theme
  - Most of projects in Building & Resilient Infrastructure has 'digitalization' component of EWS.
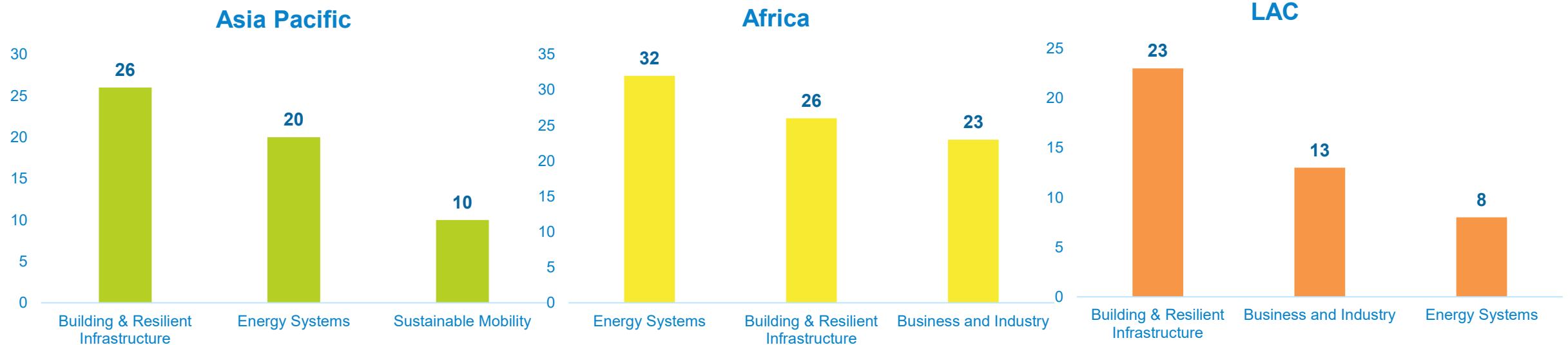
Future Demand

Energy Systems
Examples of Future Technical Assistances

UN environment programme | CTCN UN Climate Technology Centre & Network

Use of digitalization and AI for energy system management

Decarbonizing or greening the grid and hard-to-abate sectors

Grid optimization and smart grid operation including decentralized power systems (IPPs)

Non-conventional renewable energy systems, such as ocean thermal energy, offshore wind, geothermal energy, energy islands, etc.

Demand side management and demand response, and energy storage applications

Strengthening National Systems of Innovation to create market mechanisms for energy supply.

Fuel substitution through alternative energy carriers such as green hydrogen, bioenergy, and ammonia as substitutes

WEF Nexus
Examples of Future Technical Assistances

Sensor deployment to aid food and crop resilience

Improved water management, accounting, and productivity

Enhanced platforms and tools for collaboration and learning on agri-food technology development and transfer

Using digital technologies, such as radio internet, for the water-energy-food nexus

Providing opportunities for integrated planning and management, such as flood early warning systems that help advice farmers to plan accordingly and avoid losses related caused by flooding incidents

Designing knowledge transfer and capacity building programs, such as integrated water resources management, sustainable agriculture, and renewable energy technologies

CTCN: Business and Industry
Examples of Future Technical Assistances

Develop low-carbon strategies for businesses and industries Businesses and industries receive support on identifying low-carbon pathways and developing targeted strategies.

Focus on Hard to abate Sectors (cement, steel, ammonia etc.) – Cement Sector roadmap implementation, steel sector process efficiency, waste heat recovery.

Develop low-carbon strategies: Industrial automation and 4IR (Fourth Industrial Revolution)

Small and Medium Scale Industries : To enhance endogenous capacities of innovation and adopting as well as adapting climate technologies to local needs, paying special attention to women and youth and their role in shaping and leading the green business and industry. Focus could be on agro based SMEs specifically in LDCs and SIDs.

Greening of Supply Chain to large producers Development of strategies and visons for new source of energy, like green hydrogen etc. for fossil fuel replacement, and specific climate gases such SF6, HFCs, methane etc

Buildings and Infrastructure
Examples of Future Technical Assistances

Net zero emission buildings and green infrastructure, green building materials

Application of IoT for building management

Digital public goods and community-based solutions and resource pricing.

Climate Resilient Smart Cities

Longer lead time based Early warning systems for drought, floods etc.

Real time systems for monitoring and management of floods.

Use of remote sensing and UAVs for Urban planning through nature-based solutions.

Integrated Coastal zone management through nature-based solutions.

Integrated water management systems and Smart water and waste-water networks

Sustainable Mobility
Examples of Future Technical Assistances

Use of digitalization and AI for smart monitoring systems for traffic management (ex. Bus Rapid Transit system)

Innovative and efficient battery chemicals, Energy Storage Systems (ESS) and its end-of-life management

Electric Vehicle Charging Infrastructure / Smart Grid Integration

Bi-directional charging, and optimization of EV charging infrastructure in countries

Electrification of medium to heavy-duty vehicles using low-emission fuels

Switch to fuel substitution through alternative energy carriers such as green hydrogen, bioenergy, and ammonia as substitutes

National Systems of Innovation
Examples of Future Technical Assistances

Strengthening countries' capabilities to drive and enable climate technology innovation.

Supporting countries in incentivizing innovation through policy, institutional and regulatory development.

Providing opportunities to lower emissions growth, create social and environmental co-benefits, and achieve other SDGs.

Facilitate the development and transition to a circular economy, whereby NIS can stimulate economic growth and create new job opportunities and contribute to a more resilient environment.

Digitalization
Examples of Future Technical Assistances

Developing and piloting locally adapted digital solutions to drive climate adaptation, increase resilience in communities, resulting in significant reductions in GHG emissions

Exploring the climate potential of emerging technologies such as artificial intelligence, blockchain, Internet of Things, cloud computing and open data

Strengthening capacity for R&D and endogenous innovation around digital technologies for climate action

Supporting the enabling environment for digital technologies by harnessing opportunities and identifying and removing barriers

UN environment programme

CTCN
UN Climate Technology Centre & Network

CTCN Secretariat
UN City, Marmorvej 51
DK-2100 Copenhagen, Denmark
www.ctc-n.org
ctcn@un.org

UNFCCC_CTCN

UNFCCC.CTCN

Supported by

環境省
Ministry of the Environment

METI
Ministry of Economy, Trade and Industry

外務省
Ministry of Foreign Affairs of Japan

UDENRIGSMINISTERIET
DANIDA

Norwegian Ministry
of Foreign Affairs

GREEN
CLIMATE
FUND

EUROPEAN UNION

United States of America

ADAPTATION FUND

Canada

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO

gef

UK Government

Ministry of Science and ICT

Federal Ministry
for Economic Affairs
and Energy

Government Offices of Sweden
Ministry of the Environment and Energy

MINISTERO DELL'AMBIENTE
E DELLA TUTELA DEL TERRITORIO E DEL MARE

NDC
PARTNERSHIP

Spanish
Cooperation

Federal Ministry
Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

FORMIN FINLAND FI
MINISTRY FOR FOREIGN
AFFAIRS OF FINLAND

Comhshaol, Pobal agus Rialtas Áitiúil
Environment, Community and Local Government

WIPO FOR OFFICIAL USE ONLY