



# **POLICY BRIEF #10**

## **HEALTH AND ENERGY LINKAGES – MAXIMIZING HEALTH BENEFITS FROM THE SUSTAINABLE ENERGY TRANSITION**

**Developed by:**

WHO

**In collaboration with:**

Climate and Clean Coalition, the Global Alliance for Clean Cookstoves, UN Environment, UNICEF and United for Energy Efficiency

**12<sup>TH</sup> FEBRUARY 2018**

**DRAFT FOR PUBLIC CONSULTATION**

This document is a part of a series of Policy Briefs being developed to support SDG7 review at the UN High-Level Political Forum to be held in July 2018. The objective is to inform intergovernmental discussions by providing substantive inputs on SDG7 and its interlinkages with other SDGs prepared through inclusive multi-stakeholder consultation processes. The development of these Policy Briefs is coordinated under the auspices of the Ad Hoc Informal Multi-stakeholder Technical Group of Advisors on SDG7.

If you want to provide comments on this Policy Brief, please visit:

<https://sustainabledevelopment.un.org/EnergyConference/documentation>

## KEY MESSAGES

Policies to expand access to energy, increase the share of renewables in the global energy mix, and improve energy efficiency have the potential to unlock vast benefits for human health. Prioritizing energy policies that generate benefits for health will help achieve not only SDG7 and SDG 3 (“Ensure healthy lives and promote well-being for all at all ages”), but will also spur progress across the entire Sustainable Development Agenda. To realize this opportunity, closer cooperation is needed at all levels between actors and decision-makers from all sectors, especially between health and energy sectors. A focus on health in implementing policies and interventions to meet the energy targets of SDG 7 will accelerate progress across the entire Sustainable Development Agenda.

- 3 billion people lack access to clean fuels and technologies for cooking, and the resulting household air pollution is a cause in some 4 million deaths from noncommunicable diseases including heart disease, stroke and cancer, as well as childhood pneumonia. The health risks of inefficient household energy use is a particular health and livelihood risk for women, children and infants. Access to clean fuels and technologies has the potential to save millions of lives each year.
- Air pollution largely generated from the inefficient use of energy in homes, transport, industry and buildings is putting over 90% of the world’s urban populations at increased risk of heart, brain and respiratory disease.
- Around 25% of health care facilities in 11 Sub-Saharan Africa lack any access to electricity, a major barrier to the delivery of essential primary health care, particularly maternal, child, and adolescent care.
- Prioritizing energy-related policies and programmes that yield the greatest health benefits will provide leverage across the development agenda—including and beyond SDG7 on energy and SDG 3 on health.
- Energy policies that take health risks and benefits into account can accelerate the transition to a sustainable economy, maximize impact for the most vulnerable people, and provide the broadest and most durable return on investment of scarce resources for human development, health and opportunity.
- Implementing policies to achieve the recommended health-improving targets for energy access, efficiency and renewable energy by 2022 will motivate significant progress toward multiple 2030 SDG targets (e.g. 1 poverty, 3 health, 5 gender, 11 cities, 13 climate, 15 life on land) while also generating major benefits for health.

## Health and Energy in the context of the Sustainable Development Goals

Energy sustains us, connects us and, sometimes, even saves us. We use it to cook our meals, to get to where we want to go, to produce and use most goods, and to power our medical devices and healthcare systems. Having access to reliable, clean, modern energy sources enables people to live to their full potential. Conversely, living without reliable energy constrains people’s possibilities, and undermines their health and wellbeing. A lack of electricity limits the availability of life-saving care in healthcare facilities (e.g. lighting, heating, ventilation and cooling systems, blood banking, cold-chain vaccine storage, ICT services, etc.) . Without reliable energy, transport systems can’t function, and homes and workplaces can’t be heated and cooled to a comfortable level. For billions who rely on polluting fuels and devices, such as burning wood in an inefficient stove to cook meals, the resulting household air pollution poses a deadly, daily health risk.

Investing in energy access, renewables and energy efficiency—the three target areas of SDG 7—will be instrumental in unlocking progress across the Sustainable Development Agenda. Accelerating efforts to achieve SDG 7 will reduce poverty, contribute to more inclusive, sustainable economic growth, and generate especially huge benefits for health.

In pursuit of SDG 7, the global community aims to meet three targets by 2030: ensure universal access to affordable, reliable and modern energy services; increase substantially the share of renewable energy in the global energy mix; and double the global rate of improvement in energy efficiency. This briefing highlights how policies to achieve these three targets can create significant benefits for health, through focused actions in three key settings: households, cities/urban environments, and healthcare facilities. It summarizes recommendations for prioritizing “energy for health” policies and interventions in each of these settings, and offers intermediate targets to focus efforts in the energy and health sectors.

### **Access to clean and modern household energy & health**

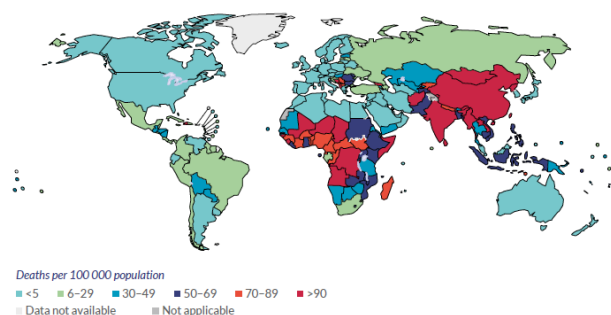
Three billion people rely on polluting fuels and technologies for their daily cooking needs. Over a billion people still lack access to electricity, and must rely on candles and kerosene lamps to light their homes. Their homes are dangerous places to be

## POLICY BRIEF #10: Health and Energy Linkages – Maximizing health benefits from the sustainable energy transition

simply because the energy sources they use release pollutants that are harmful to their health.

Achieving universal access to affordable, reliable and modern energy (SDG Target 7.1) will improve the health and wellbeing of some of the most vulnerable people in the world. It is the poorest countries, and within countries, the most vulnerable populations (e.g. women, children), who lack access to clean, affordable energy alternatives such as electricity, gas, biogas and other low-emission fuels and devices to meet their most basic cook, heating and lighting needs.

Fundamental public health goals enshrined in SDG 3—such as improving child survival and preventing noncommunicable diseases—simply cannot be achieved without expanding access to clean household energy. Household air pollution resulting from the inefficient use of clean fuels and technologies for cooking alone is responsible for some 4 million deaths and over 146 million disability-adjusted life years (DALYs) each year (WHO, 2016); more than the total number of deaths to HIV/AIDs, malaria tuberculosis combined. Household air pollution is the leading risk factor for childhood pneumonia, accounting for over 50% of all childhood pneumonia deaths or about 530,000 deaths each year. It is also responsible for a substantial fraction of deaths to noncommunicable diseases: about one-third of all premature deaths to chronic obstructive pulmonary disease; one quarter of deaths to stroke; and close to one-fifth of deaths from lung cancer and ischemic heart disease. (Figure1)



**Figure 1: Deaths per 100,000 population from household air pollution caused by using mainly polluting fuels and technologies for cooking, 2012 (WHO, 2016)**

Ensuring universal access to clean and energy in the home can save lives now and in the future, helping to accelerate the achievement of SDGs on health (i.e. 3.2, 3.4 and 3.9 –see Box 1) The International Energy Agency (IEA) estimates that 1.8 million lives a year could be saved between now and 2030 from strong and concerted actions are taken to achieve the universal target.

Beyond SDG 3 and SDG 7, accelerating access to clean household energy will unlock progress towards multiple SDGs, like SDG 5 on gender, SDG 11 on cities and SDG 13 on climate<sup>1</sup>

Women and girls are the primary procurers and users of household energy services, and bear the largest share of the health and other burdens associated with the reliance on

### Box 1: Achieving SDG 7 will be instrumental for achieving multiple SDG 3 targets:

- **3.2: Reducing the neonatal and under-five mortality rates.** (“By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.”)
- **3.4: Reducing the mortality rate attributed to cardiovascular disease, cancer, chronic respiratory disease.** (“By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.”)
- **3.9: Reducing the mortality rate due to household and ambient air pollution.** (“By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals

polluting and inefficient energy systems. For instance, available survey data from 13 countries showed that girls in sub-Saharan African homes using mainly inefficient biomass cookstoves spend about 18 hours weekly collecting fuel or water, while boys spend 15 hours. In homes mainly using cleaner stoves and fuels, girls spend only 5 hours weekly collecting fuel or water, and boys just 2 hours. The use of modern and clean energy in the home can alleviate the drudgery and safety risks associated with traditional household energy use and the resulting time savings provide the opportunity for more schooling, income generation and/or leisure for women and children.

Lack of access to clean and modern energy services in the home is not limited to rural areas. On average, around 22% of households in urban areas lack access to clean fuels and technologies for cooking, and 5% still lack access to electricity (WHO, 2016; World Bank, 2017). In many cities and peri-urban areas, inefficient household fuel combustion is a major source of air pollution and related health impacts. A recent study<sup>2</sup> shows much of the air pollution in New Delhi, around one-fifth, is actually caused by the air pollution generated from inefficient cookstoves in and around the mega-city.

The adoption of clean and modern energy services in the home also presents an unparalleled opportunity to realize climate and health co-benefits. Inefficient household fuel combustion is a significant source of both greenhouse gases and short-lived climate pollutants. Globally, residential biomass combustion is thought to account for around 25% of global black carbon emissions (a health-damaging pollutant) in the air, and is a major cause of the glacier melting. Affordable and reliable sources of clean and modern energy services in the home presents an opportunity for climate change mitigation and reduce the health impacts from climate-sensitive diseases.

<sup>1</sup>Burning Opportunity (<http://www.who.int/indoorair/publications/burning-opportunities/en/>), WHO 2016

<sup>2</sup> Amann M, Purohit P, Bhanarkar AD, Bertok I, Borcken-Kleefeld J, Cofala J, Heyes C, Kiesewetter G, et al. (2017). Managing future air quality in megacities: A case study for Delhi. *Atmospheric Environment* 161: 99-111. DOI:10.1016/j.atmosenv.2017.04.041.

## POLICY BRIEF #10: Health and Energy Linkages – Maximizing health benefits from the sustainable energy transition

Current trends suggest that the global community is moving too slowly, and needs to act with more urgency<sup>34</sup>. The International Energy Agency's (IEA) projections show that at the current rate of progress, only 91 percent of world will have electricity access in 2030, while only 72% of will have access to clean cooking energy by 2030 (IEA, 2017). Much of the financial resources relate to electricity access.

While technology advances and falling costs are bringing clean energy within reach of more households, significant policy and finance gaps remain. A 2017 report of the IEA's estimates that an additional \$786 billion cumulative investment is needed in the period to 2030 to meet the universal energy access target, or increase of 3.4% in current energy expenditure. Policymakers have an opportunity to remove some of the barriers (e.g. cost, supply, tariffs, market expansion) for the long term of adoption of clean cooking, heating and lighting services and products. Paired with the important and substantive work of both global and local energy access initiatives, we have the opportunity and partnerships (see Box 2) to save millions of lives and improve the livelihoods of billions of people. (IEA, 2017; WHO, 2016).

### Support for Accelerating the Universal Energy Access: Examples of Global Initiatives & Partnerships

*Sustainable for Energy for All* is a nonprofit organization working with leaders in government, the private sector and civil society to drive action toward achievement of SDG 7, and the Paris Climate Agreement, which calls for reducing greenhouse gas emissions to limit climate warming to below 2 degrees Celsius. SEforAll provides a knowledge hub, hosted by the World Bank in collaboration with other partners, has to benchmark progress towards SEforAll's objectives through its Global Tracking Framework and other knowledge products. More than 100 countries have engaged with SEforAll, providing financial or in-kind contributions or working on tailored national strategies and investment plans to deliver on SEforAll's objectives.

*Global Alliance for Clean Cookstoves* is a public-private partnership hosted by the UN Foundation to save lives, improve livelihoods, empower women, and protect the environment by creating a thriving global market for clean and efficient household cooking solutions. The Alliance's 100 by '20 goal calls for 100 million households to adopt clean and efficient cookstoves and fuels by 2020. It works with a strong network of public, private and non-profit partners to accelerate the production, deployment, and use of clean and efficient cookstoves and fuels in developing countries.

*United for Efficiency (U4E)* is a global effort supporting developing countries and emerging economies to move their markets to energy-efficient appliances and equipment. U4E works to: inform policy makers of the potential environmental, financial and economic savings of a transition to high-efficiency products; identify and promotes global best practices in transforming markets; and promote global best practices in transforming energy markets.

### Policy recommendations:



- “Making the clean available”<sup>5</sup> —improve the availability and affordability of suitable household energy solutions that are clean for health at the point-of-use (such as LPG, electricity, ethanol, and biogas) through policy levers including national subsidy reform (e.g. removing kerosene subsidies), increasing availability of clean fuels and technologies including to remote locations, eliminating barriers to establish a market of clean and renewable energy solutions, as well as enacting regulatory frameworks and standards that promote clean household energy
- “Making the available clean” —New technologies are being developed that can burn widely available renewable fuels such as wood and dung almost as cleanly as gas, but further technical development of the next generation of scalable and affordable low-emissions biomass stoves is needed. Energy and health sector policy-makers can help spur the rate of development, dissemination and sustained adoption of these cleaner-burning biomass stoves and devices through incentives to support innovation, market promotion, national standards for clean household energy solutions, behavioural change and awareness programmes and regulatory frameworks which enable the investment climate and penetration of clean fuels and technologies.
- Implementing policies that build a larger market ecosystem for clean and modern household energy solutions through innovations in financing and business models for household consumers, stove designers, and distributors.

### SDG7 & Urban Population Health

More than half of the world's people now live in cities, and by 2030, almost 60 percent of the world's population will dwell in cities, in particular the urban populations in low-income countries are projected almost to triple, increasing by over

<sup>34</sup>Global Tracking Framework, World Bank. 2017 (<http://gtf.esmap.org/downloads>)

<sup>4</sup> Energy Access Outlook 2017: From Poverty to Prosperity; IEA 2017

<sup>5</sup> Smith, K. R., & Sagar, A. (2014). Making the clean available: Escaping India's Chulha Trap. Energy Policy, 1–5. <https://doi.org/10.1016/j.enpol.2014.09.024>

## POLICY BRIEF #10: Health and Energy Linkages – Maximizing health benefits from the sustainable energy transition

500 million, by 2050<sup>6</sup>. The number of megacities have been increasing and 47 cities have more than 10 million inhabitants in 2018. This rapid, and often unplanned urbanization is associated with the rise of several environmental burdens, for example air pollution and unsustainable mobility that contribute to an increase in noncommunicable diseases, such as heart disease, cancer and diabetes. Cities are responsible for more than 70% of global CO2 emissions and only 12 percent of the cities in the global WHO database meet the WHO air quality guidelines values, air quality levels designed to protect public health from ambient air pollution.

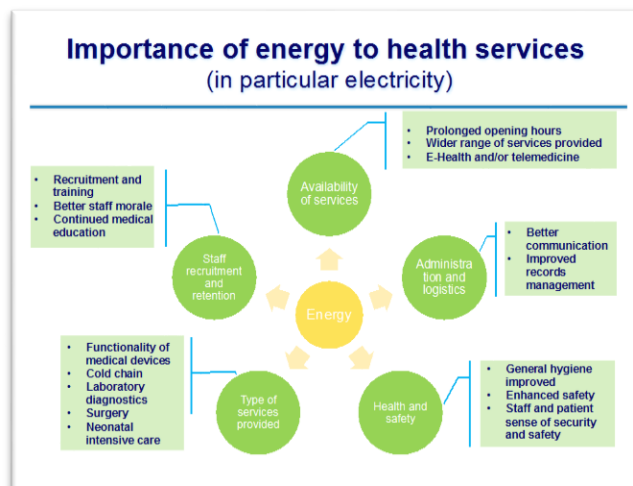
Air pollution is produced by several sources: industries, transport, biomass burning heating and cooking, waste burning, and construction activities. While in the EU and North America measures taken to tackle air pollution have reduced substantially the levels of air pollution, in low-income cities the trend has been the opposite, in particular in Africa and Asia. But, human activities can be planned and designed in ways that promote public health, for example minimizing the production of air pollution.

### Policy recommendations:

- Prioritize investments in energy-efficient networks, building codes and waste management systems to enable and promote healthier cities
- Holistic, innovative land use planning (e.g. compact cities, energy efficient public transport, walking and cycling networks, green spaces) can improve population health and reduce health inequities while saving energy
- Scale up of renewable energy technologies in cities (e.g. solar street lamps) to increase safety and livability of cities.
- Use of tax-incentives, innovative financing, stringent building energy codes and other mechanisms to encourage more energy-efficient and healthier housing.
- Soot free buses, electric mobility and other public transport related initiatives are also an opportunity to reduce energy intensity, increase efficiency while at the same time providing benefits for public health.

### Energy in Health Care Facilities:

Each of the three target areas addressed under of SDG 7—access, renewables and efficiency—are critical enablers of expanding and ensuring access to quality health care. Lighting operating and examination rooms, sterilizing equipment to prevent infection, refrigerating vaccines and medicines and blood for transfusions—these, and many more critical



healthcare functions require a reliable electricity supply. In the absence of power, many basic life-saving interventions in health facilities cannot be performed safely or at all.

Powering health facilities with clean sources of energy, when coupled with energy efficiency measures, will reduce health sector dependency on fossil fuels, lower carbon emissions, and reduce operating costs. It may also promote energy independence and resilience in the health sector, particularly in the face of wider disruptions to the energy grid or energy supply chain.

Health facilities will be a key service delivery platform for realizing Universal Health Coverage and other health related SDG3 targets, especially in low income settings. It will not be possible to meet these health targets if the health facilities providing essential services do not have reliable electricity.

Available data on electricity supply in health facilities in low income settings is limited. Findings from a WHO analysis of health survey data from 11 Sub-Saharan countries suggest that as many as 1 in 3 health facilities do not have electricity at all. While nearly all hospitals included in the survey data were connected to the central grid, only about 30% reported that they had reliable power and did not experience regular electricity outages.

Resolving the energy gap in health facilities will require that decision-makers from the energy and health sectors work closer together to ensure that health facility energy needs are

<sup>6</sup> UN-Habitat (2016) World Cities Report 2016. UN-Habitat: Nairobi.

## POLICY BRIEF #10: Health and Energy Linkages – Maximizing health benefits from the sustainable energy transition

adequately prioritized in national energy sector strategies as well as in health sector development plans.

The costs of solar PV and other renewable energy technologies are declining, making them increasingly affordable even in low and middle income settings. But the falling costs of technology alone will not ensure reliable access to energy in health facilities. Simply installing solar panels, batteries and some LED lights in a rural clinic is not sufficient on its own. The health sector must make energy services an essential service and commodity, and correspondingly dedicate resources towards ensuring the sustained availability of energy services. Health facility staff need to be trained to operate and maintain these systems. Energy services need to be integrated into health facility management plans so that there is an appropriate delegation of responsibility and resources to ensure the sustained operations and maintenance of these services. And, perhaps most importantly, market based service delivery models should be used to provide energy services to health facilities, as this will be essential for ensuring the development of a robust local supply chain and service sector that can provide maintenance and after sales services, particularly for off-grid and renewable energy installations.

### Critical healthcare services that require reliable energy:

- Lighting, especially at night
- Cold Chain, e.g. refrigeration of blood, vaccines, medicines, etc.
- Operation of medical devices for diagnosis and treatment
- Communications and information technology (ICT systems)
- Hygiene and infection control measures, e.g. ventilation/air circulation, sterilization of equipment, use of autoclaves or incinerators for waste treatment and disposal; pumping water; water heating; operation of laundry facilities, etc.
- Cooking, space heating and cooling

The costs of solar PV and other renewable energy systems are declining. But the falling costs of technology alone will not ensure reliable access to energy in health facilities. Simply installing solar panels, batteries and some LED lights in a rural clinic is not sufficient. To help healthcare providers deliver quality care, staff must be trained to operate and maintain these systems. And perhaps most importantly, energy services must be integrated into these facilities' sustainable operations plans.

**Interim Target by 2022:** Health facility energy needs are reflected in national energy sector strategies, particularly those aimed at realizing SDG7.

### Policy Recommendations:

- Ensure that health facility energy needs are appropriately articulated in the context of national energy plans and strategies, in particular those aimed at addressing critical industries and end-users of energy services;
- Develop and implement clean energy policies to promote increased health sector reliance on clean energy, promote energy efficiency, and ensure that appropriate resources and responsibilities are allocated to the management (and maintenance) of health facility energy resources;
- Identify incentives and market based service delivery models which promote energy security and in health facilities and at the same time encourage the development of local service industries to sell, support and service energy services targeted for health care facilities, especially for primary care facilities in resource constrained settings.

### Contribution of SDG 7 to the realization of Universal Health Coverage and other SDG3 targets in a health facility context:

Relevant SDG3 target (s)	Contribution of SDG7
<ul style="list-style-type: none"> <li>• 3.1: "By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births."</li> <li>• 3.2: "By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births"</li> </ul>	<p>A key pillar of the Global Strategy for Women's, Children's and Adolescent's Health <sup>7</sup> aimed at reducing maternal and newborn mortality is to bring pregnant mothers into health facilities and improve the quality of care provided to them at the time of birth. Ensuring that these facilities have reliable electricity will ensure that the core operating conditions needed to provide safe, quality maternal and newborn care are in place.</p>
<ul style="list-style-type: none"> <li>• 3.8: Achieve universal health coverage (UHC), including financial risk protection, access to quality essential health-</li> </ul>	<p>Health facilities are a key service delivery platform that will be used by countries to realize UHC and related health targets.</p>

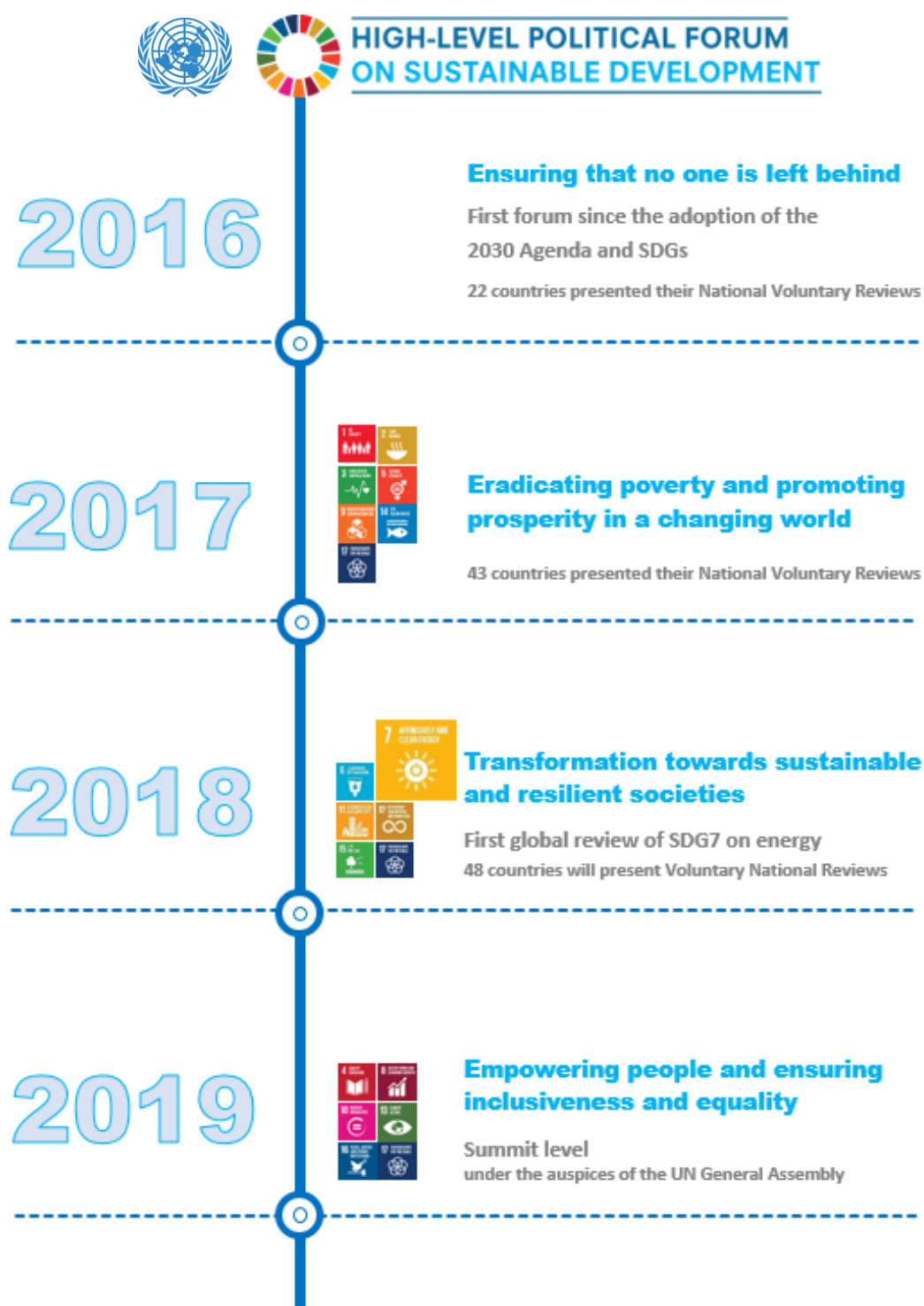
<sup>7</sup> See pillar 1 (survive) of the Global Strategy Here: <http://www.who.int/entity/life-course/partners/global-strategy/global-strategy-2016-2030/en/index.html> and the WHO (2016) standards for improving quality of maternal and newborn

care in health facilities: <http://apps.who.int/iris/bitstream/10665/249155/1/9789241511216-eng.pdf?ua=1>

**POLICY BRIEF #10: Health and Energy Linkages – Maximizing health benefits from the sustainable energy transition**

<p>care services and access to safe, effective, quality and affordable essential medicines and vaccines for all</p>	<p>Health facilities must have an appropriate infrastructure, including a reliable power supply, in order to provide this basic package of essential health services.<sup>8</sup></p>
<ul style="list-style-type: none"><li>• 3.12: Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States</li></ul>	<p>Health workers will remain in and will be more motivated to work in remote health facilities that have reliable power. In such context, off-grid renewable energy technologies therefore have significant potential to contribute to this SDG3 target.</p>

<sup>8</sup> [http://www.thelancet.com/journals/lancet/article/PIIS2214-109X\(17\)30263-2/fulltext?elsca1=tlxpr](http://www.thelancet.com/journals/lancet/article/PIIS2214-109X(17)30263-2/fulltext?elsca1=tlxpr)



For further information, please contact:  
Division for Sustainable Development  
Department of Economic and Social Affairs  
United Nations  
<https://sustainabledevelopment.un.org/>