



Energy Transition Pathways for the 2030 Agenda

SDG7 Roadmap for Fiji



Acknowledgements

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SDG7 Roadmap for Fiji

Foreword: Fiji



The Sustainable Development Goal (SDG) Roadmap is the path to transform Fiji's energy sector towards achieving the SDG7 targets and our commitment to the Paris Agreement by 2030. It presents a matrix of technological options and strategies for the sector. The document also identifies gaps and the support needed to achieve the intertwined objectives of the SDG7:

- i. Ensure universal access to affordable, reliable and modern energy services.
- ii. Increase substantially the share of renewable energy in the global energy mix.
- iii. Double the global rate of improvement in energy efficiency.

Our National Development Plan (NDP) and National Determined Contribution (NDC) Roadmap, mandate that we provide all Fijians with access to modern energy services and reduce carbon emissions by 30% in 2030. While good progress has been made so far in the energy sector, more needs to be done to achieve all SDG7 targets through enabling tools and a policy framework.

Our energy transition pathway presents a complex and challenging task for policymakers. Our vulnerability to the threats of natural disaster and climate change, oil price volatility, small market size and coupled with the unprecedented impacts of the COVID-19 pandemic is a great challenge to the sector and the economy at large.

The development of the National Expert SDG Tool for Energy Planning (NEXSTEP) is a godsend and timely. It enables policymakers to make informed policy decisions supporting the achievement of the SDG7 targets as our emission reduction targets (NDCs).

I am glad to note that this document was formulated through an open, transparent, inclusive and participatory consultation process with all stakeholders.

My sincere appreciation is extended to the UNESCAP and Global Green Growth Institute (GGGI) for their technical support and the New Zealand government for its financial support in the development of this Roadmap.

I commend that the SDG Roadmap as the way forward to marshal our efforts towards transforming our power sector and achieving our sustainable development goals and target.

Honourable Jone Usamate

Minister for Infrastructure &
Meteorological Services

Foreword: ESCAP



Energy is the key enabler of development for the Asia-Pacific region, particularly for Pacific Island countries such as Fiji. The COVID-19 pandemic has reinforced the need to change the development trajectory and to build back better. In this endeavour, transitioning to a sustainable, secure and least-cost energy system can form a key part of the recovery as well as pave the way to achieve the Sustainable Development Goals.

Energy self-sufficiency is critical for Fiji to enhancing its energy security as a Pacific Island nation with limited conventional energy resources. Goal 7 provides an opportunity to diversify energy resources and reduce dependence on imported fuels. Furthermore, Fiji's endowment of renewable energy resources – solar, wind, biomass and hydropower in particular – means that the country is well-positioned to establish a sustainable clean energy future through the energy transition.

This Roadmap for achieving Goal 7 presents a detailed assessment aimed at helping the country to reach a clean and green energy future, relying largely on its indigenous resources. It details a range of technical opportunities and policy options for reducing fuel imports with the adoption of fuel-efficient vehicles and moving towards a higher share of renewables in power generation, cutting emissions, saving energy and lowering the cost of power generation. The Roadmap offers an opportunity to leverage a least-cost sustainable energy development pathway and direct the investment savings to other critical sectors – such as healthcare – in building back better from the COVID-19 pandemic.

The Roadmap also examines how Fiji can enhance its Nationally Determined Contribution targets to further contribute to the attainment of the Paris Agreement. The combination of greater transport sector energy efficiency and the phasing out of fossil fuel-based power generation will offer Fiji the opportunity to raise its emission reduction ambitions further.

The Roadmap takes a holistic approach to the energy system by using the National Expert SDG Tool for Energy Planning (NEXSTEP). It presents an energy transition pathway that reflects Fiji's development strategies and aligns with global goals and targets. It also offers different scenarios to reduce economic risks, both for public and private investment, and identifies areas for financial savings in the energy sector that can support the recovery of other critical sectors.

Fiji is among the first countries in the Pacific region to develop a Goal 7 Roadmap. The success of this cooperative effort is a testament to our shared ambition for Fiji and the region to deliver on the sustainable energy vision of the Sustainable Development Goals, and provides an example for other countries looking to understand how they can begin taking up sustainable energy development opportunities.

I look forward to Fiji's continuing leadership in delivering a secure, resilient and sustainable energy future as it builds back better from the COVID-19 pandemic.



Ms. Armida Salsiah Alisjahbana

Under-Secretary-General of the United Nations and

Executive Secretary of the United Nations Economic and Social Commission for Asia and the Pacific

Executive Summary

Transitioning the energy sector to achieve the 2030 Agenda for Sustainable Development and the objectives of the Paris Agreement presents a complex and difficult task for policymakers. It needs to ensure sustained economic growth as well as respond to increasing energy demand, reduce emissions, and consider and capitalize on the interlinkages between Sustainable Development Goal 7 (SDG7) and other SDGs. In this connection, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) has developed the National Expert SDG Tool for Energy Planning (NEXSTEP).¹ This tool enables policymakers to make informed policy decisions to support the achievement of the SDG7 targets as well as emission reduction targets, i.e., nationally determined contributions (NDCs). The initiative has been undertaken in response to the Ministerial Declaration of the Second Asian and Pacific Energy Forum (April 2018, Bangkok) and Commission Resolution 74/9, which endorsed its outcome. NEXSTEP also gained the support of the Committee on Energy in its second session, with recommendations to expand the number of countries being supported by this tool.

The key objective of this SDG7 roadmap² is to assist the Government of Fiji to develop enabling policy measures to achieve the SDG7 targets. This roadmap contains a matrix of technological options and enabling policy measures for the Government to consider. Using national data, existing energy policies and strategies as well as other development plans, the NEXSTEP tool (methodology is presented in chapter 2) has developed seven scenarios for Fiji. These are the business-as-usual (BAU) scenario, current policy scenario, SDG scenario and four ambitious scenarios that look beyond achieving SDG7.

A. Highlights of the roadmap

Fiji has been making good progress towards achieving the SDG7 targets, but more needs to be done to achieve all SDG7 targets by 2030 through a concerted effort and the establishment of an enabling policy framework. Fiji is close to achieving universal access to electricity – only 4 per cent of its population was still to be connected in 2018, and are likely to receive access by 2024.³

Universal access to clean cooking technology and fuel, however, remains a challenge; about half of Fiji's population was still relying on unclean cooking technology in 2018. While Fiji has been making steady progress in recent years, more efforts will be needed to achieve universal access to clean cooking by 2030 through the development and implementation of targeted policy measures.

Likewise, energy efficiency improvement needs to be boosted across different sectors in order to achieve a 2.9 per cent annual improvement, reducing energy intensity to 2.18 megajoules per US Dollar GDP (measured in constant terms at 2011 PPP) by 2030.

As an island nation, which is currently heavily reliant on imported energy resources, energy security is high on Fiji's agenda. Therefore, key aims of the country should include diversification of the power generation mix, with a focus on indigenous sources (i.e., solar and hydro) and a reduction in the reliance on imported petroleum fuel. This aligns with the SDG7 target for renewable energy, as such a goal will require the share of renewable energy (RE) in the total final energy consumption (TFEC) to grow significantly from the 2018 share of 9.4 per cent (excluding traditional biomass). Moreover, the levelized cost of electricity from renewable power technologies has experienced a steep decline in the past decade, becoming economically more competitive than the conventional fossil fuel-based technologies.

1 The NEXSTEP tool has been specially designed to perform analyses of the energy sector in the context of SDG7 and NDC with the aim that the output will provide a set of policy recommendations to achieve the SDG7 and NDC targets. No other tool has been found suitable to fit this purpose.
2 This roadmap examines the current status of the national energy sector and existing policies, compares them with the SDG7 targets, and presents different scenarios highlighting technological options and enabling policy measures for the Government to consider.
3 Projected based on the historical improvement trend between 2007 and 2018. However, the timeline may be delayed due to the impact of COVID-19 crisis and Cyclone Yasa.

This offers Fiji an economically feasible solution to transition its energy sector to a low-carbon energy future while achieving the SDG7 targets and improving energy security.

Under current policies, the country is on track to meet the unconditional emissions reduction target of 10 per cent compared to the business as usual (BAU) scenario pledged under the Paris Agreement. The policies outlined under the SDG scenario would allow Fiji to achieve an emission reduction of 21 per cent, compared to the BAU scenario. The NEXSTEP analysis shows that the emissions reduction in this scenario would be achieved mostly by increasing the shares of fuel-efficient vehicles (i.e., hybrid) and RE in the power sector.

B. Achieving Fiji's SDG7 and NDC targets by 2030

Universal access to electricity

Around 4 per cent⁴ of Fiji's population lacked access to electricity in 2018, primarily in rural or maritime areas and informal settlements. Achieving universal access to electricity is a priority for the Government of Fiji. The National Development Plan (Government of Fiji, 2017) states the objective is to reach a rate of 100 per cent by 2021. However, in consideration of the adverse impacts from the COVID-19 crisis and Cyclone Yasa, the Cabinet has readjusted the 2021 objective to an open-ended timeline.

Based on a continuation of the historical improvement trend between 2007 and 2018, the NEXSTEP analysis indicates that the remaining population will receive access by 2024³ under the BAU scenario. The NEXSTEP analysis suggests that mini/off-grid systems technologies (i.e., solar mini-grid and solar home systems) would be the more appropriate technologies, based on the technology's cost-effectiveness and climate resiliency, while allowing faster implementation.

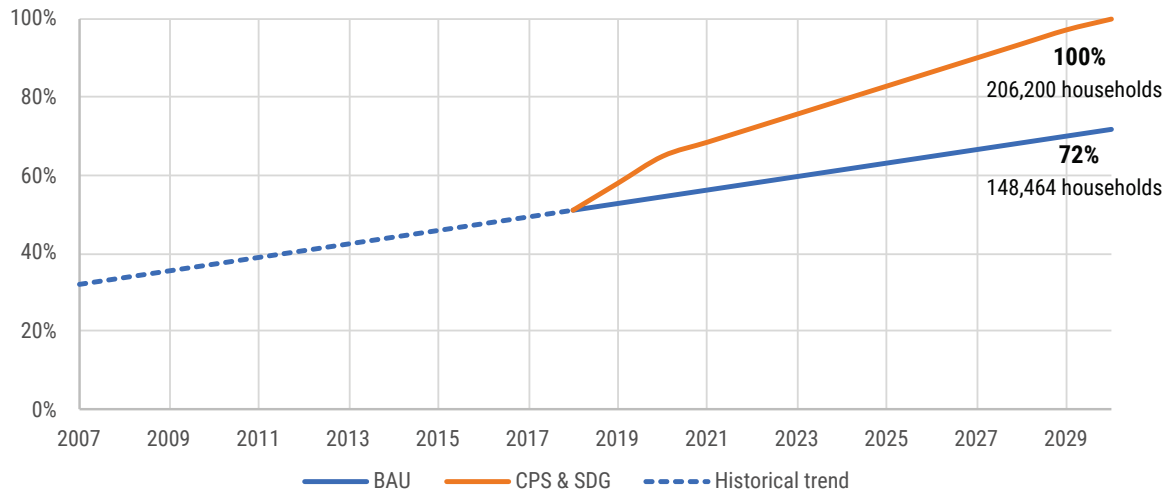
Universal access to clean cooking

In 2018, 51 per cent⁴ of the population of Fiji was still reliant on unclean cooking fuel and technology, exposing them to poor indoor air quality and associated negative health impacts. A steady increase in the clean cooking access rate has been observed over the past decade, with an average addition of 1.7 per cent of the population gaining access each year. Nonetheless, based on the historical improvement trend between 2007 and 2018, it is projected that 28 per cent of Fiji's population will not have access to clean cooking by 2030.

The Government of Fiji has launched the Rocket Wood Stove Initiative, which aims to distribute cleaner, energy efficient rocket wood stoves to 60,000 households (UNFCC, 2021; and FBC News, 2020). It is expected that this initiative will bring the clean cooking access rate to 100 per cent by 2030, as modelled in the current policy scenario. Nevertheless, NEXSTEP suggests that electric cooking stoves and LPG stoves may provide the better alternatives as long-term solutions. Research has shown that improved cooking stoves (i.e., rocket wood stoves) require continual monitoring and follow-up to facilitate long-term adoption. Moreover, the low electricity tariff in Fiji also results in better affordability for electric stoves. Considering the lack of indigenous fossil fuel resources and domestic LPG production, electric cooking stoves are a better option than LPG cooking stoves for Fiji, as this reduces the reliance on imported fuels. However, considering the possible lack of sufficient power supply capacity for some households (i.e., households connected to mini-grid or solar home systems) to meet the power demand of electric stoves, LPG stoves may be the most appropriate technology for some households.

⁴ Based on data provided by the Department of Energy, Fiji.

Figure ES 1. Fiji's access to clean cooking under BAU, CPS and SDG model scenarios



Renewable energy

The share of renewable energy in the total final energy consumption (TFEC) was 9.4⁵ per cent (“modern renewables”, excluding traditional biomass) in 2018, or 11.4 per cent if traditional biomass usage is also considered. Based on the current policies, the share of renewable energy will increase to 14 per cent by 2030. The increase is due to the projected increase in the share of renewable electricity as per the current power expansion plan for 2020-2030, which is expected to increase the share of RE-based grid generation from 59 per cent of electricity in 2018 to 71 per cent in 2030. In the SDG scenario, the share of renewable energy is further improved to 14.5 per cent of TFEC in 2030. The additional 0.5 percentage point increase can be attributed to the application of several energy efficiency measures, which are projected to reduce TFEC by 56 ktoe, compared to the current policy settings.

Energy efficiency

Energy Intensity in Fiji declined at an average annual rate of 2.22 per cent between 1990 and 2010. A doubling of the 1990-2010 improvement rate is required to achieve the SDG 7.3 target, corresponding to an average annual rate of 4.44 per cent between 2018 and 2030. Consequently, the energy intensity in 2030 should be 1.80 MJ/USD₂₀₁₁. This is an ambitious target for Fiji, which will be difficult to achieve in the short term, even with ambitious energy efficiency improvement measures. Therefore, NEXSTEP analysis suggests that Fiji's energy intensity target should be aligned with the global target of 2.9 per

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