

Indonesia National Sustainable Energy Strategy Report
on
Enabling Environment and Technology
Innovation Ecosystem for Affordable
Sustainable Energy Options

Prepared for

Asian and Pacific Centre for Transfer of Technology (APCTT)
of the Economic and Social Commission for Asia and the Pacific (UNESCAP)

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Abbreviations	
5P	: Pro-poor public-private partnership programme
ADB	: Asian development bank
AICTE	: All India council for technical education
AMDAL	: Approval of the environmental impact assessment
APACE	: Appropriate technology for community and environment
APCTT	: Asian and Pacific centre for transfer of technology
BAPPENAS	: The national development planning agency
BOMT	: Build, operate, maintain and transfer
BOT	: Build, own and transfer
CNY	: Chinese Yuan
CPO	: Construction partner organization
CTF	: Clean technology fund
CTP	: Craftsman training programme
DANIDA	: Danish international development agency
DEN	: The national energy council
DGET	: Directorate general of employment and training
DGNREEC	: Directorate general of new energy, renewable energy and energy conservation
EE	: Energy efficiency
EEP	: Energy and environment partnership with Indonesia
EMI	: Equal monthly instalments
ESCAP	: Economic and social commission for Asia and the Pacific
ESCO	: Energy service company
ESMAP	: Energy sector management assistance programme
ESSV	: Energy self sufficient village programme
FDI	: Foreign direct investment
FIT	: Feed-in tariff
GDP	: Gross domestic product
GEF	: Global environment facility
GEOCAP	: Geothermal capacity building programme
GERD	: Gross expenditure on research and development
GFF	: Geothermal fund facility
GIS	: Geographic information system
GIZ	: German federal enterprise for international cooperation
GoI	: Government of Indonesia
GS	: Grameen Shakti
GWA	: Geothermal working area
HPS	: Husk power system
HRD	: Human resource development
IDR	: Indonesian rupiah
IIGF	: Indonesian infrastructure guarantee fund
IIM	: Indian institute of management
IMIDAP	: Integrated micro hydro development and application programme
IPP	: Independent power producer
ITI	: Industrial training institute
IUPTL	: Electricity business license
JRF	: Junior research fellowship
KPLC	: Kenya power
M.Sc.	: Master of science
M.Tech	: Master of technology
MEMR	: Ministry of energy and mineral resources
MES	: Modular employment skill development programme
Mha	: Million hectare
MHPP	: Micro hydro power programme
MoF	: Ministry of finance
MSOE	: Ministry of state-owned enterprise
MSW	: Municipality solid waste
NDRI	: Non-departmental research institutes

NGO	: Non-government organization
NREF	: National renewable energy fellowship
O&M	: Operation and maintenance
OSS	: One-stop service
PDF	: Project development facility
PIP	: Indonesia investment agency
PLN	: Perusahaan Listrik Negara
PPA	: Power purchase agreement
PPP	: Public-private partnership
PRC	: People's republic of China
PV	: Photovoltaic
QBTU	: Quadrillion British thermal unit
R&D	: Research and development
RA	: Research assistantship
RDC	: Research and development centre
RE	: Renewable energy
RIKEN	: General plan of energy conservation
RPO	: Renewable purchase obligation
Rs.	: Indian rupee
SBC	: System benefit charge
SBZ	: Special biofuel zone
SE4All	: Sustainable energy for all
SET	: Sustainable energy technology
SHS	: Solar home system
SLO	: Certificate of operational worthiness
SME	: Small and medium enterprise
SNV	: Foundation of Netherlands volunteers
SOE	: State owned enterprise
SRF	: Senior research fellowship
SSC	: South-South cooperation
SWHS	: Solar water heater system
TOE	: Tons of oil equivalent
UDBP	: Indonesia domestic biogas programme
UNDP	: United Nations development programme
UNESCAP	: United Nations economic and social commission for Asia and the Pacific
USDA	: United states department of agriculture
VAT	: Value added tax
WISE	: World institute of sustainable energy

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Executive Summary

Indonesia is endowed with fossil fuel resources such as coal, oil and gas. The country also has abundant potential for renewable sources of energy such as geothermal, solar, biomass and hydro. However, fossil fuels have dominated the energy portfolio of the country for decades, and the use of renewable energy sources has been limited so far. Fossil fuel subsidies provided by the government over the past four decades kept the price of fossil fuels significantly below the market price, and to some extent are posing problems for increasing the affordability of sustainable energy options in the country. Being an archipelago, the use of decentralized off-grid renewable-based energy applications is important for Indonesia from the point of view of ensuring energy security and energy affordability.

National Enabling Environment for Sustainable Energy Options

In order to increase the share of renewable energy in the energy mix of the country, the government of Indonesia stipulated 17% target share of renewables by 2025 in the country's energy mix.¹ The electrification ratio in the country was about 75.79% in 2012, and is targeted to grow up to 83.4% by 2016.² The Directorate General of New, Renewable Energy and Energy Conservation (DGNREEC) administers the development and promotion of renewable energy (RE) under the aegis of the Ministry of Energy and Mineral Resources (MEMR) in Indonesia. The power market is dominated by the state owned company PLN which has 85% share in power generation and is a vertically integrated utility responsible for transmission and distribution of power.³ The PLN has taken a few initiatives in sustainable energy development in the country, e.g., the '1000 Islands Programme' and establishing geothermal power plants to promote sustainable energy options. In Indonesia, the renewable energy sector is governed by several policies, laws and regulations notified by the government. Programs such as 'Energy Self- Sufficient Village (ESSV) programme', 'Domestic Biogas Development Programme' and 'Solar Home System Programme' promote the use of sustainable energy technologies in Indonesia. The ESSV programme encourages the use of locally available resources and aims to improve infrastructure and economic condition of the villages. Fast-track programmes create a conducive environment for massive investments in the renewable energy sector. Fiscal and financial incentives facilitate investment in sustainable energy. Feed-in tariff and business viability guarantee are provided for attracting more Independent Power Producers in the sector.

Sustainable energy technologies and projects are entitled to income tax reduction, accelerated depreciation benefit, exemptions on import duties and Value Added Tax. Besides, subsidies are available for biofuels. Geothermal fund facility provides financial support to geothermal developers. Farmers get loans at lower interest rates for biofuel plantations. Apart from finance from banks,

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