



ENERGY WORKING GROUP 2021 RECOMMENDATIONS

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About the Americas Business Dialogue

The Americas Business Dialogue (ABD) is one of the most important private sector initiatives in the Western Hemisphere. It represents companies and business organizations from all sectors of the economy and all countries in the Americas.

Its mission is to develop, disseminate and support the implementation of policy recommendations that contribute to a business environment that enables increased investment, innovation and productivity, generates more and better jobs, and fosters sustained economic growth towards the development of the countries across the continent.

ABD carries out a sustained high-level exchange with the governments of the region seeking to develop a collaborative relationship in the formulation and implementation of public policies. It is the private sector consultation mechanism for the Summit of the Americas.

Disclaimer

ABD is a private sector led initiative facilitated by the Inter-American Development Bank (IDB).

The Inter-American Development Bank, in its role as facilitator of the initiative, provides secretariat services and acts as an honest-broker, helping ABD engage in a constructive dialogue with government officials across the region.

ABD members are solely and exclusive responsible for the development of the views and recommendations included in this document.

This document should not be interpreted as an endorsement of private sector views and recommendations by the Inter-American Development Bank. The opinions expressed in this publication are those of ABD members and do not necessarily reflect the views of the Inter-American Development Bank, its Board of Directors, or the countries they represent.

Introduction

As the world confronts the reality of climate change, it is critical to take decisive actions and implement innovative technology-neutral solutions that enable countries to rapidly decarbonize their economies while meeting increasing energy demand and ensuring reliable and affordable energy while sustaining economic growth. Countries are beginning to create policy and regulatory environments that support a shift to low and zero emission systems, from energy to transportation or the heavy industry sectors. Latin America and the Caribbean is highly vulnerable to the consequences of climate change and has suffered from great social and economic disruption from the COVID-19 pandemic. Nevertheless, the region has a unique potential and a great variety of renewable and low-carbon energy resources, in many cases still largely untapped. As Latin American countries step up their decarbonization goals, capital and technology deployment by the private sector will play a key role in this effort. Companies are already transforming their business models to catalyze the energy transition by investing in wind and solar energy solutions, natural gas, hydrogen, electric mobility, energy storage, biofuels, and low sulfur diesel, among others. For example, it is estimated that by 2030 investment in clean generation, networks, and end uses (electric vehicles, energy efficiency, among others) in Latin America and the Caribbean will be US\$122 billion per year, of which US\$91 billion per year would come from the private sector¹. Understanding that issues may apply differently to various countries in the region, the following recommendations from the Americas Business Dialogue (ABD)'s Energy Working Group aim at encouraging the development of policies that will accelerate the energy transition in the Americas overall and funnel investments towards sustainable, reliable and affordable energy solutions while reducing greenhouse gas emissions. They also focus on supporting best practices that will strengthen the resilience and sustainability of energy systems while creating jobs and making energy more affordable and reliable for people in the region, pushing for circular economy and social development of local communities, and reducing inequality.

Suggested fora for public-private engagement on the following recommendations include but are not limited to:

- Fifth Ministerial Meeting of the Energy and Climate Partnership for the Americas (ECPA) to be hosted in Panama on February 10-11, 2022.
- Ninth Summit of the Americas – United States, Summer 2022:
 - CEO Summit
 - Propose to set up subregion (North America, Central America, Caribbean

¹ [Financing clean energy transitions in emerging and developing economies](#). IEA (2021).

and South America) or thematic meetings with public and private sector participation facilitated by ABD to discuss energy transition priorities and progress.

- UNGA – United States, September 2022.

RECOMMENDATION #1: GRID FLEXIBILITY AND RESILIENCY

Goal: Support renewable integration and the path towards decarbonization while ensuring reliability and resiliency of the power grid.

Opportunity: With effective planning, it is possible for a state or nation to achieve high renewable energy integration, even 100%, without significant increases in rate payers' costs or loss of reliability. Effective planning will maximize renewable energy production while maintaining adequate flexible thermal and storage resources are available balance renewable production. This will ensure reliability with the fewest resources and lowest costs. Planning today for tomorrow's system is paramount to ensure the compatibility of the portfolio of resources that can drive both reliable system operations and economic growth. This requires building a portfolio of diverse resources capable of balancing intermittent resources to maintain grid reliability and resiliency. Failure to incorporate flexibility needs will lead to unstable and less resilient power grids, making it much more difficult to meet environmental objectives. Flexible and resilient grids have higher potential for renewable energy uptake and meeting targets than less resilient grids. While natural gas plays a critical role for this grid resilience, existing hydropower assets, storage, demand side management can also help to add grid flexibility. Moreover, transmission and distribution investments will also be needed to increase the grid's resilience and stability.

The majority of investments in new power capacity over the next three decades in Latin America is expected to go to renewable sources of energy, such as wind and solar, in line with global trends. Renewables and energy storage may account for up to 80% of the total investments through 2050. To accommodate this greater penetration of intermittent renewable energy sources, complementary policies and investments in grid flexibility, stability and resiliency will be critical for the power grid to adapt to these new technology offerings. Furthermore, investing in grid enhancement technologies to build grid resiliency is not only necessary to prevent grid instability, such as dispatchable carbon-neutral thermal resources and digital and storage solutions, is also cost effective as relatively small investments can leverage a lot of resilience. It is worth noting that in the particular case of Latin America and the Caribbean, the existing hydropower fleet represents 50% of the current installed capacity, hence its modernization and digitalization must also be considered.

Short Term Objective: Achieving economically beneficial high renewable penetration starts by building a plan that establishes clear, well-defined objectives and milestones, as well as compliance, enforcement tools and contingencies for development delays.

Baseline and indicators: Paramount among these are determining the renewable goals. These can be measured as a volume of energy produced or consumed and by when these goals should be reached. Once these goals are set, it is critical to assess what the existing fleet is capable of reliably integrating. It is important to note here however that as technology evolves, the assessment will change overtime as penetration of renewable integration will progressively increase. Then committing to the additional resource investments that are required to reliably incorporate higher renewable levels. Grid improvements should be made if it is determined that a higher level of renewable energy uptake could endanger grid stability. This requires the system planner to define a measurement of reliability. This can be set in terms of the probability of lost load or unserved energy. This measure allows the planner to balance the benefits of higher reliability and the costs of building additional capacity. Ultimately, these processes will result in an iterative policy process to ensure system upgrades are feasible and consistent with policy goals and measurements. Compliance and enforcement of objectives can be achieved through predefined incentives and/or penalties.

Long Term Objective: Build a balanced fleet of resources with diverse capabilities that provides reliable electricity service and economic growth.

Baseline and indicators: A diverse fleet has always been, and still is, a tenant of reliable electric grid operation. Planners should integrate available renewable energy resources (hydro, solar, wind, geothermal) with other energy sources like balancing natural gas resources and solutions such as battery-based energy storage or low-carbon sources and carbon capture technologies to maintain grid reliability and resilience and to ensure the System Operator is able to reliably operate the electric grid.

Recommendations:

1. **Utilize detailed planning tools to maximize carbon reduction opportunities by ensuring flexible capacity is available to firm intermittent renewable output instead of curtailing renewable output due an inflexible generation fleet.** Effective planning must be based on more advanced, detailed, and accurately model the entire portfolio of generating resources. Comprehensive Integrated Resource Plans based on accurate modelling and transparent process is a necessary first step. Simply adding more megawatts (MW) will lead to additional costs if those resources are not designed to achieve the

end goal and to operate effectively both in isolation (resource reliably) and in conjunction with other resources (system level reliability).

2. **Planners must develop market products that account for and value flexibility capacity needs and complementary services to avoid unnecessary “inflexibility costs” and lost “flexibility benefits.”** Planners need to ensure that enough dynamic capacity and flexibility are incentivized. Without market signals and market product, the proper capacity will not be built, resulting in loss of reliability and/or failure to meet objectives.

	Inflexible system costs	Flexible system benefits
Capacity needs	More capacity is needed to provide complementary services.	Properly planned enabling and flexible capacity resources, thus minimizing over procurement needs to balance renewable variability.
Energy production	Excess renewable energy must be either curtailed or shifted to allow grid operator to move slow resources. This will result in the need to pay for energy twice.	All renewable energy produced can be used at the time it is produced, or stored with the use of batteries or used to produce carbon neutral fuels (green hydrogen for instance) to support flexible thermal generation.
System Reliability	May not be able to meet needs caused by infrequent but extreme output from renewable resources, resulting in load shed.	Able to respond quickly to changing system conditions and maintain reliability.
Fuel diversity	Inability to efficiently or effectively convert to alternative fuels may require high-cost retrofits or complete replacement of resource.	Effective fuel switching to using low/no carbon fuels means that resources can be modified to utilize various fuel sources without significant additional costs.

3. **Strategic investments in grid and resource flexibility will ensure climate goals are achieved while minimizing costs and maximizing the reliability of the system.** Grid flexibility and resilience does not necessarily depend on new, expensive infrastructure investments. Planners can effectively make use of cost-effective technologies (energy storage, smart grid, demand management, etc.) and focused grid enhancements (including Transmission) to prevent contingencies, which otherwise may lead to blackouts.

4. **Total system cost should be the driver for determining capacity additions, not the levelized cost of energy of a single resource.** Capacity additions that are not complementary to others in the system will provide less useable energy than the traditional levelized cost of energy would measure. This means that the levelized cost of delivered or used energy will be much higher than the traditional levelized cost of energy. Complementary resources will provide more useful energy and better represent the benefit of the capacity addition.
5. **Effective Renewable Energy planning requires the use of models that account for a wide range of possible scenarios over all hours.** This modelling will identify needs for both MWs of Renewable Energy and MWs of complementary/enabling services, including natural gas flexibility services. For example, more advanced modeling can capture things like extreme weather events, multi-day weather events, droughts, seasonality impacts, and forecast error. Also, the correct modeling of shorter time frames (minutes or seconds) is also necessary, to include in the analysis ramp-times, as well as adequate modelling of storage devices. In the particular case of transient stability models, it is key to account for all new technologies that might pose inertia challenges to the grid.
6. **All costs should be accurate and accounted for when designing future power systems.** It is critical that both capital and operating costs be accurate to ensure a least-cost path to achieving GHG reduction goals. For example, a high renewable future will require many more starts and stops from some resources, thus including accurate start-up costs is extremely important in the decision-making process.

Status and outlook: Responsibly transitioning to a reliable zero and low-carbon fleet of resources over time will provide opportunity to transition the existing workforce to new opportunities with the new generation and distribution system. A reliable electricity service is critical to support existing industries and encourage future growth.

RECOMMENDATION #2: REGIONAL INTEGRATION

1. POWER AND INTERCONNECTIONS

Goal: Increased regional electricity integration will benefit all countries. Benefits will expand the size of energy markets with the creation of economies of scale that attract private investment and, reduce capital costs leading to lower costs of electricity and increased power system stability and security. Increased regional stability will also encourage renewable energy integration. International interconnections are needed to improve national and regional grid resilience.

Status and outlook: Grid reliability and flexibility in the Americas can be increased through a) targeted improvements of national power grids and interconnections to increase flexibility, and b) an overhaul and harmonization of existing regulatory frameworks governing interconnections to reduce network congestion and operate more economically. Electric power systems in the Americas as a region are not properly integrated and interconnection regulatory regimes are not aligned with best practices. A lot of potential economic development is lost due to inequalities induced by power systems that are not integrated, and those which are not optimized. Underinvesting in certain areas of power grids lead to power grids operating below maximum capacity. Operating country grids and interconnections closer to its maximum capacity will “free up” underutilized transmission and generation capabilities without the need for new infrastructure, thereby optimizing existing generation and transmission infrastructure, including renewable energy integration. Similarly, investments in new interconnections between countries are urgently needed to increase regional power system reliability, resiliency, and flexibility.

Recommendations: Regulatory frameworks governing existing interconnections must be updated to make provision for operating interconnections based on market-based conditions. This will increase mutual as well as regional grid flexibility and reliability. Existing interconnection regulatory frameworks may limit not only free market conditions but can also unintentionally harm power system stability by creating network congestion. Removing excessive tax regimes of interconnections, where applicable, should also be considered.

Developing interconnection regulatory frameworks that are flexible and can take advantage of day-to-day or intra-day power system changes between countries will not only increase regional power grid stability by removing artificial network congestion but will also contribute to economic development. Electricity rates will likely be reduced if operated based on market conditions. It will allow for the natural flow of power from a country with access capacity to a country with a higher demand at certain times of the day.

There is an enormous opportunity to modernize the power grid through regional initiatives such as SIEPAC, SINEA or SIESUR. In the Northern Triangle, the capacity of the Central American Electrical Interconnection System could for instance be doubled to generate electricity for the region. However, this will require the standardization of regulations and internal adjustments in the transmission systems of each country to maximize the use of the line (from 300MW to 600MW). It will also require adoption of new technologies regulations, currently limited or not recognized in Central America, such as Energy Storage (for auxiliary services and to eliminate congestion in transmission).

Short Term Objectives:

- **Technical:**
 - Optimizing existing transmission infrastructure:
 - Develop technical interventions across the region to maximize grid availability (decreasing power outages) and operational flexibility.
 - Direct focused smart grid investments to increase economical dispatch to securely operate power grids closer to their maximum capacities without affecting reliability.
 - Enhanced grid flexibility will prevent potential critical power system contingencies that can lead to blackouts or brownouts.
 - New transmission interconnections between countries will increase optimization and economic utilization of mutual generation resources.
- **Regulatory:** Comprehensive analysis and modification of current Firm Transmission Rights regulation.

Long Term Objectives:

- **Regulatory:**
 - Adopt new guiding principles for existing and future interconnections to increase regional integration through the creation of flat, free, and fair market regulations governing interconnections.
 - New regulatory frameworks should include the flexibility for the daily change (even hourly) of cross border electricity trade. This will allow channeling electricity at market rates to the country/region of highest demand.
 - Unnecessary tax burdens should, where present, be reduced.

- Excessive charges discouraging efficient power trade and creating network congestion should be eliminated.
- Support the creation of other regional electricity markets in the region (SINEA, SIESUR).

Baseline and indicators:

- Focus on two interconnected systems, SIEPAC and Argentina/Chile as immediate opportunities to create value to improve technical optimization and regulatory environments.
- Focus also on opportunities for interconnection between Colombia and Central America as well as Mexico and Central America, with the potential to create an energy corridor from Colombia to the United States.

Public Private Partnerships:

- Establish an Americas Interconnection Commission to study and make recommendations to strengthen regional power sector integration, based on the above guidelines. This could be funded by the IDB.
- IDB offering SIEPAC and the Argentina/Chile Interconnection reviews to a) streamline regulation and b) optimize existing transmission infrastructure, based on the above objectives. ABD can assist with the development of high-level study objectives for these reviews.

2. ENERGY INFRASTRUCTURE INTEGRATION

Goal: The Western Hemisphere has abundant energy resources and a significant consumer market for them. Stronger energy integration will lead to significant economies of scale and energy optimization for the region. Regulatory frameworks that provide stability and predictability to regional energy trade as well as regional and sub-regional integration will attract private investments that can support energy security and resiliency while maintaining affordability.

Status and Outlook: There are many opportunities for broader energy integration in the Americas. The North American sub-region is the most integrated, with the U.S. and Canada leading the way. If North America wants to continue being a major economic global player, the sub-region must increase its energy integration to boost productivity and efficiencies in production platforms and supply chains, while optimizing energy

usage and reducing its GHG emissions. Central America has also tried to integrate its energy systems to seek economies of scale and efficiencies. The Plan Puebla Panama in the early 2000s was a first attempt, with subsequent conversations about integrating its pipeline systems and power grid from Southern Mexico to Colombia, and with increasing LNG imports to Panama and El Salvador. Honduras has also tried to shift its power generation from oil to natural gas, but the project has stalled. Meanwhile, the Caribbean has tried to attract small scale LNG (ssLNG) for power generation at more affordable and reliable costs. The Caribbean's challenge has always been the scale and associated costs of delivering energy to multiple islands, but ssLNG is an economic lower carbon solution that could be a game changer for the region. Moreover, natural gas is a much more environmentally friendly fuel than the fuel oil used in Central America and the Caribbean today. There is some level of integration in South America as well, with pipeline connectivity between Bolivia and its main neighbors, Brazil and Argentina, and between Chile and Argentina, but their integration could be further optimized.

Short Term Objectives:

- Promote sub-regional conversations at the ministerial level to discuss energy integration opportunities, with active involvement from the private sector, to determine specific actionable measures. Set up priorities and timelines. Meet twice a year to review goals and progress.
- Review national energy transition goals and Paris Accord objectives and timelines; and discuss at the sub-regional level how countries could collaborate to achieve those common goals.
- Support energy literacy programs across the region to seek a better understanding from consumers of the value of energy in their daily lives and the challenges to mitigate the environmental impacts. The objective is behavioral change and a more efficient energy usage.

Long Term Objectives:

- Optimize energy systems within the sub-regions, seeking more interconnectivity within them and across the Americas – boosting regional productivity and economic growth.
- Maximize energy efficiencies across the region and across energy value chains.
- Promote CCS technologies and minimize the environmental impact.

Baseline and indicators:

- Paris Accord commitments from each and every country in the region.
- Use of natural gas and its respective infrastructure for power generation.
- Optimization of liquid fuels for light and heavy-duty vehicles; use of natural gas in some countries.
- Penetration and awareness of educational campaigns for consumers, promoting energy efficiencies/better energy usage.

Public Private Partnership: ABD could coordinate government and private sector engagements to discuss common goals and actionable solutions.

RECOMMENDATION #3: TECHNOLOGY AND INNOVATION

Recommendations:

Encouraging technological development of innovative systems that make low-carbon energy widely affordable and available will require integrated policy approaches. A well-designed and economy-wide price on carbon offers the most efficient and effective policy tool to reduce emissions at the lowest cost to society, while maximizing incentives to drive innovation. According to the United Nations Intergovernmental Panel on Climate Change (UNIPCC), carbon capture and storage (CCS) is an essential technology to achieve emission reduction goals and it also achieves these objectives at a far lower cost to society. Moreover, energy storage has the potential to revolutionize the electric sector by providing needed grid stability to accommodate the greater penetration of intermittent renewable energy sources and allow for significant improvements in the overall reliability of electric systems.

There are also great opportunities for hydrogen in Latin America. Chile is one of the key countries looking into these technologies. Governments should highlight their vision with the benefits and risks for large scale hydrogen projects in mind, but also define objectives and measures that will attract private investment. Governments should also increase and promote support for research and development (R&D) and innovation, ensure access to financing, facilitate the permitting processes, and create export opportunities through standards and preferred tariffs, among other key measures.

In order to increase investments for zero and low carbon technologies in the region,

we recommend that governments and electricity regulators of the Americas:

1. Adopt a well-designed, economy-wide **price on carbon and incentives for promising pre-commercial technologies such as blue and green hydrogen, biofuels and CCS**.
2. **Include energy storage in their long-term planning analysis with specific targets and guidelines** set across a range of applications to enable the participation of storage in all the industry's segments (including standalone capacity and ancillary services to add flexibility).
3. **Allow for storage-supported solutions to alleviate congestion of the transmission networks**, particularly during peak renewable hours.
4. Promote **policies for customer demand management** through storage to help replace diesel generation.
5. **Develop rural electrification programs**, with integrated solar+storage projects for instance, to help meet demand and access for electricity in rural and remote areas.
6. Adjust electricity regulatory frameworks to **consider the new configurations of renewable energy production** for green hydrogen production avoiding grid overcharges.
7. **Develop a plan for land uses** that allow the development of hubs of green hydrogen production with the infrastructure required with community participation.

Status and outlook:

Global interest is rising in green **hydrogen** as one of the solutions for an energy transition toward zero or net-zero emissions. However, its actual use is still very limited. Many of the components in the hydrogen value chain have already been deployed on a small scale and are ready for commercialization, but they require significant investments to be used at a larger scale. Challenges for its broader commercial usage include a lack of infrastructure and incentives to promote its use (e.g. tax incentives).

Battery-based energy storage will also play an integral part in a clean energy future. As new, clean intermittent energy, such as solar and wind, come online, complementary energy storage installations, in combination with low or zero-carbon thermal resources, will be critical to ensure the reliability and meet the needs of a new electric system. However, energy storage deployment in Latin America and the Caribbean is still nascent.

While the technology has been proven in numerous markets, this relatively new type of technology requires a flexible regulatory framework with pricing mechanisms to optimize its use, including general definitions that should be as neutral as possible with respect to the type of technology, avoiding over-regulation, which could discourage investments and the deployment of new innovative technologies. Chile and Colombia have implemented technological solutions for the role that energy storage can play for capacity, reliability, frequency control, and transmission. In addition to defining the role of energy storage, clear regulations should also be designed to facilitate the implementation of any types of storage solutions, while being mindful of the potential environmental impact of those storage solutions (e.g., mining practices for lithium batteries).

Interest is also rising in the Americas to develop **CCS** as key solutions to advance the energy transition towards a carbon-neutral economy.

Opportunity:

Short Term Objectives:

- **Lift regulatory restrictions** that currently prevent or delay the participation of **energy storage**, and **develop national storage strategies** with input from industry.
- **Develop national hydrogen strategies**, such as in Chile or Colombia, with input from industry. These strategies should realistically assess the potential for blue and green hydrogen production, distribution, and storage; define targets; and address concrete yet flexible policies that can adapt to fast-evolving market realities.
- Support research, development, and deployment of **CCS technologies**.
- Support the **introduction of new technologies in the region**, including new forms of solar panels and energy efficiency programs.
- Consider a **carbon pricing mechanism** to promote a more efficient usage of energy and use those funds to help finance development of innovative technologies.

Long Term Objectives:

- **Consider energy storage in long-term planning processes**, particularly in markets facing significant flexibility challenges due to high renewable penetration and the decommissioning of coal power plants, as part of an all-

of-the-above approach to technologies and fuels that complement renewable energy deployment.

- **Build or repurpose a complete ecosystem around CCS and all low-carbon hydrogen that is pathway agnostic** and focused on industry sectors with higher emissions (i.e., mining, shipping, refining, chemicals, construction, steel and cement production, electro-mobility, etc).
- Facilitate the **development and adoption of regional technical standards for the hydrogen** sector.

Public Private Partnership:

- **Pilot projects** and partnerships between government, public utilities, and industry could help prove the viability of grid-scale projects, which so far have been limited, and inform regulations.
- Organization of IDB-sponsored **workshops with public sector and industry participation to highlight the benefits of these technologies, share best practices and technical assistance** from markets with successful integration or existing projects (e.g. US, Australia, Chile), and develop regulatory frameworks for scalable deployment.

Note on the Role Natural Gas Can Play in the Energy Transition of the Region

Investment in natural gas and natural gas infrastructure can enable the deployment of renewable energy sources and support a responsible energy transition by providing a stable source of back-up power to support economic and industrial growth. As a less carbon-intensive thermal source, natural gas is expected to play an important role in meeting global energy demand in the coming decades for power generation, transportation and industrial development as the world transitions responsibly towards fully decarbonized energy system over time.

The development of natural gas is expected to play an important role in the diversification, resilience, and sustainability of energy production in the Americas during the energy transition. In order to promote the usage of natural gas in different industrial sectors, the ABD Energy Working Group recommends the following:

- Incorporate technology-neutral, performance-based, cost-effective and **gradual but consistent emission control standards** that define allowable levels of pollutants and GHG emissions on a life-cycle basis for any kind of

industry independent of fuel.

- Support energy efficiency and innovation by the **adoption of technologies** such as Combined Heat and Power, Blue and Green Hydrogen, and Carbon Capture and Storage (CCS) focused on industry and transformation.
- Promote a **regional regulatory framework** to allow investments in LNG and natural gas infrastructure that will support pathways toward storing and transporting increasingly low-carbon liquid and gaseous fuels, and promote regional integration.
- Support the development and adoption of **technical standards** for natural gas.
- Support the implementation for **market-based rules and systems** (i.e. technical cooperation, financing, exchange of best practices) to incentivize private sector investments and competition to foster lower costs for end consumers.

Status and outlook: In recent years, natural gas has emerged as a reliable complement to renewable energy in the global energy transition due to its properties, the wide availability of reserves and, especially because the technologies for its use are widely proven in all segments where it is used. Due to its reduced emissions impact (20% with respect to diesel and 50% with respect to coal), off-setting carbon emissions with renewable carbon credits is a feasible option, as demonstrated with recent import of carbon-compensated LNG cargo into the Caribbean. Natural gas not only reduces the intensity of greenhouse gases compared to other thermal sources, but also its combustion is capable of significantly reducing and even eliminating a series of atmospheric pollutants such as NO_x, SO_x, particulate matter and ozone that cause significant damage to the health of communities near fuel consumption points.

Growing demand and the development of innovative exploration and production technologies have led to a substantial increase in production, resulting in the development of the logistics chain that includes liquefaction terminals, methane tankers, regasification terminals, gas pipelines and networks for final consumption. It has also led to the development of new markets for LNG through land distribution with cryogenic trucks or in small-scale methane tankers that enable service to smaller markets at a competitive cost.

Natural gas has been associated with large-scale electricity generation to replace diesel, heavy oil and coal as it is the lowest carbon fossil fuel available at scale and can enable the increased deployment of intermittent renewable energy. Moreover, natural gas comes with significant existing logistics and the infrastructure to help meet the world's energy demand. In addition to its traditional uses, the use of natural gas greatly

increased in innovative proven technologies (such as utilization of compressed natural gas for light vehicles), while governments and the private sector are exploring new segments of use in the power sector (hydrogen), vehicle market (public transport and road freight transport) and in the maritime transport market (as a marine fuel to replace traditional, more polluting and less cost-effective solutions).

The advancement of new technologies, such as low-carbon hydrogen, CCS, and carbon recycling, can further reduce the carbon impact of natural gas. Furthermore, natural gas infrastructure will play a complementary role in the transition to using lower carbon and zero-carbon fuels. Continued access to financing and investment to improve and retrofit existing LNG and natural gas infrastructure supports pathways toward storing and transporting increasingly low-carbon liquid and gaseous fuels while lowering the overall cost of the transition and ensuring the reliability of energy systems. As gas turbines are cheap and modular compared to the high upfront costs of other energy sources, they avoid huge cost overruns and remain financially viable even when wind and solar meet energy demand much of the time.

Short Term Objectives:

- Support the use of natural gas as a key energy source in the energy transition, in combination with renewable sources of energy, to help bolster energy systems' reliability.
- Adopt emissions standards/incentives for fossil fuels that can differentiate between emissions intensity levels; providing incentives for the use of Carbon Compensated LNG.
- Establish regional workstreams to support the usage and deployment of technical standards for natural gas development.
- Conduct an inventory of pipeline infrastructure and what metallurgy it consists of to identify which parts can become more compatible with increased lower carbon and zero carbon fuel usage like hydrogen.
- Accelerate pace to replace remaining cast-iron grid distribution pipelines (in the United States, only 3% of the natural gas distribution pipelines are iron, but they account for 10% of all distribution leaks) and mandate replacement of pipelines that are over 50 years old.
- Strengthen transportation and distribution survey and repair standards.

Longer Term Objectives:

- Create incentives for fuel conversion projects.
- Consider market deregulation to incentivize greater private participation in the gas sector.
- Invest in research and development to enable low-carbon natural gas development, such as low-carbon hydrogen, CCS, and carbon recycling.
- Promote investment to expand and improve existing LNG and natural gas transmission, distribution, and storage infrastructure. Investment should ensure that infrastructure can be repurposed over time to support pathways toward storing and transporting increasingly low-carbon liquid and gaseous fuels.

RECOMMENDATION #4: REGIONAL POLICY ACTION FOR THE NET ZERO TRANSITION

Goal: Lay the foundations for the integration of energy, environmental, and economic policies to set up regional frameworks for an uptake of investments in renewable energy and low carbon technologies, and their integration into the current electricity and energy systems, while improving the reliability, stability and affordability of the energy supply in the Americas.

Recommendations: Policy and regulation for regional collaboration supporting the rapid and exponential scaling of low and zero carbon technologies must be implemented. Renewable and new energy technologies can play an even larger role beyond the electricity sector itself in supporting decarbonization efforts from other industries including manufacturing, steel, cement or transport. Current national and regional policies and frameworks currently do not allow or encourage for the pace of growth required to meet climate goals. The industry and financial community as well as civil societies generally support this transformation, and policymakers have a critical role to play in creating the necessary enabling environment, through the integration of energy, environmental and economic policies, to intersect and collectively drive investments, economic growth and progress towards a net zero future. The creation of instruments that enable nature-based solutions and carbon offsets will also be key to create a cleaner progress and more sustainable development tools. In addition, some regional partners' energy regulatory frameworks are closed to corporate renewable purchasing. This leaves companies with no choice but to rely on more carbon intensive power sources and limits countries from leveraging private capital from corporate

renewable energy buyers to support the expansion of clean energy.

Baseline and indicators: Existing mechanisms can be leveraged for this, such as national climate programs, national plans for renewable energy and energy efficiency. There is also a need to streamline and bring together separate planning and reporting strands. Such an integrated approach would serve to enhance: the role and rights of consumers, transparency and predictability for investors, systematically monitoring key indicators for cost-efficient and competitive markets. The approach should also promote safe, secure and sustainable energy systems, and facilitate the coordination of national climate and energy policies, while fostering regional cooperation.

Opportunity: Sustainability and climate policies are currently guiding the decisions of financial institutions, focusing their new investments into more sustainable projects. In order to boost investments to drive the transition to net-zero, a new approach will be required where governments must reconcile energy, environmental (climate), and economic policies to accelerate progress towards building sustainable economies based on clean energy and GHG emissions reduction.

Short Term Objectives:

- **Create a roadmap** (white paper) for a strategic, reliable, transparent and integrated energy and climate governance for the region. This will ease the design of updated, comprehensive, and long-term policy frameworks to enable corporate purchasing of renewable energy, secure capital flows for innovation, investments and sustainable financing for the deployment of renewable energies and new technologies to reduce GHG emissions at the unprecedented necessary level to meet climate targets.
- **Promote waste management and recycling programs** across the Americas, so the region can optimize its circular economy.
- **Secure additional organizations and private sector companies from across the Americas to join The Climate Pledge**, a commitment to meet the Paris Agreement's goals and achieve net-zero carbon goals. Expanding the number of companies from across the Western Hemisphere who have committed will have a real and lasting impact, and further demonstrate to governments how the private sector can support national-level commitments.
- **Provide open access to energy markets for renewable electricity suppliers**, consumers, and corporate buyers and link those markets across borders.
- **Increase consumer options for sourcing renewable energy.**
- **Promote common accounting tools to track renewable energy** such as

renewable energy certificates (REC) or other similar instruments.

- **Support reforestation and other nature-based solutions** across the Americas with a strong focus in the Amazon basin.
- **Expand support for the Lowering Emissions by Accelerating Forest finance (LEAF) Coalition**, an ambitious new public-private initiative designed to accelerate climate action by providing results-based finance to countries committed to protecting tropical forests. This includes international aid commitments by donor governments for technical assistance and results-based payments to tropical forest jurisdictions, commitments by new corporate participants to purchase verified emission reductions, and commitments by tropical forest jurisdictions to reduce deforestation with support from the LEAF Coalition.

Long Term Objectives: Build comprehensive legal and policy frameworks to drive investment in mature renewable and new energy technologies, as new conventional forms of power generation and GHG emissions reduction in Latin America and the Caribbean. Electricity markets and systems must be modernized and adapted to provide reliability, security of supply and efficiency, under scenarios of increasing shares of renewable energy. Transmission and distribution management and investments in networks will be crucial in addressing the challenges of a net-zero transition and should be considered as a key pillar of energy policy, system planning and regulation, also taking into consideration new technological innovations such as carbon capture and storage (CCS), hydrogen and biofuels, as well as grid flexibility and the digitalization of energy systems management. An all of the above approach will be necessary to realistically achieve the global net zero goals. The frameworks should address:

- **Integration of national energy and climate plans** setting process in the area of renewable and new energy technologies (CCS, hydrogen, etc.) with long-term economic development and sustainability strategies.
- **Policy response:** electricity market, and electricity system design and operation for intermittent renewable energy sources; consumers rights to access green energy: certification of origin and labelling, traceability and impact on the environment.
- **Financing:** enabling economic policies, underwriting and guarantee mechanisms, interaction of carbon markets/taxation green certificates, carbon pricing mechanisms, and other instruments.

- **Technological innovations:** Blue and green hydrogen, carbon capture and storage (CCS), other types of energy storage, etc.
- **Reporting** on progress on to milestones towards net zero. IDB/OLADE could serve as regional body ‘overseers’.

Public Private Partnerships:

- **Launch an ABD/IDB-sponsored project to work out a white paper** based on best practices knowledge sharing to inspire and build up reliable, transparent and integrated energy, climate and economic long-term policy frameworks, to secure capital flows for investments and sustainable financing for the deployment of renewable energies and new technologies for the Net Zero transition and reduce GHG emissions at the unprecedented necessary level to meet climate targets.
- **Set up a new specific mechanism for each sub-region** to discuss common energy integration/energy transition and climate goals with bi-annual meetings to discuss goals and progress within sub-regions, and an annual meeting of the sub-regional leaderships to discuss a broader regional integration (sub-regions: North America, Central America, Caribbean and South America), with public and private sector participation.
- **IDB to organize a regional dialogue, in partnership with member governments and relevant stakeholders** to discuss financing opportunities and commitments that governments can access to end deforestation and support reforestation.

RECOMMENDATION #5: CIRCULAR ECONOMY FOR ECONOMIC GROWTH

Goal: Accelerate circular economy criteria adoption within renewable energy development, through the engagement of financing institutions, with particular focus on critical raw materials, impacts on the territory, local value chains, and material recovery.

Recommendations: The energy transition represents a fundamental step not only to address the climate crisis but also to accelerate economic recovery and growth in the region. In order to maximize the positive impacts of this transition, it is critical to have a

comprehensive approach early on. Indeed, a circular economy perspective will create an attractive environment for forward-looking companies seeking to invest in areas where the ecosystem supports sustainable business that includes renewable energy, circular material and closing the loop value chains, local value chains, and positive relationships with local communities. It is also important to consider that emission volumes are linked to the entire extraction / production / manufacturing chain and that new technologies (photovoltaic, wind, electric mobility, batteries, etc.) could have higher specific consumption of critical materials than traditional technologies.

Opportunity: We are already witnessing high price fluctuations and shortage of supplies. Implementing circular value chains to ensure supply for critical materials as well as end of life value recovery can contribute to derisking and improving competitiveness for the renewable sector and competitiveness for existing and new business models. The growth in volumes makes it necessary to address the need for robust supply chains for renewables and end-of-life cycles. Setting the energy transition in a context of circular economy would help ensure that the energy transition has a positive impact in all its dimensions. The European Union, for instance, has placed decarbonization and circular economy at the center of its Green New Deal strategy. In its Circular Economy Action Plan, the EU has defined a vision of the circular economy as a strategic driver linked to the redesign of value chains, decarbonization, innovation and finance. In 2020, the EU also launched its European Raw Material Alliance in order to address supply chains issues related to critical materials necessary for the energy transition. Similar concern is also being seen in other countries, such as the United States. This also presents a significant opportunity for Latin America and the Caribbean in terms of nearshoring and bringing some of these supply chains in the region.

Baseline and indicators: Define the current status of indicators for financial support to renewable investments in the region, as well as new indicators to be addressed and foresee a 'grace period' in which indicators will be asked but without a minimum level and then fix minimum levels (to be periodically reviewed).

Short term objectives:

- **Prioritizing and developing regional supply chains** will reduce dependencies on imported critical materials and contribute to finding sustainable solutions for reliable and stable long term power supply. **Bringing renewable energy value chain production in the Hemisphere** will also facilitate the scaling of more renewable solutions at scale while creating opportunities for jobs, productivity and regional trade.
- **Define indicators for evaluation of projects for financial institutions** (such as life cycle material consumption vs. energy output, end of life management, critical materials, impact on communities).

- **Identify the critical energy technology supply chains for ensuring security of energy supply and the clean energy transition**, prioritizing product groups (raw materials/sub-components) in the context of electronics, ICT and batteries, wind energy, solar PV, such as gas infrastructure, hydrogen electrolyzers and stationary fuel cell, and the equipment/services or skills necessary for a specific energy technology.
- **Review policy measures to avoid high price fluctuations and shortage of supplies** deploying incentives of critical products, components and raw materials, green trade zones for energy transition investments or projects. (i.e. zero tariffs for a defined set of low-carbon goods and services, 18 countries are negotiating as part of a potential WTO Environmental Goods Agreement or FTA).
- **Electric Vehicles**: Create incentives that support the planning/producing/purchasing of sustainable buses/trucks/vans/bikes/scooters as well as charging infrastructure, both public and private.

Long term objectives:

- **Use the aforementioned indicators in renewable investments.**
- **Leverage both regional and inter-industry alliances to address supply chain risks and opportunities**, in particular related to batteries, green hydrogen, smart buildings, electronics and on low-carbon industries to enable policy drivers on low-carbon targets and circular economy.
- **Set up multilateral cooperation** to accelerate the deployment of the needed infrastructure, low-carbon materials and local suppliers, to exchange best practices and promote cooperation between countries on research and development (R&D) for circular and low-carbon transition.
- **Identify and support** (through both capital expenditure and operational expenditure subsidies, loans/ financial guarantees, public investments, contracts for difference, facilitating long-term offtake contracts, fiscal incentives) **early-stage projects, investments and partnerships** to kickstart critical supply-chains clusters where it is possible to synchronize and collocate production and demand and recycling needs, and measure material efficiency.