ACCELERATING SDG 7 ACHIEVEMENT

# POLICY BRIEF 16

## INTERLINKAGES BETWEEN ENERGY AND TRANSPORT

7 AFFORDABLE AND CLEAN ENERGY

# ACCELERATING SDG 7 ACHIEVEMENT

# POLICY BRIEFS IN SUPPORT OF THE FIRST SDG 7 REVIEW AT THE UN HIGH-LEVEL POLITICAL FORUM 2018

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# POLICY BRIEF #16

## INTERLINKAGES BETWEEN ENERGY AND TRANSPORT


## Developed by

FIA Foundation, UN Environment, United Nations Economic Commission for Europe (UNECE), International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO)

# KEY MESSAGES

## Status of energy and transport and progress towards achieving SDG 7

- At the global level, the transport sector was responsible on average for 28 per cent of total final energy consumption annually between 2010 and 2015, and consumed around 60 per cent of global oil products.
- In many developed countries, the transport sector is the single largest energy user. Globally, transport energy demand has been rising faster than any other sector. Energy consumption in the transport sector is set to continue to grow, predominantly in non-OECD countries, with the greatest growth in Asia.
- Transport (aviation, inland transport[1] and maritime transport) is a key driver of economic and social development and the energy that powers it should be clean, renewable and low carbon. However, overall, transport is not on track to achieve sustainable mobility targets.
- Road vehicles are responsible for the largest share of transport energy use. Improving the efficiency and fuel economy of vehicles will help in managing energy demand, saving money and minimizing climate and air quality impacts from emissions. As road transport increasingly shifts towards vehicles powered by electricity, it is vital that the electricity used is low carbon, and that local energy systems are able to manage and to respond to changes in demand.
- While energy demands from shipping and aviation represent a relatively low proportion of total transport demand, energy use in these sectors is increasing and further policies and technology measures that promote fuel efficiency are needed.

## Priority actions

- Implement fuel economy policies to improve the efficiency of light duty vehicles (aerodynamics, engines and power trains), and promote electric and zero emission vehicles through new standards, fiscal incentives and improved consumer information.
- Introduce measures to improve the efficiency of trucks, including fuel economy standards and voluntary "green freight" initiatives to improve vehicle efficiency and consolidate journeys through advanced logistics and hubs, where possible.
- Phase out inefficient transport-related fossil-fuel subsidies, including direct and indirect policies (e.g., inefficient fiscal measures) that encourage wasteful consumption.
- Introduce sustainable transport policies, irrespective of political frontiers, that invest in safe walking and cycling infrastructure, with ring-fenced funding and strong linkages to efficient, connected and affordable public transport systems.
- Continuous progress is needed in setting international policies and standards under International Civil Aviation Organization (ICAO), and International Maritime Organization (IMO) to address emissions from international aviation and maritime transport, respectively.
- Accelerate research in efficient batteries and energy storage systems, including hydrogen and fuel-cell technologies, to reduce prices and increase the range of electric-powered vehicles and develop necessary charging/refuelling infrastructure.
- Continue to develop and adapt vehicle fuel economy policies, and seek continuous energy efficiency improvements in other sectors including aviation and shipping as well as research and development around increased use of sustainable aviation fuel, clean energy and renewable power.

## Transport and the 2030 Agenda

### The importance of transport for achieving the SDGs

Transport is a vital sector for achieving the Sustainable Development Goals. Transport supports the achievement of virtually all the goals, including those associated with economic and social development, connecting goods with markets, supporting agricultural productivity and access to services. Safe, clean and sustainable transport that is affordable and accessible to all is critical for sustainable development.

Transport is fuelled by energy and is therefore directly linked to SDG 7 on affordable and clean energy. Sector stakeholders can contribute to target 7.2 by increasing the share of renewables in the transport energy mix, and to target 7.3 through measures that improve passenger/freight distance travelled per unit of energy input. Targets 7.A and 7.B also have links to transport. The sector's capacity to innovate may prove increasingly relevant to these two targets for 2030 through investment in research and development (R&D) and as nascent technologies mature (for example, solar highways and induction-based charging of electric vehicle (EV) batteries that use them).

### Current energy use from transport

Energy use in transport has increased significantly in correlation with world population growth and economic development. At the end of the twentieth century there were 500 million private cars in use globally. By 2015, that number had doubled to 1 billion. Over 20 million cars are sold each year in China alone, and the number of vehicles will continue to grow. Energy use from inland freight, aviation and shipping continues to increase in response to the growing demand for goods and domestic and international travel.

The transport sector's share of global total final energy consumption in 2015 was 28.8 per cent. In the same year, it consumed 65 per cent of global oil supply. In total, transport consumes over 100 quadrillion British thermal units (Btu) per year. The majority (96 per cent) of this energy is in the form of petroleum or other liquid fuels, with a very small proportion as electricity. The share of electricity used in the sector is expected to increase gradually along with natural gas. (IEA, 2015).

Road transport accounts for around three quarters of transport energy consumption, with light duty vehicles responsible for around half, and a quarter is used by trucks and buses. Air and maritime transport are each responsible for around 10 per cent, while the railways share is the lowest of all modes at 3 per cent (EIA, 2017).

### Key challenges

Virtually all (96 per cent) of future increases in transport energy use are expected to be in non-OECD economies. Recent increases in OECD countries' demand have been predominantly in aviation and shipping. Currently 70 per cent of global trade in value and 80 per cent by volume is carried on board ships. Estimates vary, but most reference scenarios suggest population growth and rising incomes could result in around a 50 per cent increase in demand by 2040 compared with 2015 levels (ibid). Total freight transport demand is expected to triple from 112,000 billion ton-kilometres in 2015 to 329,000 billion ton-kilometres in 2050. Airfreight volumes are expected to grow faster than other modes at about 5 per cent annually. Trucks are the fastest growing source of global oil demand and could account for 40 per cent of oil demand growth to 2050. Without policy action, they are likely to overtake light duty vehicles in the coming decades as the largest energy user (World Bank, 2017).

### How to fill the gap

The transport industry is a major global energy consumer and the dominant consumer of oil and its products. Improving the energy efficiency of vehicles, aircraft and ships and increasing the share of renewables in the fuel mix will be crucial to achieving the targets set out in SDG 7. A series of measures must be defined and put in place in order for the transport sector to contribute to achieving SDG 7 worldwide by 2030. These measures will need to be tailored to achieve the global targets while recognizing sectoral specificities, local socioeconomic circumstances, environment and development needs.

Measures to improve energy efficiency and integrate renewables into transport systems commonly diverge on the boundary between the urban scale and the inter-urban and international transport scales. It is important to take into consideration and respond to the particularities of these transport subsectors—their environments, economics and stakeholders. Developing rail infrastructure so that freight and passengers can be transported between cities by train rather than road would reduce the energy intensity and carbon footprint of transport. Developing intermodal freight infrastructure to support the shift of freight transport to more energy efficient modes, namely rail and inland waterways, and improving transport logistics to reduce the number of journeys required— "green freight" initiatives—will increase the energy efficiency of international freight transport.

At the urban scale, the "avoid, shift, improve" mitigation framework describes pathways for improving the sustainability of transport:

- reducing travel demand and minimizing unnecessary travel;
- shifting to lower emission alternatives;
- improving the technological performance of vehicles.

One programme promoting this framework is UN Environment's and FIA Foundation's Share the Road programme, which works to promote policies for cycling in cities in developing country. Similarly, UNECE and WHO Europe's Transport Health and Environment Pan-European Programme (THE PEP) promotes and provides support for developing policies that encourage walking, cycling and a shift to greater use of public transport in urban centres in the ECE region.

Figure 16.2:

**Transport and the SDGs**

Source: SLOCAT

Beyond context-specific measures, incremental and continuous improvements in vehicle fuel efficiency will be key for ensuring the transport sector's contribution to achieving SDG 7. Most internal combustion engines are inefficient at converting fuel into usable energy. Most gasoline combustion engines average around 20 per cent efficiency. Diesels are typically higher, approaching 40 per cent in some cases. In sum, only 20 to 40 per cent of the energy in the fuel burned in engines of road vehicles is actually employed to move them; the rest is rejected as heat. This is also true for aircraft turbojet engines, while marine diesel engines on large ocean-going ships (the main maritime energy users) can have slightly higher efficiencies of around 50 per cent (shaft power output) and even 55 per cent when waste heat recovery is employed.

In addition to improving the efficiency of petrol combustion engines, further measures are needed to support expansion of the fleet of road vehicles propelled by alternative and renewable fuels, such as liquefied natural gas (LNG) and biofuels, hydrogen and fuel cells, and expanding the fleet of hybrid electric vehicles (HEV) and electric vehicles (EV). The extent of the contribution of EVs will depend both on improving battery vehicle range on a single charge without adding significant additional cost and on the construction of EV charging infrastructure networks. The use of sustainable aviation fuel and other clean energy in air transport is another challenging area. Some industry-wide progress has been realized already, including the approval of five production processes for sustainable aviation fuels and a number of airports distributing such fuels, which has led to 100,000 commercial flights being powered with sustainable aviation fuels through 2017.

### Interlinkages with other SDGs

Transport is linked with virtually all SDGs. Direct impacts of transport on progress in achieving the SDGs and their targets include reducing road traffic deaths (target 3.6), which are a factor of the safety features of vehicles, the design of infrastructure and traffic systems and the behaviour of participants in traffic. Further key links are with Goal 13 on climate change (target 13.2 on mitigation), Goal 11 on cities (target 11.6 on emissions and air quality) and Goal 3 on health (target 3.9 on air pollution). Transport is responsible for around a quarter of $CO_2$ emissions, and diesel fuels are associated with emissions of a particulate matter, including "black carbon", which acts as a short-lived climate pollutant, particularly in areas covered by ice and snow, by absorbing heat and contributing to warming. Over 3 million people die each year from the impacts of outdoor air pollution, and transport is associated with a large proportion of this, particularly in cities (WHO, 2016).

Notable links are also observed in relation to SDG 8 on decent work and economic growth. The transport industry plays an important role in today's economy. It has a substantial impact on economic growth and provides a significant proportion of employment in high-income countries around the world. In the European Union, the industry directly employs 10 million people (while the indirect and induced employment figures it generates are several orders of magnitude higher) and is responsible for 5 per cent of the economic area's GDP (European Commission, 2011). Taking into account the strong projected long-term rate of increase of demand for transport-related products and services in developing countries, the industry will be a very important element in the equation to achieve the targets of SDG 8.

Transport systems consumption of energy extends beyond that of vehicles that carry persons and freight. The manufacturing of vehicles and the construction and maintenance of transport infrastructure are energy-intensive industries that can seek opportunities to improve their resource intensity throughout their products lifecycles. In this broader perspective, transport systems and energy consumption very much impact SDG 9 on industry, innovation and infrastructure and SDG 12 on responsible consumption and production, and they will in turn be impacted by measures taken by governments and industry stakeholders to achieve these goals (such as target 12.C on rationalizing inefficient fossil fuel subsidies that encourage wasteful consumption). Finding sustainable solutions for end of life management of EV batteries (scarce resource recycling) is a prime example of the transport-energy-resource sustainability nexus challenge for society. Finally, the evolution of transport systems and related industries will also affect the achievement of targets relating to SDG 14 on life below water and SDG 15 concerning life on land.

## Policy Implications

Due to increasing demand for mobility and freight transport, without successful green technology and green behaviour transitions, the energy intensity and environmental impact of transport may increase substantially.

### Improving vehicle efficiency

Agreeing on approaches to manage growth in emissions from inland transport modes, aviation and shipping will limit their respective passenger and freight transport energy intensities. The amount of $CO_2$ released into the atmosphere from fuel combustion is directly proportional to the amount of fuel burned. Therefore, improvements in petrol combustion engine efficiency reduce the per unit of distance covered and per passenger/freight carried $CO_2$ emissions. These improvements would reduce harmful environmental and human health impacts (environmental and social sustainability) and the amount of energy employed per unit of distance and passenger/freight carried, which will in turn save money and reduce energy intensity (resulting in immediate and upstream economic and environmental sustainability impacts).

The Vehicle Regulations developed by the UNECE World Forum for Harmonization of Vehicle Regulations (WP.29)[1] and subsidiary working groups, prescribe $CO_2$ emission limits and thereby fuel economy standards for road vehicles, both light and heavy duty, with internal combustion engines. However, it is often suggested that the current standards are not challenging enough and there are also issues around enforcement and the actual efficiency of vehicles in real-world conditions.

The Global Fuel Economy Initiative (GFEI—www.globalfueleconomy.org) is working in 70 countries to promote improved fuel efficiency, and to support governments as they evaluate policy options.

In addition to energy efficiency standards in the realm of construction of vehicles and their engines, there are well-tested financial and non-financial instruments that have been used in the past decades to restrain the energy intensity of transport.

One obvious measure is increasing the price of energy through fuel taxes, thereby encouraging road users to adopt more energy efficient behaviour or to consider other transport modes. However, high fuel taxation can have important implications for mobility, if it is not associated with measures promoting alternative transport options (public transport, ride sharing, bicycling, etc.).

Taxation of new cars based on $CO_2$ emission levels, or engine power, can also promote the use of energy-efficient and low-emission vehicles. A differentiated tax system on the purchase of new vehicles by taxing cars according to their $CO_2$ emission levels has, in the past, been successful in European countries. Another example is bonus-penalty programmes that promote replacing cars with newer, more environmentally friendly versions. Owners receive bonuses if the new replacement car is more energy efficient than the old one, while they are penalized for replacing their vehicle with ones that have more energy-intensive engines.

Congestion-charging programmes have been used as financial instruments to reduce car use in urban environments (including in Stockholm, London, Rome, and Milan). Exemptions for EVs and HEVs provide an impetus for their purchase by city dwellers.

Examples of non-financial instruments include the establishment of rules for public authorities that will serve as good examples for road users, such as mandatory procurement of energy-efficient vehicles for government institutions. Further measures worth considering are vehicle fuel efficiency educational campaigns that promote driver behaviour, such as maintaining steady speeds, anticipating traffic, slow and smooth accelerations and maintaining tire pressure at optimal levels.

In the aviation sector, ICAO has developed standards for aircraft engine $CO_2$ emissions and fuel economy (ICAO, 2009) and the IMO has set similar standards for ship engines (IMO, 2017). IMO regulations for energy efficiency of ships apply to internationally trading ships of 400 gross tonnage and above and make mandatory the Energy Efficiency Design Index (EEID) for new ships, and the Ship Energy Efficiency Management Plan (SEEMP) for all ships. ICAO adopted the first ever global certification $CO_2$ standard for aeroplanes, which will apply to new aeroplane-type designs from 2020 and to aeroplane-type designs which are already in production in 2023 (UNFCCC, 2017). ICAO also facilitates operational improvements in aviation, such as Air Traffic Management (ATM) for better use of airspace, more efficient air routes and less congestion in the sky, as well as promotes green airports to reduce aviation-related $CO_2$ emissions at the ground level.

In 2017, 192 member States adopted the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which will contribute to achieving the international aviation sector's goal of carbon-neutral growth from 2020, together with other $CO_2$ mitigation measures (ICAO, 2018). CORSIA is strongly supported

1 WP.29 is the leading international institution for harmonization of safety and environmental provisions for road vehicles. The three agreements that it administers cover 143 United Nations Regulations (1958 Agreement), 19 United Nations Global Technical Regulations (1998 Agreement) and 2 rules for Periodical Technical Inspections (1997 Agreement). All United Nations member States may accede to and apply regulations under the three vehicle agreements, https://www.unece.org/trans/main/welcwp29.html.

by the aviation sector as the only global market-based instrument for international aviation, compared to a patchwork of different national and regional financial/economic instruments.

**Modal shift and infrastructure development**

Modal shifts are unlikely without substantial changes in costs/pricing, strong regulatory measures and changes in governance structures. Policy measures that may affect transport mode choices include economic instruments such as fuel taxes, congestion and emissions charges, labour and safety regulations and investments in infrastructure and service improvements.

The construction of infrastructure to support a modal shift in passenger and especially freight transport is necessary in order to achieve a reduction in energy intensity of transport systems, especially in light of population growth projections and economic development targets. This means investment in the construction of rail networks to shift freight transport from truck to rail, where possible, and to establish intermodal terminals in key ports where freight can be transferred from ships to trains for transportation inland.

In the recent past, public sector investment in the rail industry has been modest in most of the world (with the exception of some European and Asian countries), with much of it focusing on upgrading. A radical increase in rail investments may be required to reduce prices and improve services, allowing rail to increase its market share.

In passenger transport, the use of intermodal facilities can be encouraged by ensuring that there are proper alternatives to car travel and by providing appropriate infrastructure to allow travellers to use different modes. National authorities can facilitate passenger use of intermodal transport by financing transport interchanges and generally improving public transport facilities and their accessibility at urban centres.

**Increasing the share of renewables and sustainable alternative fuels in transport**

Achieving a substantial increase of renewable energy in the transport energy mix will depend on setting ambitious targets for shares of advanced biofuels and other alternative fuels with low-carbon lifecycle emissions in the transport energy mix; deployment of higher proportions of EVs in vehicle fleets; and the expansion of renewable electricity generation capacities (on grid and decentralized). It is important to note that if the electricity powering EVs is not generated from renewable sources, the related emissions are simply displaced from the vehicle tailpipe to the fossil fuel power plant.

Apart from using cleaner energy, and using it in a more efficient way (electric motors are superior in efficiency compared to internal combustion engines), EVs are, in the future, expected to be a key part of smart electricity grids. Their batteries will be used as grid storage devices, with the energy stored in them available to be dispatched when necessary (if they are parked and plugged in) to balance the electricity grid during daily peak loads.

Government, private sector and academia collaboration on R&D for EVs and their components (most importantly batteries), and investment in required infrastructure (i.e. charging stations in cities and along national roads and highways) are basic preconditions for the uptake of EVs. Challenges in this respect include the reinforcement of electricity distribution networks, their upgrading to allow a higher uptake of intermittent renewables into the grid and construction of the charging infrastructure itself. In addition, the end of life management (collection, depositing and/or recycling) of EV batteries is a process that is still maturing. The stock of natural resources from which the batteries are constructed is limited; extraction processes are energy intensive; and used batteries can emit toxic gases if damaged. It is therefore key for the industry to develop environmentally sustainable and economically efficient technologies and processes for their recycling (or other solutions for reuse) before the market is overwhelmed with depleted EV batteries.

Hydrogen and fuel cells can also improve the energy efficiency of transport beyond applications limited to road vehicles. A number of rail and shipping companies have announced the commercial rollout of trains and ships running on hydrogen fuel cells during the 2020-2025 period. Technological solutions for overcoming challenges in transport and storage of hydrogen are on the horizon, while the current state of the art already has solutions for its safe use. However, a number of challenges remain, in particular addressing the capital costs of establishing fuelling station networks and the corresponding required infrastructure for hydrogen fuelled road vehicles.

Because of deep technological gaps, renewable electricity will not substitute for liquid fuels in air and seaborne transport in the near future. Consequently, aviation stakeholders are working towards a gradual increase in the share of drop-in biofuels that can provide significant life-cycle emission reductions for passenger and freight aviation in comparison with the industry dominant fossil fuels of today. European Union countries have established, through the European Advanced Biofuels Flightpath,[2] the goal of reaching a minimum of 40 per cent low-carbon sustainable biofuels in national aviation by 2050. Within the United Nations system, ICAO's Global Framework for Aviation Alternative Fuels[3] provides a platform for coordination of national policy actions to accelerate

[2] https://ec.europa.eu/energy/en/topics/biofuels/biofuels-aviation.

[3] https://www.icao.int/environmental-protection/GFAAF/Pages/default.aspx.

the appropriate deployment of sustainable alternative jet fuels and a stage to exchange information and best practices and draw attention to the need for increased harmonization for sustainability. In addition, the ICAO Conference in October 2017 agreed on the ICAO Vision as a pathway towards a significant proportion of conventional aviation fuels being replaced by sustainable aviation fuels by 2050. The ICAO Vision will be periodically reviewed in the run up to the convening of the next ICAO Conference by 2025, with a view to updating the vision with a quantified 2050 goal. ICAO is also leading a number of studies and projects with the objective of increasing the use of clean energy, including the installation of solar panels at airports, in cooperation with the European Union, UNDP and GEF.

IMO adopted amendments to the MARPOL Convention, which have led to a significant decrease in the sulphur content in fuels used by international shipping. This mandatory requirement will contribute to massively reshaping international shipping's fuel mix. Further GHG emissions reduction opportunities in the current development of the IMO GHG Strategy include the uptake of low- and zero-carbon-based fuels.

The wording of target 7.2 of SDG 7: "by 2030, ***substantially increase*** the share of renewable energy in the global energy mix", is quite open. As such, it presents an opportunity for countries that are able to dedicate sufficient resources to define voluntary targets for shares of renewables in their transport sectors by 2030, thereby taking the lead with proactive policy examples that may be replicated elsewhere.

## REFERENCES

EIA (2017), International Energy Outlook, Chapter 8: Transportation sector energy consumption, https://www.eia.gov/outlooks/ieo/pdf/transportation.pdf.

European Commission (2011), "Transport 2050: The major challenges, the key measures" (MEMO/11/197), http://europa.eu/rapid/press-release_MEMO-11-197_en.htm.

GFEI (2016), Working Paper 14, "Estimating the fuel efficiency technology potential of heavy-duty trucks in major markets around the world", https://www.globalfueleconomy.org/data-and-research/publications/gfei-working-paper-14.

GFEI (2017), Working Paper 15, "International comparison of light-duty vehicle fuel economy 2005-2015: ten years of fuel economy benchmarking", https://www.globalfueleconomy.org/data-and-research/publications/gfei-working-paper-15.

GIZ, Sustainable Urban Transport and Energy Efficiency, Module 5h, http://www2.giz.de/wbf/4tDx9kw63gma/SUT_module5h.pdf.

ICAO (2009), Technology Standards, https://www.icao.int/environmental-protection/Pages/technology-standards.aspx.

ICAO (2016), Environnent Report, https://www.icao.int/environmental-protection/Pages/ENV2016.aspx.

ICAO (2017a), 2nd Conference on Aviation and Alternative Fuels (Oct. 2017), https://www.icao.int/Meetings/CAAF2/Pages/default.aspx.

ICAO (2017b), Green Airports Seminar, Nov. 2017, https://www.icao.int/Meetings/greenairports/Pages/default.aspx.

ICAO (2017c), International Civil Aviation Convention, Annex 16 (Environmental Protection), Volume III ($CO_2$ Standards), http://www.fzt.haw-hamburg.de/pers/Scholz/materialFM1/ICAO-2017_Annex16_Volume3_CO2CertificationRequirement.pdf.

ICAO (2018a), Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), https://www.icao.int/environmental-protection/Pages/market-based-measures.aspx.

ICAO (2018b), Assembly Resolutions A39-1, A39-2, A39-3, https://www.icao.int/environmental-protection/Pages/default.aspx.

IEA (2015), Total Final Consumption, https://www.iea.org/Sankey/#?c=World&s=Final per cent20consumption.

IEA (2017), Future of Trucks report, https://www.iea.org/publications/freepublications/publication/TheFutureofTrucksImplicationsforEnergyandtheEnvironment.pdf.

IMO (2017), Greenhouse Gas Emissions, http://www.imo.org/en/OurWork/environment/pollutionprevention/airpollution/pages/ghg-emissions.aspx.

REN21 (2017), Renewables 2017 Global Status Report (GSR), http://www.ppmc-transport.org/another-record-breaking-year-for-renewable-energy-more-renewable-energy-capacity-for-less-money.

UNCTAD (2017), Review of Maritime Transport, http://unctad.org/en/PublicationsLibrary/rmt2017_en.pdf.

UNECE (2015), Transport for Sustainable Development—The case of inland transport, https://www.unece.org/fileadmin/DAM/trans/publications/Transport_for_Sustainable_Development_UNECE_2015.pdf.

UNFCCC (2017), The 47th Session of the UNFCCC Subsidiary Body for Scientific and Technological Advice, November 2017, Agenda Item 10, http://unfccc.int/documentation/submissions_from_non-party_stakeholders/items/7482.php.

WEC (2012), Global Transport Scenarios 2050, https://www.worldenergy.org/wp-content/uploads/2012/09/wec_transport_scenarios_2050.pdf.

WHO (2016), Ambient (outdoor) air quality and health, September 2016, http://www.who.int/mediacentre/factsheets/fs313/en/.

World Bank (2017), Sustainable Mobility for All (SuM4ALL) Global Mobility Report 2017, http://sum4all.org/publications/global-mobility-report-2017.

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HIGH-LEVEL POLITICAL FORUM
ON SUSTAINABLE DEVELOPMENT

7 AFFORDABLE AND CLEAN ENERGY