



HIGH-LEVEL DIALOGUE ON
ENERGY
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THEME REPORT ON **ENERGY TRANSITION**

TOWARDS THE ACHIEVEMENT OF
SDG 7 AND NET-ZERO EMISSIONS

EXECUTIVE SUMMARY

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PRIORITY RECOMMENDATIONS

INTRODUCTION

Over the next decade, every aspect of national energy systems will be affected by changes in climate and energy policy, and financing, continuous technological advancement, and shifts in energy supply and demand. The rapidly falling costs of renewable technologies have opened up previously unimagined possibilities across the globe. Ongoing developments in many countries offer a promising outlook for the security, inclusiveness, and sustainability inherent in a transformed energy sector. However, the transition needs to speed up significantly and broaden its scope to achieve SDG 7 and align with the goals of the Paris Agreement on climate change, while at the same time achieving implementation of the 2030 Agenda for Sustainable Development.

The energy transition can thus no longer be limited to incremental steps. It must become a transformational effort, a system overhaul, based on the rapid upscaling and implementation of all available technologies to innovate for the future. This is the right moment to reassess long-standing assumptions, perceived barriers, and default decisions. The emerging energy system must promote resilient economies and societies for a more inclusive and equitable world. Ambitious and targeted actions are needed now and throughout the coming decades to ensure the goals of SDG7 are fulfilled and a decarbonized energy system achieved by 2050.

RECOMMENDATION 1

Rapidly scale-up deployment of available energy transition solutions to reach 8000 GW¹ of renewables by 2030 with due consideration to different contributions by individual countries. The abundance of cost-effective renewable potentials worldwide makes them a scalable option that is essential to the decarbonization of the entire economy across all sectors. For many countries, this translates a technical and economic challenge into a set of investment, regulatory and societal opportunities.

RECOMMENDATION 2

Increase the average annual rate of energy efficiency improvement from the current 0.8% to 3% through the implementation of all available technologies while supporting further innovation. Energy efficiency opportunities are readily available and have positive effects on employment; however, they often need policy support to be implemented. Efficiency measures and strategies

¹ Estimate based on IRENA's World Energy Transitions Outlook, and compatible with the recent IEA 'Net Zero by 2050' report.

must address the main barriers to the adoption of energy efficiency measures and promote structural and behavioural change. Further, they must be considered across different sectors and areas, for instance, standards and norms for buildings and appliances, transport, industrial uses, and heating and cooling, among others.

RECOMMENDATION 3

Invest in physical infrastructure to enable the energy transition. Updating ailing infrastructure or investing in expansion is an integral part of the energy transition and an enabler of modern technologies. Public finance can be used to attract private investment in the infrastructure needed, which will help create jobs. Investments in infrastructure must be aligned with long-term plans and be reflective of broader strategies, including regional market integration.

RECOMMENDATION 4

Countries of the Organisation for Economic Co-operation and Development (OECD) should phase out coal by 2030 and redirect international energy financing towards the transition. Non-OECD countries should phase out coal by 2040, noting that many will require support for this process. Coal phase-out will reduce the risk of stranded assets, improve energy independence, and bring about significant health and fiscal benefits. Countries should enact time-bound strategies to manage the social and economic aspects of the coal phase-out.

RECOMMENDATION 5

Mainstream energy policies into economic, industrial, labour, educational, and social strategies. Policy measures and investments for recovery from COVID-19 must drive a broader structural shift aligned with plans for long-term energy sector transformation. To deliver on energy ambitions and avoid, reduce, or anticipate challenges, coherent, cross-ministerial policymaking is required.

RECOMMENDATION 6

Establish medium and long-term integrated energy planning strategies, define decarbonization targets, and adapt policies and regulations to shape energy systems that boost sustainable development. Long-term energy scenarios, including net-zero mid-century scenarios, can be used to facilitate the dialogue needed to help reach consensus among all relevant stakeholders. When preparing energy transition, the ambitions of the nationally determined contributions (NDC) should be raised and short-term challenges identified. Engaging sub-national and city-level decision-makers in transition planning and implementation will be essential, given rapid urbanization and the decentralized nature of the modern energy system.

RECOMMENDATION 7 (INTERLINKAGES WITH SDG 9)

Create regional energy markets to facilitate the integration of renewables, promote cross-border power grid connectivity and trade, and further reduce costs through economies of scale. Regional approaches to energy transition can reduce costs and enhance access to reliable and affordable electricity supply through expanded and smarter grid infrastructure; security of supply should be achieved through resource diversification. Regional integration can also enhance the resilience of energy systems to extreme weather patterns, climate variability and climate change, and the reduction of carbon emissions, and generally foster green economic development and employment.

RECOMMENDATION 8 (INTERLINKAGES WITH SDG 10)

Intensify international co-operation on energy transition to meet the 2030 Agenda for Sustainable Development and avoid future catastrophic climate change impacts. A common learning curve will be accelerated through cooperative action and exchange of experiences and best practices across the power and end-use sectors. Underpinned by global solidarity, an overriding priority is to strengthen public resolve and to ensure that no one is left behind.

RECOMMENDATION 9 (INTERLINKAGES WITH SDG 9 AND SDG 11)

Develop sustainable transport roadmaps. Based on an “avoid–shift–improve” approach. Country-specific plans that include urban strategies should include time-bound roadmaps for all modes of transport, with full consideration of mobility needs, efficiency, and renewable options. Across all regions, plans must include solutions such as electrification, sustainable bioenergy or green hydrogen, enhanced public transport and shared mobility, and promotion of regional and international cooperation and action.

RECOMMENDATION 10 (INTERLINKAGES WITH SDG 4 AND SDG 8)

Tailor labour and social protection policies to the specific needs of each region and country. Although clear global gains in job creation will be made, the structural and labour-market impacts of energy transition will vary among locations, job types, and sectors. In cooperation with all involved stakeholders, countries should enact strategies for a just transition, maximizing opportunities, and minimizing hardship for individuals and communities.

RECOMMENDATION 11 (SDG 7)

Make the energy transition a participatory enterprise. Participatory approaches that meaningfully engage all actors, multi-stakeholder coalitions, and public–private partnerships will help shape the desired energy futures and also manage expectations. The private sector must play a significant role in the implementation of the energy transition. Equally important is the empowerment of citizens, youth, local governments, research institutions, and indigenous communities to become part of the energy system.

2 RESULTS AND ACTIONS MATRIX

PRIORITY RESULTS (UP TO 5 RESULTS TO BE ACHIEVED AT MOST)	PRIORITY ACTION AREAS (UP TO 5 SPECIFIC MEASURES TO REALIZE EACH PRIORITY RESULT)	STAKEHOLDER ACTIONS (UP TO 3 PRIMARY ROLES AND RESPONSIBILITIES PER STAKEHOLDER)				MILESTONES (AS APPLICABLE, AND NUMERICALLY MEASURABLE TO THE EXTENT POSSIBLE)		
		Public	Private	Civil Society and Communities	International and Regional Institutions	2025	2030	Towards 2050
Create comprehensive and holistic plans/strategies and regulatory frameworks	Consult all stakeholders across government, the private sector, academia, and local communities	Set holistic, cross-sectoral policy, regulatory, and legal frameworks, aligned with NDC targets	Feed into government consultations	Feed into government consultations	Compile data and provide analyses of trends	All countries have a comprehensive energy-transition strategy in place	100 countries have achieved an annual energy efficiency increase of 3%	All countries have implemented decarbonization energy strategies
	Release strategies with clear, time-bound targets and budgets	Hold timely, wide-ranging consultations to ensure link-up across government entities at all levels	Set branch strategies on climate action and decarbonization targets	Promote public awareness and activism	Assist with strategy development	100 countries have targets for 100% clean power	100 countries have targets for 100% renewable energy (power, transport, building, and industry)	Education and labour policies support a clean energy workforce
	Strategize to promote a circular economy		Align investment with SDG7 and decarbonization priorities	Support ambition-raising	Link up across sectors			Coal has been phased out of the power system
	Promote regional energy markets combined with ambitious clean energy targets	Conduct grid master-planning based on least-cost social options			Devise global and regional roadmaps/pathways		There are 100 million jobs in the energy sector (compared with 58 million today). These include 60 million jobs in renewables and efficiency (22.5 million today)	
	Set out roadmaps for a just transition				Ensure sharing of data and best practices			
					Scale up capacity-building and technical-assistance efforts			

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		Public	Private	Civil Society and Communities	International and Regional Institutions	2025	2030	Towards 2050
Accelerate deployment of available solutions across the renewables, efficiency, and auxiliary sectors, while innovating for the future	Identify and map available resources	Set enabling policies for public–private partnerships	Commit to energy transition strategies for all operations.	Advocate for clean energy	Share timely data and analyses	Sustainable energy investmen-ts are at least doubled	Reduce fossil fuel share to 30% from current 60%	92% of power in 2050 comes from renewable technologies (33% in 2018)
	Remove barriers to investment for the private sector	Channel public funds towards sustainable infrastructure	Invest in R&D	Support nature-based solutions	Provide tailor-made financial derisking to catalyze investments	Zero new coal plants are in the pipeline	8000 GW installed RE capacity	Energy demand has stabilized due to increased energy efficiency and the circular economy
	Provide stability and continuity through targets/strategies	Support nascent sustainable technologies.	Stop investment in and use of non-sustainable energy	Opt for public transport, energy-efficient buildings, vehicles, and appliances	Link public and private investors to opportunities	All all major emitter countries have adopted a minimum of 50% of govern-ment purchasing/ procure-ment targets for higher perfor-mance appliances, vehicles/ transport fleets, and buildings	Alternatives to rare earth metals are commercialized	Electricity is a key energy carrier exceeding 50% of final energy use by 2050
	Identify gaps where innovation is needed, including the use of digital technologies	Implement the international standard on smart energy and energy efficiency		Participate Individually in the sphere of energy supply /demand	Provide technical support and capacity building	All major oil and gas companies have verified net-zero commit-ments	There is targeted use of sustainably sourced biomass, particularly as a replacement for high -energy-density fuels	There is expanded production and use of green hydrogen and synthetic fuels and feedstocks, in pursuance of indirect electrification
	Identify where clean energy will be utilized in the end-use sector			Develop international standard for improving energy efficiency across sectors	Propose and implement regional and national projects		All countries have adopted minimum international appliance, transport and buildings standards and related national programmes	
Promote international cooperation and support, including knowledge-sharing	Collate and share data	Engage internationally	Build coalitions, and identify shared knowledge /needs	Exert pressure for global action and government accountability	Provide platforms for global and regional actions	NDCs that raise energy- transition ambition have been enhanced	Energy ambition has been raised in NDCs aligned with decarboniz-ation of the energy system by 2050	
	Support strategy development	Support regional development	Share best practices		Convene governments and stakeholders			
	Support transition of workers to future skills	Share best practices	Support global industrial development	Push for clear labelling on products				
	Highlight inequalities and injustices			Promote stakeholder participation	Provide empirical and analytical input			
	Acknowledge climate adaptation needs			Formulate and advocate for the value of nature-based solutions	Assist in tracking and priority-setting aimed at leaving no one behind			

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