Advancing SDG7 in the United Nations Economic Commission for Europe Region

SDG7 POLICY BRIEFS IN SUPPORT OF THE UN HLPF 2023

This document is part of a series of policy briefs compiled by the multistakeholder SDG7 Technical Advisory Group (SDG7 TAG) in support of the review of SDG7 at the High-level Political Forum (HLPF) 2023. Convened by UN DESA, the SDG7 TAG is composed of over 40 experts from governments, UN organizations, international organizations and other stakeholders. The HLPF is the central United Nations platform for the follow-up and review of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) at the global level. More information on the SDG7 TAG, including previous editiosn of the annual SDG7 Policy Briefs, is available at https://sdgs.un.org/sdg7tag

For further information, please contact:
Division for Sustainable Development Goals
Department of Economic and Social Affairs
United Nations
DESA/DSDG: https://sdgs.un.org
SDG7 TAG: https://sdgs.un.org/sdg7tag
Email: salame1@un.org

United Nations | Department of Economic and Social Affairs

Design concept and production by
Camilo Salomon @ www.cjsalomon.com

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Contributing organizations:

United Nations Economic Commission for Europe (UNECE)

KEY MESSAGES

Even before the crises and challenges of recent years, progress in the UNECE region towards achieving the Sustainable Development Goal 7 (SDG) was already too slow to meet the 2030 target. Amid overall positive SDG7 implementation trend, this report confirms the gap between the actual progress and that for that required for the achievement of the set SDG7 targets.

Although access to electricity and the use of clean fuels for cooking, heating and lighting is widespread in the UNECE region – and deployment of renewable energy had been increasing and energy efficiency had also been improving – the rate of progress has not been high enough to make the energy targets of SDG7 achievable.

An acceleration of effort is therefore critical to ensure access to affordable, reliable, sustainable and modern energy for all.[1]

Particular challenges include:

- **The affordability of clean fuels and technologies.** This is particularly acute for low-income households, but is a growing problem across the region.

- **A shortage of skills and qualifications.** This can be seen particularly in the deployment and maintenance of clean energy technologies.

- **Persistent behavioural barriers.** These often act as an obstacle to the effective harnessing of optimal organizational potential, which would help achieve more resilient energy systems. This is a widespread factor even when technologies and capabilities are in place.

Public and private investment in renewable energy across many UNECE countries remains modest compared to global growth trends. For instance, investments in 17 countries of South-Eastern and Eastern Europe, the Caucasus and Central Asia are particularly insufficient. In US dollars (US$), the year 2020 saw US$ 7.2 billion invested, a sum equivalent to 2.2 per cent of the global total and much the same as the amount invested 10 years ago.

On the positive side, a total of 44 UNECE member States increased the share of renewable energy in their energy mix to above 10 per cent in 2020. This was compared to 26 countries in the year 2000 and 40 countries in 2015. These data show a clearly positive trend, although this may have slowed in the last year due to the impact of the recent energy crisis.

Meanwhile, between the years 2000 and 2019, the average energy intensity of the UNECE region fell 58 per cent to 4.18 MJ/US$ (megajoules (MJ) per unit of gross domestic product (GDP) in constant 2017 US dollars (US$) at purchasing power parity (PPP)). This was 0.54 MJ/US$ lower than the global average.

System-wide inefficiencies, however, resulted in noticeable losses throughout the region's energy value chains over the period studied. Energy efficiency solutions should therefore be deployed as a priority across both the supply and demand sides. This requires integrated thinking by energy system actors, coupled with enabling policy frameworks and good governance. It therefore also requires increased cooperation and financing.

PROGRESS TOWARDS ACHIEVING SDG7

### SDG7.1: Ensure universal access to electricity and clean cooking solutions

While both urban and rural populations in the UNECE region enjoy universal access to electricity, in several countries access to clean fuels and technology remains a challenge. This becomes even more complex in times of crisis, with the COVID-19 pandemic, ongoing geopolitical crises, supply chain disruptions and the impact of climate change all having an impact.

Clean fuels and technologies are often more expensive than traditional fuels and technologies, making them unaffordable for lower-income households. This affordability challenge is particularly acute for those living in rural areas and informal settlements, where incomes tend to be lower and access to financial resources more limited. The affordability aspect of access to clean fuels and technologies could therefore become a significant barrier for certain energy users, going forward.

SDG7.2: Substantially increase the share of renewable energy in the global energy mix

A broader deployment of renewable energy technologies in the region took place during the monitoring period. In 2020, 44 UNECE member States had a share of renewable energy in their energy mix above 10 per cent, as compared to 26 countries in 2000 and 40 countries in 2015. Importantly, the number of countries where the share of renewable energy was below 1 per cent decreased from 4 countries to just 1 country over the 2010−2020 period. Similar dynamics were observed in the group of countries with renewable energy shares of between 1−10 per cent. Within the latter group, most of the countries have continuously increased their shares of renewables to above 10 per cent.

FIGURE 1. Proportion of population with primary reliance on clean fuels and technology, 2000, 2015, and 2020 (per cent)
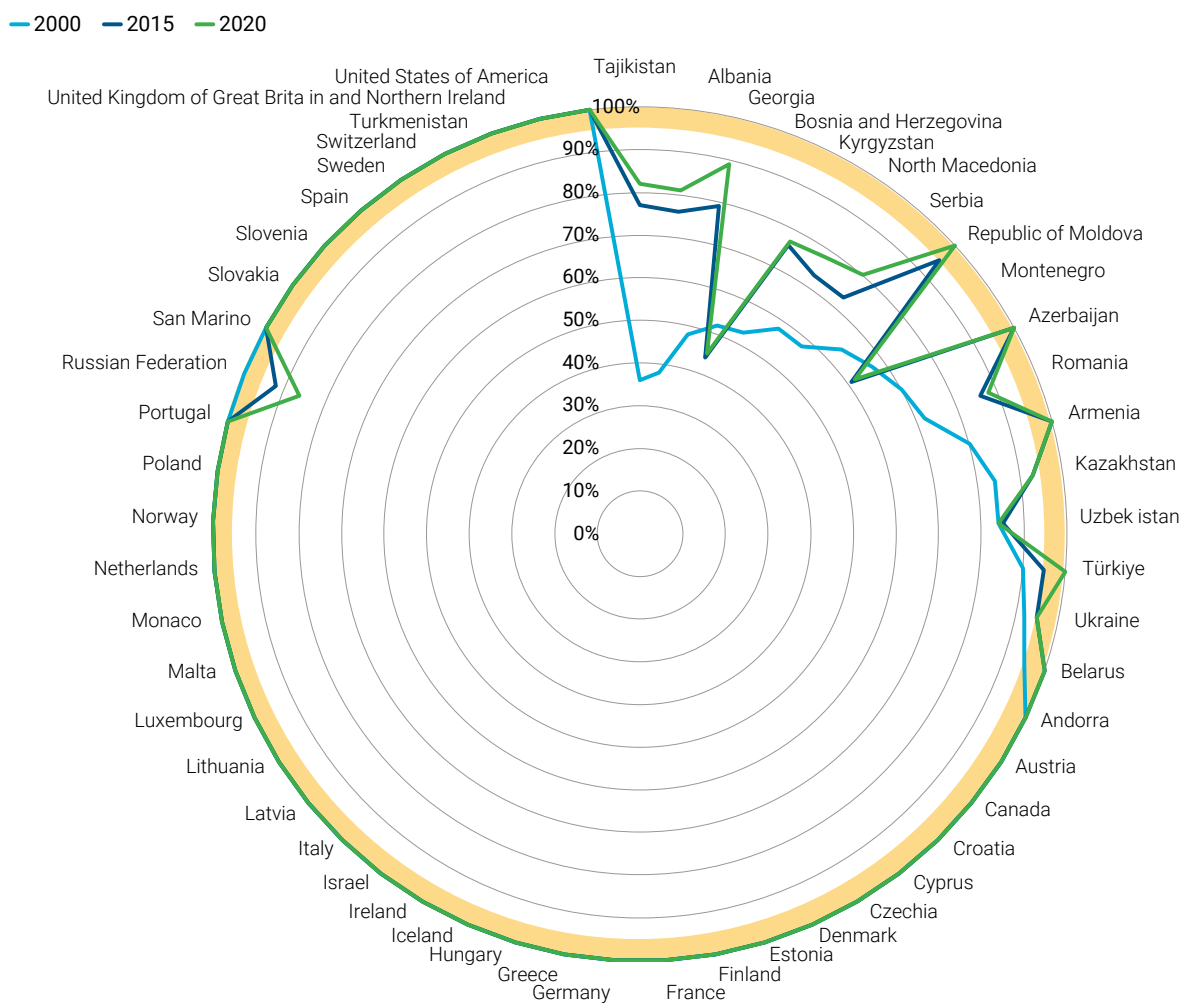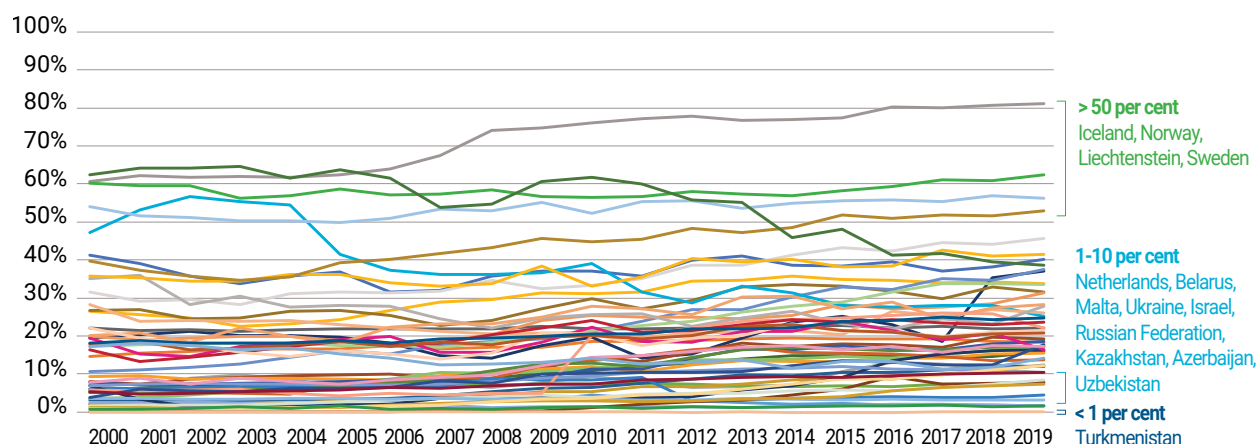
— 2000 — 2015 — 2020

Note: The blue circle visualizes the level above 95 per cent. Source: Figure based on the SDG Indicators Database, https://unstats.un.org/sdgs/dataportal/database

FIGURE 2. Number of UNECE member states grouped by share of renewable energy in their energy mix, 2000, 2015, and 2020 (per cent)

■ < 1 per cent ■ 1-10 per cent ■ 10-50 per cent ■ > 50 per cent
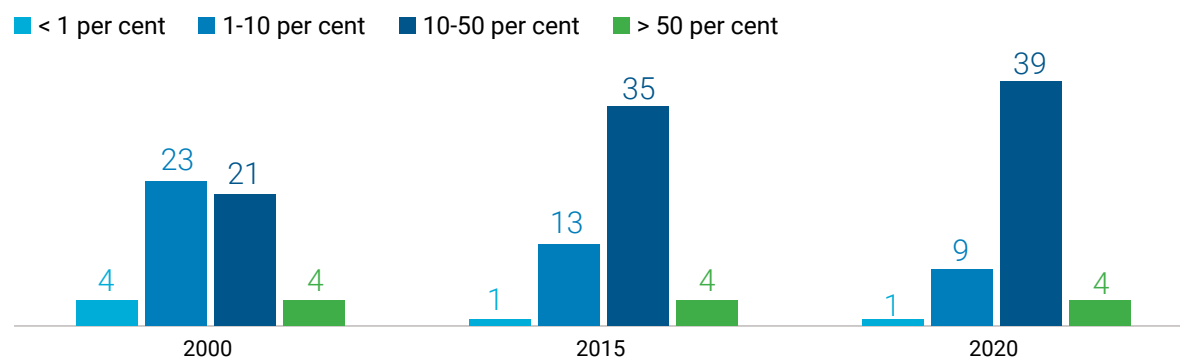
Source: Figure based on the SDG Indicators Database, https://unstats.un.org/sdgs/dataportal/database

FIGURE 3. Share of renewable energy in total final energy consumption, 2000–2019 (per cent)

> 50 per cent
Iceland, Norway,
Liechtenstein, Sweden

1-10 per cent
Netherlands, Belarus,
Malta, Ukraine, Israel,
Russian Federation,
Kazakhstan, Azerbaijan,
Uzbekistan

< 1 per cent
Turkmenistan

Source: Figure based on the SDG Indicators Database, https://unstats.un.org/sdgs/dataportal/database

The 2022 UNECE Renewable Energy Status Report shows that in 17 UNECE focus countries significant progress in renewable energy has been achieved in recent years, although the full potential remains largely untapped.[2] The region has seen an unprecedented growth in renewable electricity, but that is not the case in transport sector or space heating and cooling.

Public and private investment in renewables across the focus countries remained modest compared to global growth trends. This highlights the need for a significant effort to deploy financial resources in renewables, along with the development of policy options to facilitate renewable energy uptake.

In 2018, renewable energy investments in the region totalled US$ 7.2 billion. This was a similar amount to that achieved almost ten years before. This figure also represented only some 2.2 per cent of the global total and approximately 13 per cent of the US$ 55 billion invested in renewable energy in the European Union as a whole that year.

To achieve a higher share of renewable energy in their energy mixes, UNECE member States should focus on strengthening the policy, institutional, normative and regulatory frameworks that enable and facilitate the uptake of renewable energy, as well as on improving understanding of renewable energy resource characteristics and availability. This should include application of the United Nations Framework Classification for Resources (UNFC) to renewable energy resources and projects. In addition, investing in renewable energy deployment should remain in focus.

It is also important not to underestimate the importance of the availability of historical data, notably for identifying trends and formulating evidence-based development pathways for sound decision-making and sector development.

SDG7.3: Double the global rate of improvement in energy efficiency

As shown in Figure 4, energy intensity in the UNECE member States generally decreased over the monitoring period. Expressed in MJ/US$ (megajoules (MJ) per unit of gross domestic product (GDP) in constant 2017 US dollars (US$) at purchasing power parity (PPP)), the regional average fell from 7.19 MJ/US$ in 2000, to 4.18 MJ/US$ in 2019. However, inconsistencies in the rate of improvement can be observed between countries and globally (Figure 5).

FIGURE 4. Energy intensity measured in terms of primary energy and GDP, 2000−2019
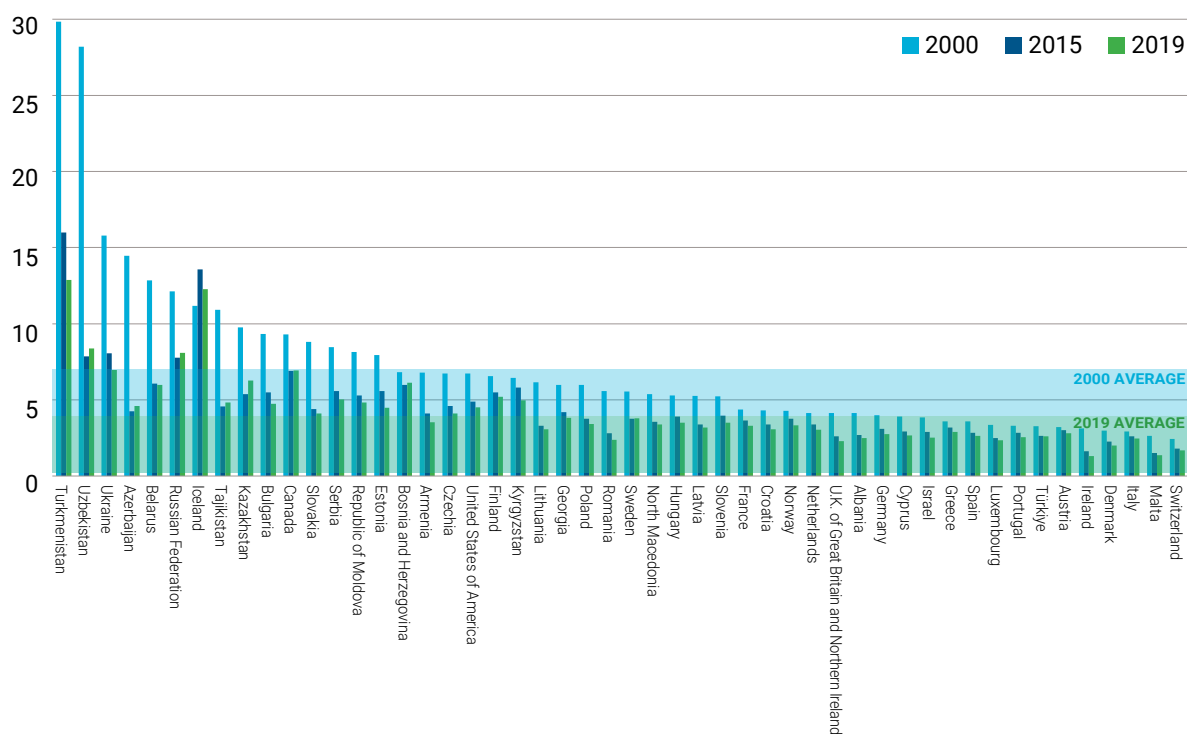
Source: Figure based on the SDG Indicators Database, https://unstats.un.org/sdgs/dataportal/database

FIGURE 5. Rate of improvement in energy efficiency in UNECE member States and globally, 2000−2010, 2010−2015, and 2015−2020
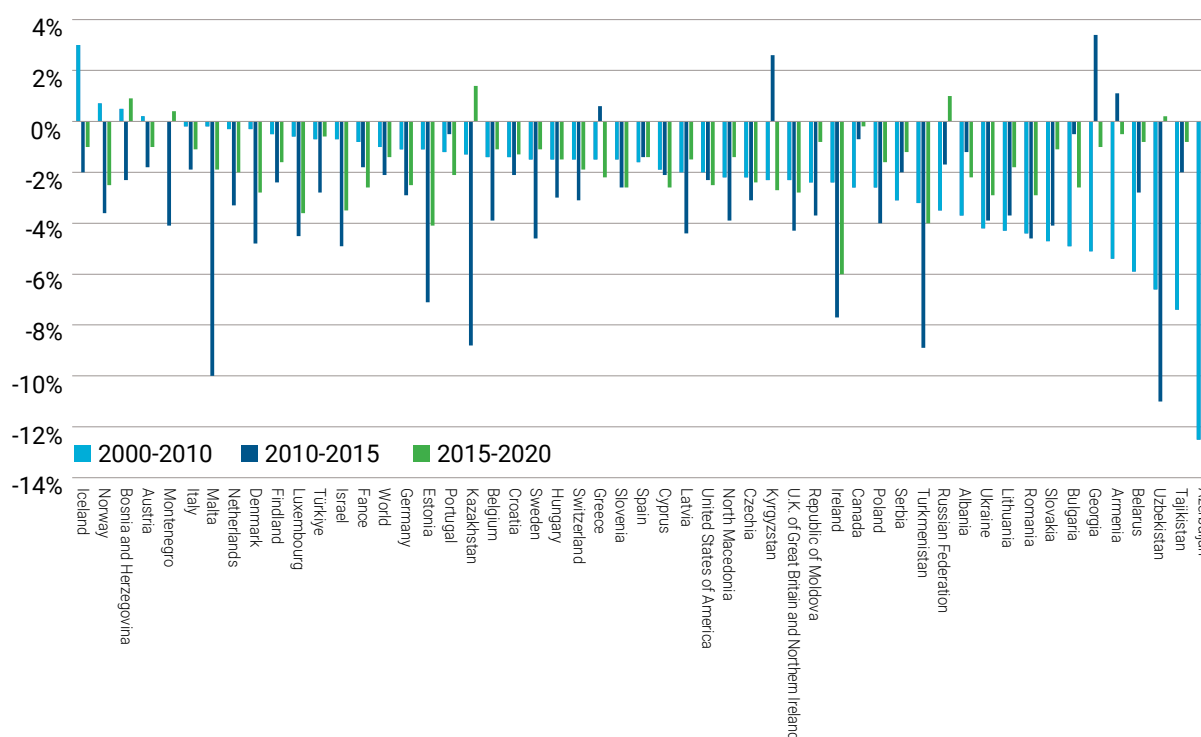
Source: Figure based on the SDG Indicators Database, https://unstats.un.org/sdgs/dataportal/database

A significant amount of energy can sometimes be wasted due to inefficiencies across the energy system. A focus shift from technology to integrated thinking, policymaking, and governance is needed to help enable larger-scale implementation of existing solutions by energy system actors. This is because the related challenges are often more of an adoptive nature.

As an example, tangible action on buildings is often hampered by the absence of such integrated thinking, policymaking and governance. This can be seen in the lack of harmonization of building codes with high-performance building targets and their subsequent application in construction and renovation. It can also be seen in the challenge of improving the efficiency of supply chains in the construction business, including in the recovery of materials. A further absence of such integrated thinking, policymaking and governance can sometimes be discerned in the absence of financial mechanisms offering incentives for building and renovation that are in line with the best available technologies and practices.

The development of pathways for the balanced integration of electric mobility by coupling charging infrastructure with urban transport requires a new level of coordination across historically siloed stakeholders. At the same time, turning electric mobility into a grid asset may help, maintaining electricity system resilience and taking advantage of distributed energy resources operated with the support of digital solutions.

Indeed, digitalization may act as a balancing force between energy security, ensuring affordable, reliable, sustainable and modern energy services and the environmental sustainability of energy use. It can also take a key role in ensuring the reliability of the transmission grid and the energy system in general. Yet, digitalization in energy can be complex, potentially impacting economies and societies and implying disruptive changes.

Among many energy actors, a relatively low awareness of the potential of energy efficiency as an energy resource in its own right – and of the resource-use optimization that energy efficiency offers – is the result of the lack of the necessary skill set to implement such existing energy efficiency solutions.
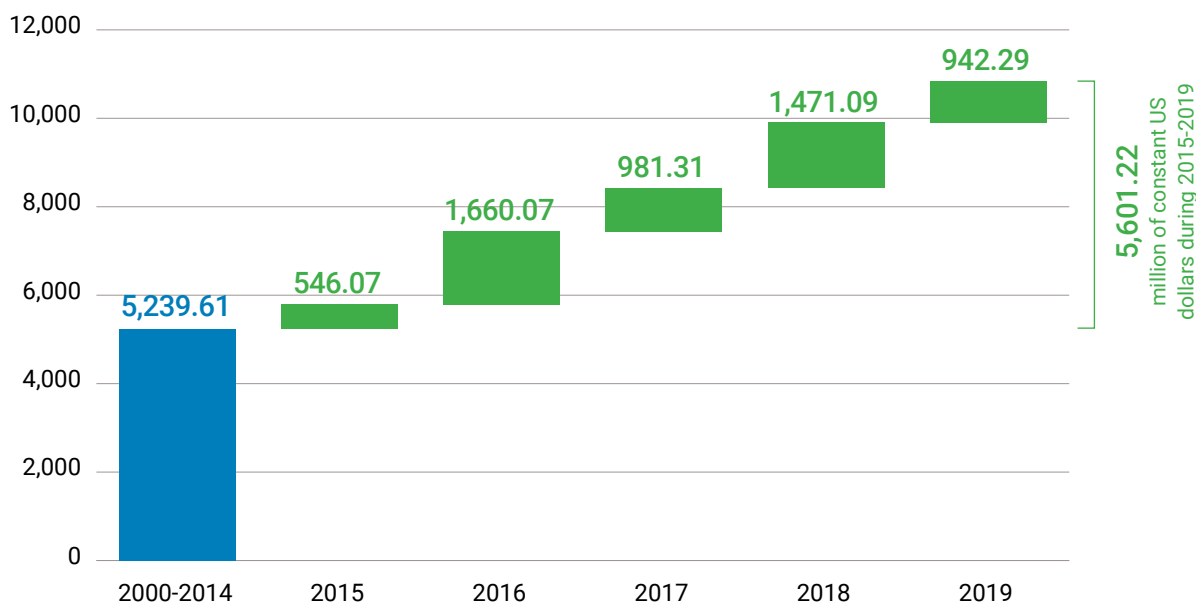
SDG7.A: Enhance international cooperation to facilitate access to clean energy research and technology

Investment in clean energy research and technology in the developing countries of the UNECE region[3] has grown significantly since the adoption of the 2030 Agenda.

Over the 15 years of the 2000–2014 period, cumulative investments in the sector in these countries totalled US$ 5.2 billion, in constant dollars. In the following five years alone, this figure reached US$ 5.6 billion (Figure 6).
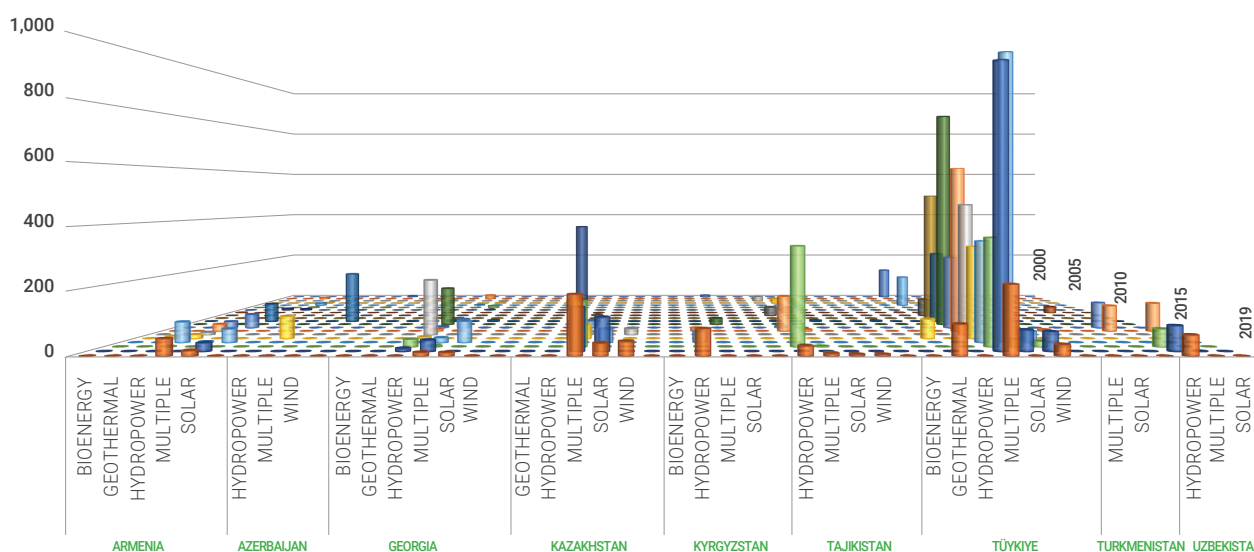
Figure 7 shows the volume of international financial flows in support of clean energy research and development and renewable energy production that went to developing countries in the UNECE region over the 2000–2019 period.

FIGURE 6. Cumulative investments in clean energy research and technology in developing countries of the UNECE region in the period of 2000–2014 and in 2015–2019

12,000

10,000

8,000

6,000

4,000

2,000

0

5,239.61   546.07   1,660.07   981.31   1,471.09   942.29

2000-2014   2015   2016   2017   2018   2019

5,601.22 million of constant US dollars during 2015-2019

Source: Figure based on the SDG Indicators Database, https://unstats.un.org/sdgs/dataportal/database

FIGURE 7. International financial flows to developing countries in the UNECE region in support of clean energy research and development and renewable energy production, including in hybrid systems, 2000–2019

1,000

800

600

400

200

0

BIOENERGY
GEOTHERMAL
HYDROPOWER
MULTIPLE
SOLAR

HYDROPOWER
MULTIPLE
WIND

BIOENERGY
GEOTHERMAL
HYDROPOWER
MULTIPLE
SOLAR
WIND

GEOTHERMAL
HYDROPOWER
MULTIPLE
SOLAR
WIND

BIOENERGY
HYDROPOWER
MULTIPLE
SOLAR

HYDROPOWER
MULTIPLE
SOLAR
WIND

BIOENERGY
GEOTHERMAL
HYDROPOWER
MULTIPLE
SOLAR
WIND

MULTIPLE
SOLAR

HYDROPOWER
MULTIPLE
SOLAR

2000   2005   2010   2015   2019

ARMENIA   AZERBAIJAN   GEORGIA   KAZAKHSTAN   KYRGYZSTAN   TAJIKISTAN   TÜYKIYE   TURKMENISTAN   UZBEKISTAN

Source: Figure based on the SDG Indicators Database, https://unstats.un.org/sdgs/dataportal/database

SDG7.B: Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries

As shown in Figures 2 and 3, the UNECE region saw an increase in renewable energy deployment in the 2000–2015 period, though the dynamics were uneven across member States.

In all cases, however, in 2020 the renewable energy mix per capita was dominated by hydropower, which accounted for 89 per cent of total installed renewable energy-generating capacity per capita in the region's developing countries. This was followed by the substantially smaller share taken by solar power, at 5.7 per cent, of which almost half of the capacity was located in Kazakhstan. Wind followed with 4.0 per cent, while bioenergy accounted for 0.6 per cent and geothermal 0.5 per cent. Three-quarters of capacity in both wind and bioenergy were installed in Türkiye, a country which also accounted for most of the installed geothermal capacity (Figure 8).

FIGURE 8. Installed renewable energy-generating capacity in developing countries of the UNECE region (watts per capita)

Legend:
- ■ Bioenergy
- ■ Hydropower
- ■ Solar
- ■ Wind
- ■ Geothermal

ARMENIA
484.04 watts per capita (2020)
+45 per cent (2000-2020)

AZERBAIJAN
127.35 watts per capita (2020)
+12 per cent (2000-2020)

GEORGIA
962.41 watts per capita (2020)
+64 per cent (2000-2020)

KAZAKHSTAN
266.15 watts per capita (2020)
+76 per cent (2000-2020)

KYRGYZSTAN
563.61 watts per capita (2020)
-6 per cent (2000-2020)

TAJIKISTAN
552.88 watts per capita (2020)
-15 per cent (2000-2020)

TÜRKIYE
585.71 watts per capita (2020)
+228 per cent (2000-2020)

TURKMENISTAN
0.199 watts per capita (2020)
-25 per cent (2000-2020)

UZBEKISTAN
60.02 watts per capita (2020)
-7 per cent (2000-2020)

Source: Figure based on the SDG Indicators Database, https://unstats.un.org/sdgs/dataportal/database

KEY INTERLINKAGES WITH OTHER SDGS IN THE REGION

UNECE is a forum where governments can cooperate and engage with all stakeholders on norms, standards and conventions. It therefore takes a multisectoral approach to tackling the interconnected challenges of sustainable development. UNECE approaches these challenges in an integrated manner and with a transboundary focus, thus helping devise solutions to shared concerns.

In accordance with SDG17, UNECE therefore supports and maintains partnerships between stakeholders. These include governments, international and regional organizations, businesses, academia,civil society, and other stakeholders active in related areas, all of which are driving forces for the work of UNECE.

This work covers three main strategic areas:

- Improving connectivity within the region, as targeted by SDGs 7, 8, 9, 11 and 13.

- Reducing environmental pressures and using resources more sustainably, as targeted by SDGs 3, 6, 7, 12, 13 and 15.

- Contributing to creating more dynamic and resilient economies, as targeted by SDGs 7, 8, 9, 11 and 13.

UNECE also promotes women's economic empowerment and the mainstreaming of gender equality in all its activities, in line with SDG5.

The key areas in which UNECE gives countries support towards achieving the SDGs are shown in Figure 9.
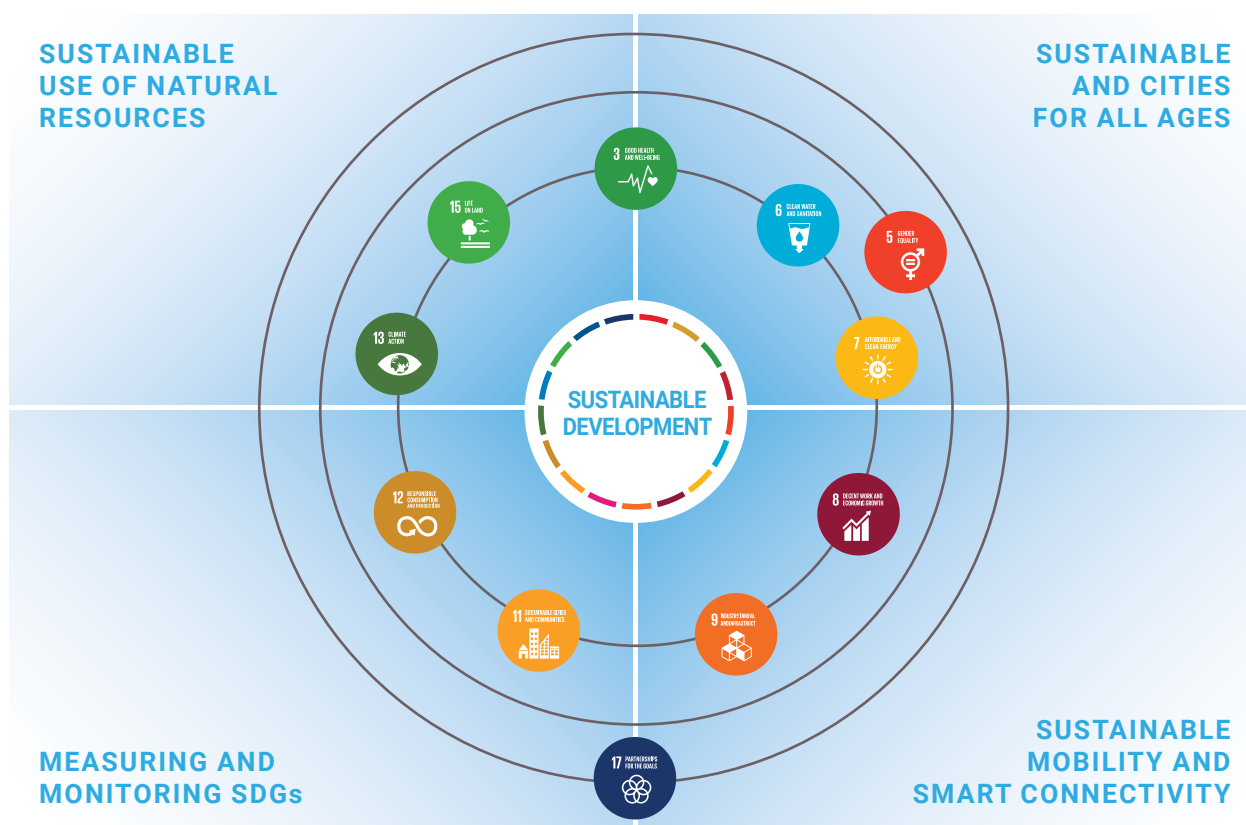
FIGURE 9. UNECE and the SDGs

Figure adapted from UNECE website, https://unece.org/unece-and-sdgs-4

Clearly, energy is fundamental to achieving many of the goals of the 2030 Agenda. Arguably, however, energy could have a negative impact on progress with some of those targets. This is especially the case if the complexity of certain interactions and interlinkages, such as the food-energy-water nexus, is not given due account.

POLICY IMPLICATIONS/RECOMMENDATIONS

UNECE acknowledges that the achievement of SDG7 is fundamental to the implementation of all other SDGs.

To build energy systems that are more secure, affordable and environmentally sustainable, the following high-level policy recommendations are proposed:

- Implement energy efficiency solutions immediately and to the greatest possible extent across both the supply and demand sides. Solutions that will enhance energy efficiencies across the industrial, building and transport sectors, as well as in energy generation and transmission and agrifood systems should be scaled and deployed widely.

- Digitalize energy systems and capitalize on the opportunities arising from improved digital literacy and the deployment of digital solutions. These opportunities will arise throughout the transition process and across all layers and stakeholders in the energy system. Digitalization has the potential to make energy systems more efficient, more resilient and more capable of meeting the trajectory needed to limit global warming.

- Diversify the energy supply of both the UNECE region and the individual member states to enhance energy security and avert future supply and price shocks. Countries should promote investment in strengthening the power grid, both to bring greater efficiency and to enable increased penetration of variable renewable energy, as well as to enable further cross-border interconnections.

- Build a workforce to deliver on energy transition by addressing the skills and labour shortage. This will create the next generation of qualified experts who can deploy and maintain clean energy technologies.

- Implement an integrated, sustainable resource management framework based on shared principles. Tools such as the United Nations Framework Classification for Resources (UNFC) and the United Nations Resource Management System (UNRMS) should be applied to minerals and energy sources. They should also be applied to injection projects, including carbon and hydrogen storage, groundwater and anthropogenic resources – such as residues and wastes, including those from agriculture and agrifood systems.

- Integrate circular economy considerations into decision-making. The transition towards a greener energy system must encourage increased circularity of materials and resources and repairability of goods. In that context, the production and use of fossil fuels that are impossible to replace in the short- or medium-term must take place efficiently and with the application of technologies that reduce their carbon footprint.

- Adopt the principles of a transition that is just and inclusive. This transition must aim to find the right balance between member states' on the goals and targets of the 2030 Agenda for Sustainable Development and on national energy security concerns. It must also find the right balance between quality of life and other social ambitions and be a rights-based approach that protects minorities, indigenous peoples and local communities from rights violations due to industrial activities that are part of the energy transition. The transition should also find a just and inclusive balance in its environmental, social and economic objectives.

- Recognize that there is no 'one size fits all' approach. The transition should be aligned with the capabilities and needs of individual member states. This should take into account their endowment of natural resources, technological and industrial base, aspirational socio-economic model, cultural heritage and legal and regulatory structures.

- Enhance linkages between the energy and agrifood systems, promoting investment in renewable energy solutions and adopting new holistic approaches. These include integrated food-energy systems and the water-energy-food-land nexus. Such solutions minimize competition and leverage synergies in water and land use, directly advancing energy and food security. They also contribute to job creation, gender equality and climate resilience and adaptation.

- Acknowledge that all technologies play a role in progress with the transition across the ECE region. This should be done while simultaneously recognizing that each member state chooses its own technological pathway. UNECE countries need to cooperate and develop technically non-discriminatory regulatory frameworks and financing mechanisms. These should provide resources for the necessary investments across the region.

- Address behavioural barriers, as although the technologies and capabilities are in place to achieve more resilient energy systems, the move towards them is not happening fast enough. One of the crucial factors – and the missing link – is human psychology. To apply skills and use the full potential of technology, psychological aspects need to be taken into account. Individual roadblocks that hinder successful implementation should be recognized and overcome while also harnessing the potential for organizational and behavioural optimization.

ENDNOTES

1 UNECE (2023), "Growing Challenges for Sustainable Development: Can the UNECE Region Turn the Tide in 2023?", UNECE, Geneva, https://unece.org/sites/default/files/2023-03/ECE-CES-STAT_SDG-Report_2023.pdf

2 See: https://unece.org/sustainable-energy/publications/unece-renewable-energy-status-report-2022

3 These countries are: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Türkiye, Turkmenistan and Uzbekistan.

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