BAHAN RAPAT PLENO

KECUKUPAN PEROLEHAN ANGKA KREDIT

KENAIKAN JABATAN FUNGSIONAL PERTAMA **ASISTEN AHLI**

Nama	Muhammad Bagus Sistriatmaja, S.E., M.E.
NIP	199708052024061001
Fakultas/Prodi	Fakultas Ekonomi dan Bisnis | S-1 Ekonomi Pembangunan
Golongan Ruang/Jabatan Fungsional	III/b | Tenaga Pengajar
Jenis Kenaikan	Kenaikan Jabatan Peralihan Tenaga Pengajar ke Asisten Ahli
Angka Kredit Minimal Yang Dibutuhkan (Baru)	0

#	KUM	AK SAAT INI	AK DIPERLUKAN	KETERANGAN	KURANG/CUKUP
1	A	0	0	0	Cukup
2	B	0	0.0	Minimal 0 = **0.0 AK**	Cukup
3	C	18	0.0	Minimal 0 = **0.0 AK**	Cukup
4	D	0	0	Minimal **0 AK** dan Paling Banyak <= **0.0 AK**	Cukup
5	E	0	0	Minimal **0 AK** dan Paling Banyak <= **0.0 AK**	Cukup
	TOTAL	**18**			

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET, DAN TEKNOLOGI
REPUBLIK INDONESIA

KEPUTUSAN MENTERI PENDIDIKAN, KEBUDAYAAN, RISET, DAN TEKNOLOGI REPUBLIK INDONESIA NOMOR 75050/S/01/2024

TENTANG
PENGANGKATAN CALON PEGAWAI NEGERI SIPIL

MENTERI PENDIDIKAN, KEBUDAYAAN, RISET, DAN TEKNOLOGI

Menimbang : bahwa dalam rangka pengisian kebutuhan jabatan yang lowong di lingkungan Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, perlu mengangkat nama yang tersebut di bawah ini menjadi Calon Pegawai Negeri Sipil dalam masa percobaan.

Mengingat :
1. Undang-Undang Nomor 20 Tahun 2023;
2. Peraturan Pemerintah Nomor 11 Tahun 2017 sebagaimana diubah dengan Nomor 17 Tahun 2020;
3. Peraturan Pemerintah Nomor 5 Tahun 2024;
4. Peraturan Presiden Nomor 32 Tahun 2021;
5. Peraturan Presiden Nomor 62 Tahun 2021;
6. Keputusan Presiden Nomor 64/P Tahun 2022;
7. Peraturan Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi Nomor 28 Tahun 2021;
8. Peraturan Badan Kepegawaian Negara Nomor 14 Tahun 2018;
9. Keputusan Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi Nomor 956/P Tahun 2020.

Memperhatikan : Pertimbangan Teknis Kepala Badan Kepegawaian Negara Nomor AG-12016004394 tanggal 17 Mei 2024.

M E M U T U S K A N

Menetapkan,

PERTAMA : Terhitung mulai tanggal 1 Juni 2024 mengangkat sebagai Calon Pegawai Negeri Sipil

nama	:	Muhammad Bagus Sistriatmaja, S.E., M.E.
NIP	:	199708052024061001
tempat/tanggal lahir	:	Rembang/5 Agustus 1997
jenis kelamin	:	Pria
pendidikan	:	S-2 Ekonomi dan Studi Pembangunan Tahun 2022
golongan ruang	:	III/b
kebutuhan jabatan	:	Asisten Ahli
masa kerja golongan	:	0 Tahun / 0 Bulan
gaji pokok	:	80% x Rp2.903.600,00 = Rp2.322.880,00
unit kerja	:	Universitas Sebelas Maret
instansi	:	Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi

KEDUA : Selain gaji pokok tersebut, kepada yang bersangkutan diberikan penghasilan lain yang sah sesuai dengan ketentuan peraturan perundang-undangan.

KETIGA : Apabila di kemudian hari terdapat kekeliruan dalam keputusan ini, maka akan diperbaiki sebagaimana mestinya.

ASLI Keputusan ini diberikan kepada yang bersangkutan untuk dipergunakan sebagaimana mestinya.

Ditetapkan di Jakarta
pada tanggal 31 Mei 2024

A.N. MENTERI PENDIDIKAN, KEBUDAYAAN,
RISET, DAN TEKNOLOGI
SEKRETARIS JENDERAL,

SUHARTI
NIP 196911211992032002

Tembusan:
1. Plt. Kepala BKN
2. Kepala KPPN Surakarta
3. Direktur Utama PT TASPEN
4. Kepala Biro Sumber Daya Manusia
5. Plt. Rektor Universitas Sebelas Maret

KEPUTUSAN MENTERI PENDIDIKAN TINGGI, SAINS, DAN TEKNOLOGI
Nomor : 978/UN27/HK.02/2025

TENTANG
PENGANGKATAN PEGAWAI NEGERI SIPIL

MENTERI PENDIDIKAN TINGGI, SAINS, DAN TEKNOLOGI

Menimbang :
a. bahwa Calon Pegawai Negeri Sipil yang namanya tersebut dalam Keputusan ini, terhitung mulai tanggal 01 Juni 2025 memenuhi syarat untuk diangkat sebagai Pegawai Negeri Sipil;
b. bahwa Calon Pegawai Negeri Sipil tersebut telah dinyatakan sehat untuk diangkat sebagai Pegawai Negeri Sipil berdasarkan surat keterangan dari Tim Penguji Kesehatan Nomor : 812/2096/2025 tanggal 10 Februari 2025;
c. bahwa Calon Pegawai Negeri Sipil tersebut telah dinyatakan lulus Pendidikan dan Pelatihan Dasar CPNS Nomor 00016619/LATSAR CPNS III/3009/017/LAN-KEMENHUB/2024 tanggal 06 Desember 2024.

Mengingat :
1. Undang-undang Nomor 20 Tahun 2023;
2. Peraturan Pemerintah Nomor 17 Tahun 2020;
3. Peraturan Pemerintah Nomor 5 Tahun 2024;
4. Peraturan Badan Kepegawaian Negara Nomor 14 Tahun 2018.

MEMUTUSKAN :

Menetapkan :

PERTAMA : Terhitung mulai tanggal 01 Juni 2025 mengangkat menjadi Pegawai Negeri Sipil :

Nama	:	Muhammad Bagus Sistriatmaja, S.E., M.E.
NIP	:	199708052024061001
Tempat/Tanggal Lahir	:	Rembang/5 Agustus 1997
Pendidikan	:	S-2 Ekonomi dan Studi Pembangunan
Jabatan	:	Dosen Asisten Ahli
Pangkat / Golongan ruang	:	Penata Muda Tk. I/III.b
Masa kerja golongan	:	01 Tahun 00 Bulan
Gaji Pokok	:	Rp2.903.600,00
Unit Kerja	:	Fakultas Ekonomi dan Bisnis Universitas Sebelas Maret

KEDUA : Selain gaji pokok tersebut, kepada yang bersangkutan diberikan penghasilan lain yang sah sesuai dengan peraturan perundang-undangan.

KETIGA : Apabila di kemudian hari ternyata terdapat kekeliruan dalam keputusan ini diadakan perbaikan dan perhitungan kembali sebagaimana mestinya.

ASLI Keputusan ini diberikan kepada yang bersangkutan untuk dipergunakan sebagaimana mestinya.

Ditetapkan di Surakarta
Pada tanggal 18 Maret 2025
a.n. Menteri Pendidikan Tinggi, Sains, dan Teknologi
Rektor Universitas Sebelas Maret

Prof. Dr. Hartono, dr., M.Si.
NIP 196507271997021001

Tembusan Keputusan ini disampaikan :
1. Kepala Biro Organisasi & SDM Sekjen Kemdiktisaintek di Jakarta;
2. Kepala Badan Kepegawaian Negara di Jakarta;
3. Kepala KPPN Surakarta;
4. Dekan Fakultas Ekonomi dan Bisnis UNS;
5. Direktur Keuangan, Aset, dan Umum UNS.

DOKUMEN EVALUASI KINERJA PEGAWAI

UNIVERSITAS SEBELAS MARET

PERIODE PENILAIAN :
02 Januari 2024 s.d 31 Desember 2024

1	**PEGAWAI YANG DINILAI**		
	NAMA	:	Muhammad Bagus Sistriatmaja, S.E., M.E.
	NIP	:	199708052024061001
	PANGKAT/GOL RUANG	:	Penata Muda Tingkat I/ III/b
	JABATAN	:	Tenaga Pengajar
	UNIT KERJA	:	S-1 Ekonomi Pembangunan - Universitas Sebelas Maret
2	**PEJABAT PENILAI KINERJA**		
	NAMA	:	Muhammad Yusuf Indra Purnama, S.E., M.Rech.,Ph.D
	NIP	:	1982110320130201
	PANGKAT/GOL RUANG	:	Penata Muda Tingkat I/ III/b
	JABATAN	:	Ketua Program Studi S1 Ekonomi Pembangunan
	UNIT KERJA	:	S-1 Ekonomi Pembangunan - Universitas Sebelas Maret
3	**ATASAN PEJABAT PENILAI KINERJA**		
	NAMA	:	Prof. Tri Mulyaningsih, S.E., M.Si., Ph.D.
	NIP	:	197907192008012009
	PANGKAT/GOL RUANG	:	Pembina/ IV/a
	JABATAN	:	Wakil Dekan Bidang Akademik dan Penelitian Fakultas Ekonomi dan Bisnis (FEB)
	UNIT KERJA	:	Fakultas Ekonomi dan Bisnis - Universitas Sebelas Maret
4	**EVALUASI KINERJA**		
	CAPAIAN KINERJA ORGANISASI	:	BAIK
	PREDIKAT KINERJA PEGAWAI	:	BAIK
5	**CATATAN/REKOMENDASI**		

Surakarta, 03 Januari 2025
7. Pegawai Yang Dinilai

Muhammad Bagus Sistriatmaja, S.E., M.E.
199708052024061001

Surakarta, 02 Januari 2025
6. Pejabat Penilai Kinerja

Muhammad Yusuf Indra Purnama, S.E., M.Rech.,Ph.D
1982110320130201

HASIL KERJA

NO	RENCANA HASIL KERJA PIMPINAN YANG DIINTERVENSI	RENCANA HASIL KERJA	ASPEK	INDIKATOR KINERJA INDIVIDU	TARGET	REALISASI BERDASARKAN BUKTI DUKUNG	UMPAN BALIK BERKELANJUTAN BERDASARKAN BUKTI DUKUNG
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. KINERJA UTAMA							
1	Terlaksananya Dharma Pendidikan	Terlaksananya Perkuliahan	Kuantitas	Jumlah SKS	18 sks	18 sks	Hasil kerja sesuai jumlah target SKS yang ditetapkan. Tingkatkan!
			Kualitas	Prosentase Kehadiran (>95%)	100 %	100 %	Hasil kerja sudah sesuai yang diharapkan. Tingkatkan!
			Waktu	Ketepatan waktu pembelajaran	12 Bulan	12 Bulan	Penyelesaian kerja sesuai waktu yang ditetapkan, sesuai ekspektasi. Tingkatkan!
2	Terlaksananya Dharma Pendidikan	Terlaksananya Pelatihan Diklat Prajabatan CPNS	Kuantitas	Jumlah Kegiatan	1 Kegiatan	1 Kegiatan	
			Kualitas	Prosentase Kelulusan	100 %	100 %	
			Waktu	Ketepatan waktu kelulusan	6 Bulan	6 Bulan	

RATING HASIL KERJA*

SESUAI EKSPEKTASI

PERILAKU KERJA		UMPAN BALIK BERKELANJUTAN BERDASARKAN BUKTI DUKUNG
1. Berorientasi pelayanan		
• Memahami dan memenuhi kebutuhan masyarakat • Ramah, cekatan, solutif, dan dapat diandalkan • Melakukan perbaikan tiada henti	Ekspektasi Khusus Pimpinan: • Belajar dari kesalahan untuk perbaikan kinerja selanjutnya	• Selalu berusaha meningkatkan kinerjanya berdasarkan potensi pengembangan
2. Akuntabel		
• Melaksanakan tugas dengan jujur, bertanggungjawab, cermat, disiplin dan berintegritas tinggi • Menggunakan kekayaan dan barang milik negara secara bertanggungjawab, efektif, dan efisien • Tidak menyalahgunakan kewenangan jabatan	Ekspektasi Khusus Pimpinan: • Menyajikan data/dokumen yang valid dan dapat dipertanggungjawabkan	• Selalu menyajikan data/dokumen dan dapat dipertanggungjawabkan
3. Kompeten		
• Meningkatkan kompetensi diri untuk menjawab tantangan yang selalu berubah • Membantu orang lain belajar • Melaksanakan tugas dengan kualitas terbaik	Ekspektasi Khusus Pimpinan: • Aktif mengikuti kegiatan pengembangan kompetensi	• Berupaya menyelesaikan tugas dengan optimal dan secara aktif mengikuti kegiatan pengembangan kompetensi
4. Harmonis		
• Menghargai setiap orang apapun latar belakangnya • Suka menolong orang lain • Membangun lingkungan kerja yang kondusif	Ekspektasi Khusus Pimpinan: • Membangun komunikasi yang lebih terbuka dan menjaga hubungan baik dengan stakeholder	• Secara aktif membangun komunikasi dengan stake holder
5. Loyal		
• Memegang teguh ideologi Pancasila, Undang-Undang Dasar Negara Republik Indonesia Tahun 1945, setia kepada Negara Kesatuan Republik Indonesia serta pemerintahan yang sah • Menjaga nama baik sesama ASN, Pimpinan, Instansi, dan Negara • Menjaga rahasia jabatan dan negara	Ekspektasi Khusus Pimpinan: • Tidak menyalahgunakan jabatan dan wewenang	• Selalu memegang teguh sumpah jabatan
6. Adaptif		
• Cepat menyesuaikan diri menghadapi perubahan • Terus berinovasi dan mengembangkan kreativitas • Bertindak proaktif	Ekspektasi Khusus Pimpinan: • Mudah beradaptasi dengan perubahan	• Segera menyesuaikan dengan perubahan yang berkaitan dengan tugasnya
7. Kolaboratif		
• Memberi kesempatan kepada berbagai pihak untuk berkontribusi • Terbuka dalam bekerja sama untuk menghasilkan nilai tambah • Menggerakkan pemanfaatan berbagai sumberdaya untuk tujuan bersama	Ekspektasi Khusus Pimpinan: • Aktif berpartisipasi dan berkontribusi sesuai keahliannya	• Memberikan kontribusi secara aktif untuk kinerja unit kerja sesuai dengan keahliannya
RATING PERILAKU KERJA* DI ATAS EKSPEKTASI		
PREDIKAT KINERJA PEGAWAI* BAIK		

Surakarta, 02 Januari 2025

Pegawai Yang Dinilai

Muhammad Bagus Syahatmaja, S.E., M.E.
NIP. 198708052024061001

Pejabat Penilai Kinerja

Muhammad Yusuf Indra Purnama, S.E., M.Rech.,Ph.D
NIP. 198211032013020 1

KEMENTERIAN PENDIDIKAN TINGGI, SAINS DAN TEKNOLOGI
UNIVERSITAS SEBELAS MARET
FAKULTAS EKONOMI DAN BISNIS

EVALUASI KINERJA PEGAWAI
JABATAN PELAKSANA
PENDEKATAN HASIL KERJA KUANTITATIF

UNIVERSITAS SEBELAS MARET

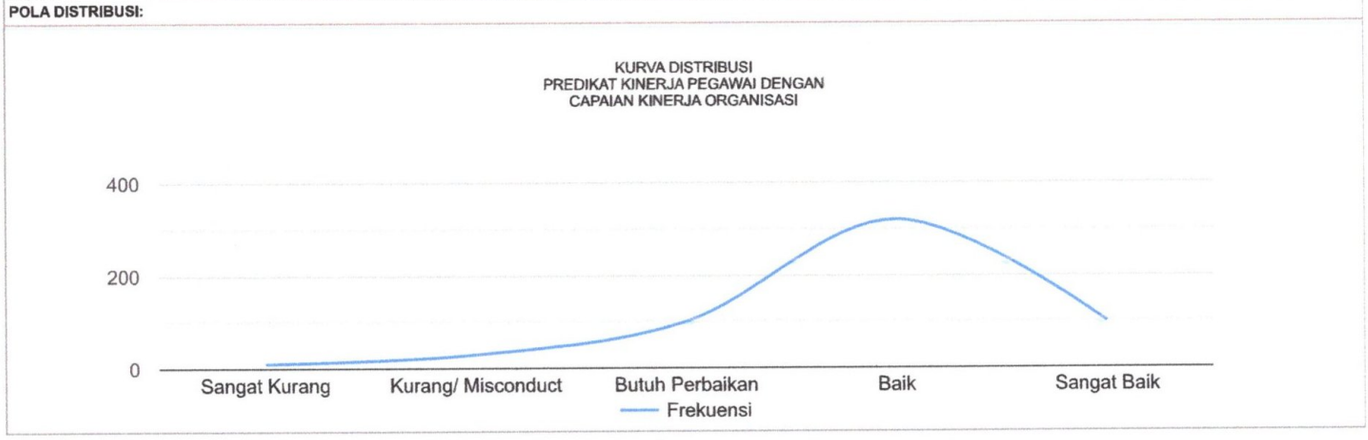
PERIODE PENILAIAN :
02 Januari 2024s.d 31 Desember 2024

PEGAWAI YANG DINILAI		PEJABAT PENILAI KINERJA	
NAMA	Muhammad Bagus Sistriatmaja, S.E., M.E.	**NAMA**	Muhammad Yusuf Indra Purnama, S.E., M.Rech.,Ph.D
NIP	199708052024061001	**NIP**	1982110320130201
PANGKAT/GOL RUANG	Penata Muda Tingkat I/III/b	**PANGKAT/GOL RUANG**	Penata Muda Tingkat I/III/b
JABATAN	Tenaga Pengajar	**JABATAN**	Ketua Program Studi S1 Ekonomi Pembangunan
INSTANSI	S-1 Ekonomi Pembangunan - Universitas Sebelas Maret	**INSTANSI**	S-1 Ekonomi Pembangunan - Universitas Sebelas Maret

CAPAIAN KINERJA ORGANISASI*

BAIK

POLA DISTRIBUSI:



LAMPIRAN SASARAN KINERJA PEGAWAI

UNIVERSITAS SEBELAS MARET

PERIODE PENILAIAN :
02 Januari 2024 s.d 31 Desember 2024

DUKUNGAN SUMBER DAYA	
1	Dukungan sarana prasarana untuk tercapainya target kinerja
2	Dukungan komitmen pimpinan untuk tercapainya target kinerja
SKEMA PERTANGGUNGJAWABAN	
1	Progres dan evaluasi pengembangan pegawai dilaporkan secara berkala.
KONSEKUENSI	
1	Apabila memenuhi ekspektasi Pimpinan direkomendasikan sebagai role model / pegawai teladan.
2	Apabila tidak memenuhi ekspektasi Pimpinan maka direkomendasikan untuk dilakukan pembinaan demi peningkatan kinerja.

Pegawai Yang Dinilai

Muhammad Bagas Astriatmaja, S.E., M.E.
NIP. 1998[illegible]8052024061001

Surakarta, 02 Januari 2024
Pejabat Penilai Kinerja

KEMENTERIAN PENDIDIKAN TINGGI, SAINS, DAN TEKNOLOGI
UNIVERSITAS SEBELAS MARET
FAKULTAS EKONOMI DAN BISNIS

Muhammad Yusuf Indra Purnama, S.E., M.Rech.,Ph.D
NIP. 19921103201302[illegible]

SASARAN KINERJA PEGAWAI
JABATAN PELAKSANA
PENDEKATAN HASIL KERJA KUANTITATIF

UNIVERSITAS SEBELAS MARET

PERIODE PENILAIAN :
02 Januari 2024 s.d 31 Desember 2024

PEGAWAI YANG DINILAI		PEJABAT PENILAI KINERJA	
NAMA	Muhammad Bagus Sistriatmaja, S.E., M.E.	**NAMA**	Muhammad Yusuf Indra Purnama, S.E., M.Rech.,Ph.D
NIP	199708052024061001	**NIP**	198211032013020l
PANGKAT/GOL RUANG	Penata Muda Tingkat I/ III/b	**PANGKAT/GOL RUANG**	Penata Muda Tingkat I/ III/b
JABATAN	Tenaga Pengajar	**JABATAN**	Ketua Program Studi S1 Ekonomi Pembangunan
INSTANSI	S-1 Ekonomi Pembangunan - Universitas Sebelas Maret	**INSTANSI**	S-1 Ekonomi Pembangunan - Universitas Sebelas Maret

NO	RENCANA KERJA ATASAN LANGSUNG	RENCANA KINERJA	ASPEK	INDIKATOR KINERJA INDIVIDU	TARGET
(1)	(2)	(3)	(4)	(5)	(6)
A. KINERJA UTAMA					
1	Terlaksananya Dharma Pendidikan	Terlaksananya Perkuliahan	Kuantitas	Jumlah SKS	18 sks
			Kualitas	Prosentase Kehadiran (>95%)	100 %
			Waktu	Ketepatan waktu pembelajaran	12 Bulan
		Terlaksananya Pelatihan Diklat Prajabatan CPNS	Kuantitas	Jumlah Kegiatan	1 Kegiatan
			Kualitas	Prosentase Kelulusan	100 %
			Waktu	Ketepatan waktu kelulusan	6 Bulan

PERILAKU KERJA

1.	Berorientasi pelayanan	
	• Memahami dan memenuhi kebutuhan masyarakat • Ramah, cekatan, solutif, dan dapat diandalkan • Melakukan perbaikan tiada henti	Ekspektasi Pimpinan: • Belajar dari kesalahan untuk perbaikan kinerja selanjutnya
2.	Akuntabel	
	• Melaksanakan tugas dengan jujur, bertanggungjawab, cermat, disiplin dan berintegritas tinggi • Menggunakan kekayaan dan barang milik negara secara bertanggungjawab, efektif, dan efisien • Tidak menyalahgunakan kewenangan jabatan	Ekspektasi Pimpinan: • Menyajikan data/dokumen yang valid dan dapat dipertanggungjawabkan
3.	Kompeten	
	• Meningkatkan kompetensi diri untuk menjawab tantangan yang selalu berubah • Membantu orang lain belajar • Melaksanakan tugas dengan kualitas terbaik	Ekspektasi Pimpinan: • Aktif mengikuti kegiatan pengembangan kompetensi
4.	Harmonis	
	• Menghargai setiap orang apapun latar belakangnya • Suka menolong orang lain • Membangun lingkungan kerja yang kondusif	Ekspektasi Pimpinan: • Membangun komunikasi yang lebih terbuka dan menjaga hubungan baik dengan stakeholder
5.	Loyal	
	• Memegang teguh ideologi Pancasila, Undang-Undang Dasar Negara Republik Indonesia Tahun 1945, setia kepada Negara Kesatuan Republik Indonesia serta pemerintahan yang sah • Menjaga nama baik sesama ASN, Pimpinan, Instansi, dan Negara • Menjaga rahasia jabatan dan negara	Ekspektasi Pimpinan: • Tidak menyalahgunakan jabatan dan wewenang
6.	Adaptif	
	• Cepat menyesuaikan diri menghadapi perubahan • Terus berinovasi dan mengembangkan kreativitas • Bertindak proaktif	Ekspektasi Pimpinan: • Mudah beradaptasi dengan perubahan
7.	Kolaboratif	
	• Memberi kesempatan kepada berbagai pihak untuk berkontribusi • Terbuka dalam bekerja sama untuk menghasilkan nilai tambah • Menggerakkan pemanfaatan berbagai sumberdaya untuk tujuan bersama	Ekspektasi Pimpinan: • Aktif berpartisipasi dan berkontribusi sesuai keahliannya

Pegawai Yang Dinilai

Muhammad Bagus Sistriatmaja, S.E., M.E.
NIP. 199708052024061001

Surakarta, 02 Januari 2024
Pejabat Penilai Kinerja

KEMENTERIAN PENDIDIKAN TINGGI, SAINS DAN TEKNOLOGI
UNIVERSITAS SEBELAS MARET
FAKULTAS EKONOMI DAN BISNIS

Muhammad Yusuf Indra Purnama, S.E., M.Rech.,Ph.D
NIP. 198211032013020l

SURAT PERNYATAAN PAKTA INTEGRITAS
KEABSAHAN KARYA ILMIAH

Yang bertandatangan di bawah ini:

Nama	:	Muhammad Bagus Sistriatmaja, S.E., M.E.
NIP	:	199708052024061001
NIDN/NIDK/NUPTK	:	5137775676130183
Status ikatan kerja	:	Dosen Tetap
Tempat, tanggal lahir	:	Rembang , 5 Agustus 1997
Pangkat/golongan ruang, TMT	:	Penata Muda Tk.I, III/b , 1 Juni 2025
Jabatan, TMT	:	Tenaga Pengajar , 1 Juni 2024
Pendidikan tertinggi	:	S2
Bidang Ilmu/Mata Kuliah	:	Ekonomi Kelembagaan
Fakultas	:	Fakultas Ekonomi dan Bisnis
Jurusan/Program Studi	:	S-1 Ekonomi Pembangunan

Dengan ini menyatakan bahwa Karya Ilmiah, seperti di bawah ini:

No	Karya Ilmiah	Judul	Identitas Karya Ilmiah
1	Karya Ilmiah - Jurnal Ilmiah	Energy transition as a way to improve the welfare of Indonesian society	C.1.c.2 | Multidisciplinary Reviews ISBN/ISSN : 2595-3982 Terindeks Scopus Q4 URL : https://malque.pub/ojs/index.php/mr/article/view/3722 DOI : https://10.31893/multirev.2024283 Scimago : https://www.scimagojr.com/journalsearch.php?q=21101163455&tip=sid&clean=0

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2. Apabila dikemudian hari terbukti bahwa karya ilmiah ini bukan karya saya sendiri atau ada pelanggaran integritas akademik, maka saya bersedia menerima sanksi sesuai ketentuan perundang-undangan yang berlaku.

Demikian surat pernyataan ini saya buat untuk dipergunakan sebagaimana mestinya.

Surakarta, 5 Juni 2025

Yang membuat pernyataan,

Muhammad Bagus Sistriatmaja, S.E., M.E.

NIDN 5137775676130183

Multidisciplinary Reviews

MINI-REVIEW
Published Online: August 10, 2024
https://doi.org/10.31893/multirev.2024283

Energy transition as a way to improve the welfare of Indonesian society

Muhammad Bagus Sistriatmaja[a] ✉ | **Bhimo Rizky Samudro**[a] | **Yogi Pasca Pratama**[a] | **Andri Praeetyo**[a]

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Abstract The shift towards energy is now a priority in Indonesia's efforts to promote sustainable development. With a growing recognition of the effects of climate change and the limitations of energy sources, the urgency to transition to clean and renewable energy options is on the rise. This study aims to investigate how transitioning to energy can enhance the well-being of communities. We aim to highlight critical insights by examining and thoroughly reviewing the literature. Firstly, ensuring energy practices is crucial for attaining development objectives. Energy plays a role in providing services like electricity, transportation, and household heating. Secondly, challenges related to infrastructure and energy accessibility remain hurdles in Indonesia's journey towards an energy transition. Despite advancements in energy initiatives, many remote areas still need access to electricity. Lastly, governmental intervention plays a role in steering a transition towards sustainable energy solutions. Private sector investment in renewable energy sources must be supported and directed through relatively strict policies, fiscal incentives, and regulations. Finally, the energy transition is an essential social and economic event, and appropriate policies need to be developed to promote a just transition and ensure the best outcomes for all stakeholders and society. To conclude, the energy transition in Indonesia requires a combination of government, private sector, civil society, and international stakeholder involvement. By working together across sectors, investing in renewable energy gen technology, and implementing advanced policies, Indonesia promotes transitioning to a more sustainable energy system and improving the overall welfare of society.

Keywords: energy transition, community well-being, sustainable development, policy development, welfare improvement

1. Introduction

The energy transition has also emerged as an essential issue in the global fight against climate change, energy security, and the need for sustainable development. Since Indonesia is a developing country with a huge population and an intensive growth rate, this topic is highly relevant to the welfare of society.

The significance of energy in driving economic and social progress cannot be understated. As Biswas et al., (2022) highlight, energy is not merely a tangible resource but also a catalyst for holistic human development. Thus, a successful shift towards sustainable energy sources has the potential to enhance overall societal welfare greatly.

The rising use of fossil fuels has resulted in higher levels of greenhouse gas emissions and air pollution, which pose risks to human health. Habib et al., (2023) suggest that solar energy, which is often underestimated, could play a crucial role in mitigating the effects of climate change. Nonetheless, economic, social, and political obstacles frequently impede the widespread adoption of renewable energy sources.

Restricted Energy Accessibility: Despite the abundance of natural resources in Indonesia, many people, particularly in rural and remote regions, still struggle to access energy. Data from the Indonesian Central Bureau of Statistics in 2020 revealed that approximately 7% of households in the country were without electricity. This highlights the necessity for an inclusive strategy in the energy transition to guarantee that all segments of society can enjoy its advantages.

Indonesia heavily depends on fossil energy, particularly oil and coal, to fulfill its energy demands. This reliance threatens a stable energy supply and exposes the country to fluctuations in global prices. Pujiati et al., (2023) highlighted that Indonesia's heavy reliance on coal exports has resulted in significant environmental and social issues, such as deforestation, land disputes, and detrimental effects on indigenous populations.

Connection to Sustainable Development Goals: The shift towards cleaner energy is focused on cutting emissions and meeting broader sustainable development objectives. This involves providing everyone access to affordable, clean, and dependable energy while generating economic prospects and enhancing social well-being. According to Syamsari et al., (2022), addressing climate change adaptation and promoting sustainable economic growth in Indonesia necessitates a comprehensive and coordinated approach.

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The role of the government in promoting a sustainable energy transition is crucial. Hille & Oelker (2023) highlight that governments can play a significant role in spurring investment and innovation in renewable energy through clear and consistent energy policies. Nevertheless, challenges such as governance complexity, frequent policy changes, and opposition from various stakeholders can hinder the effective implementation of coordinated energy policies.

For the energy transition to be successful, it is essential to involve various stakeholders such as the government, private sector, civil society, and academia. Virta & Malmelin (2022) collaboration across sectors and public engagement can lead to more innovative and accepted solutions. Ongoing management of conflicts of interest and capacity building are necessary for achieving consensus and practical cooperation.

Technical and Technological Obstacles: Despite significant advancements in renewable energy technology, there are still obstacles to overcome, such as the availability of dependable technology, cost competitiveness, and necessary infrastructure. Prokopenko et al., (2023) emphasize that investing in research and development and technology transfer is crucial in accelerating the integration of renewable energy technologies.

The economic considerations of the energy transition are significant. Schramski et al., (2020) argue that conducting a thorough cost-benefit analysis is crucial for assessing the future economic impact of different energy policy choices. Addressing funding and investment challenges is essential for successfully supporting a sustainable energy transition.

Educating the public and raising awareness about the advantages and significance of transitioning to renewable energy is crucial. According to Lucas et al. (2021), implementing education initiatives and informational campaigns can boost public engagement and backing for sustainable energy options. This involves educating individuals on energy-saving practices, adopting eco-friendly technologies, and promoting sustainable energy measures.

The energy sector worldwide, including in Indonesia, has been dramatically affected by the COVID-19 pandemic. Restrictions on movement, decreased economic activity, and shifts in energy consumption have all contributed to significant changes in the energy industry. Jiang et al., (2021) have pointed out that the pandemic has created a chance to speed the transition to a more sustainable energy model, emphasizing the importance of clean energy and decreasing reliance on fossil fuels.

The switch to renewable energy in Indonesia has significant social and economic consequences. Raza et al., (2019) Climate change can disrupt rainfall, cause drought, and lead to sea level rise, all of which directly affect agriculture, food security, and the daily lives of Indonesians. Therefore, developing effective strategies to mitigate and adapt to these challenges is crucial.

The involvement of the private sector and foreign investment plays a crucial role in driving the energy transition in Indonesia. According to Smirnova et al., (2021), working together with the government and international financial institutions can speed up the growth of renewable energy infrastructure and improve access to clean and affordable energy for the population.

The energy transition in Indonesia is connected to the global agenda, specifically in meeting greenhouse gas emission goals outlined in the Paris Agreement. Widya Yudha & Tjahjono (2019) emphasized that the Indonesian government must take practical actions to decrease emissions, such as implementing policies to improve energy efficiency and promoting renewable energy sources in the country's energy supply.

Innovation and the advancement of new technology are crucial components in driving the energy transition in Indonesia. Fadly (2019) highlighted the importance of investing in research and development of renewable energy technologies such as solar, wind, and biomass to create opportunities for reducing reliance on fossil fuels and improving access to clean and cost-effective energy sources.

Community Engagement and Education: It is crucial to raise awareness among the public about the significance of transitioning to renewable energy sources. Fobissie (2019) suggests that providing education and running information campaigns can encourage greater public involvement and backing for renewable energy initiatives. Teaching about energy efficiency, eco-friendly technologies, and sustainable energy strategies can significantly influence people's behaviors and decisions.

Maintaining policy consistency and effective governance is crucial in fostering an environment that encourages investment in renewable energy. Lin & Chen (2019) emphasize that stable and transparent government policies are pivotal in boosting investment and fostering innovation in renewable energy. Ensuring continuity and predictability in energy policies can instill confidence in market participants and expedite the shift toward clean energy.

2. Materials and Methods

The study uses a qualitative approach and employs an extensive literature review to understand the subject better. This technique will allow us to aggregate and pull data from relevant sources to be comprehensively informed on energy transition.

Literature will be searched extensively using keywords suitably associated with the research theme. My sources of information will include scientific journals, government reports, policy documents, and other valuable pieces of writing.

The analysis will consist of discovering, reading, and comprehending literature on energy transition and then updating, identifying patterns, trends, and key findings in the literature and comparing and synthesizing information from various sources to gain a clear picture of the impact of energy transition on welfare.

3. Results and Discussion

3.1. Education and public awareness

Elevating focus amongst most people about the importance of transitioning to sustainable strength is vital for reaching sustainable development objectives. Tasks, which include instructional packages and public information campaigns, were a hit in selling knowledge about renewable energy and power conservation. The latest research suggests that incorporating schooling on renewable energy into faculty curriculums and offering process education centered on accessible strength technologies can contribute to the improvement of a talented and versatile group of workers throughout the energy transition duration (Xi & Su 2021).

3.2. The role of technology in the energy transition

Fossil energy is faced with the challenge of renewable energy technology development that progresses very fast, which can virtually overwhelm it and thus reduce greenhouse effects. The latest breakthroughs in energy-storing technology, in solar panels, wind power turbines, and electric cars, have produced profound changes in the global energy landscape. Nonetheless, this hurdle is integrating the system into our infrastructure and making it accessible to the people extends the problem. The next genre of studies has shown that we need more attention to scientific progress and the deployment of renewable energy technologies and modern intelligent grid infrastructure to ensure a smooth shift to renewable energy (Kabeyi & Olanrewaju 2022).

3.3. Government engagement in supporting the energy transition

The state has a significant task laying the foundation for investment in renewable energy. Logical, obvious, and concerted policies are needed to serve as a guide and motivating force to the private sector. However, the government's role in providing financing instruments and technology renewal must be successful. According to new research, fiscal policies, including favorable fixed-feed-tariffs as well as tax breaks, are pushing direct investments in the renewable-energy industry and stimulating the building up of new clean-energy-based projects (Polzin et al., 2019).

3.4. Social and economic implications of the energy transition

Energy transition's social and economic impacts are diverse as they shift in employment patterns, income distribution, and society's overall well-being. While the energy transition can create new jobs in the renewable energy sector, the question of respective implications in job creation in the conventional energy industry has to be considered. Recent researches focus on the necessity of fair and eco-friendly policies to sustain the affected workers and the less privileged communities as the transition progresses (McCauley et al., 2019).

3.5. Infrastructure and energy access challenges

Even though some advancements have already been made in bringing electricity to Indonesia, a big part of the community still needs an electric grid that guarantees access to power. Policy challenges, such as expensive technologies, sensitivity to natural disasters, and political uncertainty, are among the significant issues of energy infrastructure. In addition, new technologies, such as microgrids and decentralized distribution systems, showed opportunities to improve energy access to far-off areas. In addition, the most recent research estimates that an implication of adopting advanced business methods like solar panel leasing and performance-based remuneration is that it also employs the private sector in investment in infrastructure (Loock, 2020).

3.6. Policy consistency and political leadership

Consistent energy policy and intense political leadership are the decisive factors that will determine whether the energy reallocation will be sustainable. The instability in policy frameworks and uncertain political environment often discourage longer-term investment in renewable energies. Hence, it is essential that political leaders fully carry out the tasks of undertaking these challenges and build a secure and encouraging situation of investment in clean energy (W. Jiang & Martek 2021).

3.7. Challenges and opportunities during the covid-19 pandemic

The COVID-19 pandemic has affected the global energy sector as oil prices dropped and fluctuated, coupled with decreased demand for the energy sector. However, at the same time, it brings an opening to encourage us to use energy cleanly to construct a more sustainable energy model. The immense spending of the government on the support of renewable energy and green infrastructure can be financially beneficial, not only towards creating new jobs but also stimulating sustainable economic growth (Zhang et al., 2021).

3.8. Integration of renewable energy and community welfare

Incorporating renewable energy in Indonesia's national energy mix can play an essential role in the economy in general, benefiting society as a whole. Indonesia can contribute to reducing oil and gas imports and developing clean, affordable, and environmentally friendly energy production by lowering its dependence on fossil fuels. This will create new jobs, increase access to energy, and reduce potential environmental impacts. Nevertheless, to meet this objective, only the government, private sector, and civil society can solve the need for partnership (Udin, 2020).

3.9. Community engagement in the energy transition

The collective participation of society in an energy transition has to be considered the cornerstone of promoting widespread public acceptance and sustainable policy targets. Using inclusion in decision-making mechanisms, education, and information dissemination, the community members will aid and become significant catalysts in supporting green energy and clean energy practices. The latest research on the energy domain reveals that the government should consider the social aspect of the problem and find the appropriate way to ensure sustainable and inclusive energy planning (Koirala et al., 2018).

3.10. Investment opportunities and international partnerships

InternationalInternational cooperation and foreign capital inflows are intrinsic to realizing Indonesia's smooth and gradual energy transition. Indonesia can speed up renewable energy infrastructure development with financial and technical support from international financial organizations and partner countries. Energy access by the people will undoubtedly be ensured due to the renewable supply of clean energy. Nevertheless, to set the optimal ground for the nationals to reap the maximum gain, the government, private sector, and international institutions must keep on joint actions (Kennedy, 2018).

3.11. Progressive and adaptive energy policy

Adaptive and progressive legislative and practical policy changes will be imperative to meet environmental and societal demands. With precise tracking of technological advances and overseeing specific market trends, the government can develop relevant and timely policies. Current studies indicate that the vigor and credibility of policy could be enforced through inclusive, transparent, and participatory policy principles (Katsonis, 2019).

3.12. Community readiness for change

The other vital factors, which are social acceptance of the transition and abiding by sustainability methods, are societal readiness for change and inclusion in sustainable practices. Mining communities could quickly adopt technologies through programs such as education, training, and technical assistance. Studies have confirmed that government and non-governmental organizations must refrain from playing the fundamental role they must take to ease the shift in the mentioned environment (Castells-Quintana et al., 2018).

3.13. Inter-sector collaboration for holistic solutions

Collaboration with the circle of parties such as the government, the private sector, civil society, and academic groups should be more present to solve the complex challenge of the energy transition. Collaborating across sectors allows for developing and implementing comprehensive, interconnected, and practical strategies to foster successful energy reforms. Scientists' latest findings underpin the necessity of reliable public-private partnerships, knowledge exchange, and cooperation on regional and international levels, as it has become evident that developing renewable energy sources and ensuring global energy access is an interconnected issue (George et al., 2024).

3.14. Adaptation to future challenges

In dealing with ever-growing and mainly evolving energy problems, the fundamental element is adaptation to change, which is crucial in achieving sustainable development goals. In a way that is oriented to innovation, flexibility, and sustainability, Indonesia is capable of overcoming future issues and using the energy transition's chances. Research in the past few years has indicated the need for strategic sector planning, risk mitigation, and energy infrastructure resilience against climate change and fast-changing markets (Charani Shandiz et al., 2020).

4. Study Limitation

A. Limitations of Empirical Data: This study relies heavily on secondary literature and available literature reviews. Limitations in access to primary data and direct case studies from the field may affect the depth of the analysis presented. In addition, the data used may not fully reflect current conditions or recent changes in the energy sector.
B. Limitations of Regional Context: Although this study focuses on the Indonesian context, most of the literature reviewed covers global studies or from other countries that may have different social, economic, and policy conditions. This may limit the relevance and applicability of the findings to the specific local context of Indonesia.
C. Measurement of Social Impact: Measurement of the social impact of the energy transition is often qualitative and difficult to measure quantitatively. This study faces limitations in measuring social impacts comprehensively and objectively, especially related to changes in community welfare and quality of life.
D. Limited Literature: Some specific aspects of the energy transition, such as impacts on certain community groups or specific regions, may be underrepresented in the available literature. This may limit a comprehensive understanding of all aspects of the energy transition.

5. Future Perspective

Energy transition is a complex and evolving topic, offering a range of opportunities and challenges that require further research to comprehensively understand its impacts. Based on the results of this literature review, there are several key areas for future research to consider:

5.1. Deeper empirical research

Future studies should focus on deeper primary data collection through field surveys, interviews, and local case studies. This will provide a better understanding of how the energy transition directly impacts local communities and economies in Indonesia. Empirical data collection can help fill gaps in the literature that currently relies heavily on secondary sources.

5.2. Local energy policy analysis

Further research is needed to explore energy policies at the local and regional levels. Given the variability of energy policies across Indonesia, studies that focus on specific policies and their implementation can provide insights into best practices and barriers faced in the energy transition. Evaluation of local energy policies can help in formulating more effective and contextualized strategies.

5.3. Social impacts on vulnerable groups

While the energy transition brings many benefits, there is an urgent need to understand its impacts on vulnerable groups, such as indigenous peoples, conventional energy workers, and rural communities. Future research should focus on how the energy transition affects the well-being of these groups and how policies can be designed to ensure inclusiveness and social equity.

5.4. Renewable energy technologies and innovations

Future studies should continue to explore technological developments and innovations in the renewable energy sector. In-depth research on technology efficiency, costs, and adoption at different scales can provide important insights into how to accelerate the energy transition. In addition, analysis of the potential of new technologies, such as hydrogen and energy storage, is also needed.

5.5. Energy economics and investment

Economic analysis and investment models in the renewable energy sector are important areas for further research. Studies on how to finance renewable energy projects, reduce investment risks, and increase private sector participation can help drive the growth of the sector. Research should also consider the long-term economic impacts and how the energy transition can be integrated with national economic development strategies.

5.6. Community participation and empowerment

Research on community participation and empowerment strategies in the energy transition is essential. Exploring how communities can be involved in decision-making processes, design renewable energy projects, and gain economic benefits from the energy transition will help ensure that the energy transition is inclusive and sustainable.

5.7. Environmental impacts and sustainability

Future research should continue to assess the environmental impacts of the energy transition, including carbon emission reductions, waste management, and impacts on local ecosystems. Studying how to achieve environmental sustainability at scale will be key to ensuring that the energy transition not only addresses climate change but also protects biodiversity and natural resources.

6. Final Considerations

The challenge of energy transition is the most complex but essential thing that should be achieved to maintain Indonesia's success in attaining sustainable development goals. Through the engagement of different actors, the application of cutting-edge technology, and the implementation of multiple policies, Indonesia has a chance to achieve more efficient renewable energy implementation, and consequently, the well-being of the society can be improved. Nevertheless, to make it happen, a highly motivated political decision, practical cross-sector work, and visionary leadership are what matters most of all. As such, the energy transition is more than a necessity; it is also a vantage point for Indonesia to make tangible strides toward a more sustainable, equitable, and competitive society.

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Ethical considerations

It is not applicable since human or animal participation was absent in this research; therefore, such consent does not apply.

Conflict of Interest

The authors declare no conflicts of interest.

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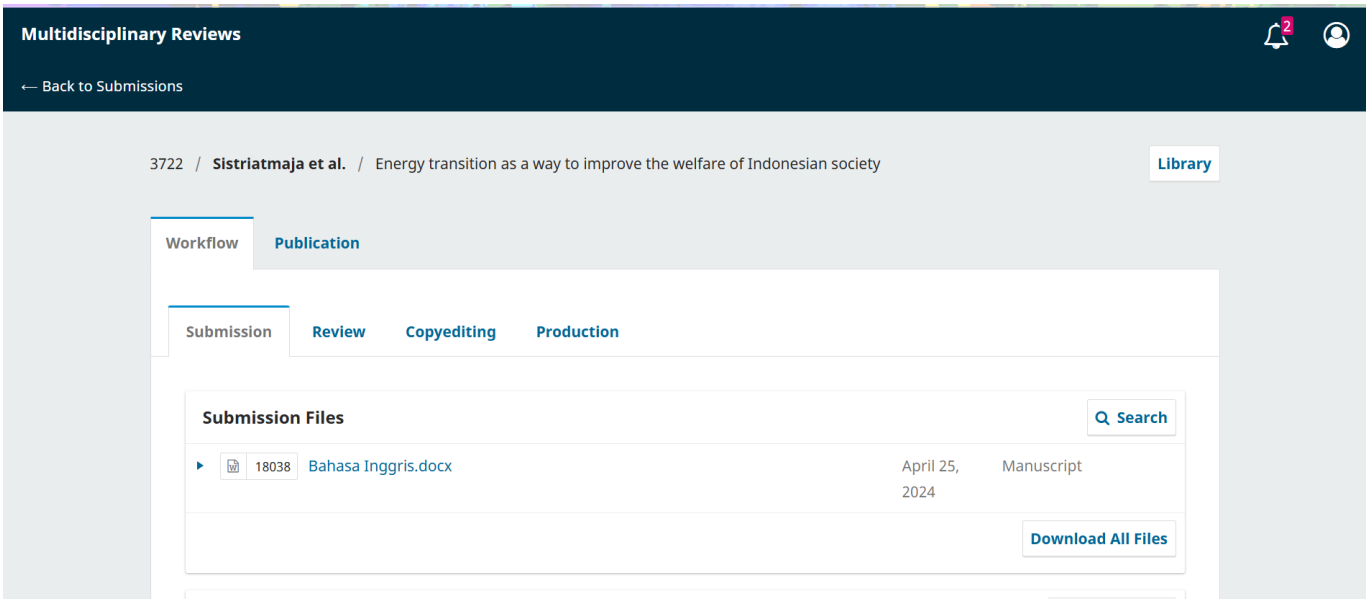

ENERGY TRANSITION AS A WAY TO IMPROVE THE WELFARE OF INDONESIAN SOCIETY

ABSTRACT

The shift, towards energy is now a priority in Indonesias efforts to promote sustainable development. With a growing recognition of the effects of climate change and the limitations of energy sources the urgency to transition to clean and renewable energy options is on the rise. This study aims to investigate how transitioning to energy can enhance the well being of communities. By conducting an examination and thorough review of literature we aim to shed light on key insights. Firstly ensuring energy practices is crucial for attaining development objectives. Energy plays a role in providing services like electricity, transportation and household heating. Secondly challenges related to infrastructure and energy accessibility remain hurdles in Indonesias journey towards an energy transition. Despite advancements in energy initiatives numerous remote areas still lack access to electricity supply. Lastly governmental intervention plays a role in steering a transition, towards sustainable energy solutions. Private sector investment into renewable energy sources must be supported and directed through relatively strict policies, fiscal incentives, and regulations. Finally, the energy transition is an essential social, and economic event, and appropriate policies need to be developed to promote a just transition, ensure the best outcomes for all stakeholders, and society overall. To conclude, the energy transition in Indonesia requires a combination of government, private sector, civil society, and international stakeholder involvement. By working together across sectors, investing in renewable energy gen technology, and implementing advanced policies, Indonesia promote transitioning to a more sustainable energy system and improving the overall welfare of society.

A. Background

The energy transition has also emerged as an important issue in connection with the global fight against climate change, energy security, and the need for sustainable development. Since Indonesia is a developing country with a huge population and an intensive growth rate, this topic is extremely relevant for the welfare of society.

The significance of energy in driving economic and social progress cannot be understated. As highlighted Biswas et al., (2022) energy is not merely a tangible resource but also a catalyst for holistic human development. Thus, a successful shift towards sustainable energy sources has the potential to greatly enhance overall societal welfare.

The rising use of fossil fuels has resulted in higher levels of greenhouse gas emissions and air pollution, which pose risks to human health. According to Habib et al., (2023) suggest that solar energy, which is often underestimated, could play a crucial role in mitigating the effects of climate change. Nonetheless, obstacles such as economic, social, and political issues frequently impede the widespread adoption of renewable energy sources.

Restricted Energy Accessibility, Despite the abundance of natural resources in Indonesia, many people, particularly in rural and remote regions, still struggle to access energy. Data from the Indonesian Central Bureau of Statistics in 2020 revealed that approximately 7% of households in the country were without electricity. This highlights the necessity for an inclusive strategy in the energy transition to guarantee that all segments of society can enjoy its advantages.

ndonesia continues to heavily depend on fossil energy, particularly oil and coal, to fulfill its energy demands. This reliance poses a threat to stable energy supply and exposes the country to fluctuations in global prices. Pujiati et al., (2023) highlighted that Indonesia's heavy reliance on coal exports has resulted in significant environmental and social issues, such as deforestation, land disputes, and detrimental effects on indigenous populations.

Connection to Sustainable Development Goals: The shift towards cleaner energy is not just focused on cutting emissions, but also on meeting broader

sustainable development objectives. This involves providing access to affordable, clean, and dependable energy for everyone, while also generating economic prospects and enhancing social well-being. According Syamsari et al., (2022) addressing climate change adaptation and promoting sustainable economic growth in Indonesia necessitates a comprehensive and coordinated approach.

The role of the government in promoting a sustainable energy transition is crucial. Hille & Oelker, (2023) highlight that governments can play a significant role in spurring investment and innovation in renewable energy through clear and consistent energy policies. Nevertheless, challenges such as governance complexity, frequent policy changes, and opposition from various stakeholders can hinder the effective implementation of coordinated energy policies.

In order for the energy transition to be successful, it is important to involve various stakeholders such as government, private sector, civil society, and academia. Virta & Malmelin, (2022) collaboration across sectors and public engagement can lead to more innovative and accepted solutions. Ongoing management of conflicts of interest and capacity building are necessary for achieving consensus and effective cooperation.

Technical and Technological Obstacles, despite significant advancements in renewable energy technology, there are still obstacles to overcome such as the availability of dependable technology, cost competitiveness, and necessary infrastructure. Prokopenko et al., (2023) emphasize that investing in research and development, along with technology transfer, is crucial in speeding up the integration of renewable energy technologies.

The economic considerations of the energy transition are significant. Schramski et al., (2020) argue that conducting a thorough cost-benefit analysis is crucial for assessing the future economic impact of different energy policy choices. Addressing funding and investment challenges is also essential for successfully supporting a sustainable energy transition.

Educating the public and raising awareness about the advantages and significance of transitioning to renewable energy is crucial. According Lucas et al., (2021) implementing education initiatives and informational campaigns can boost public engagement and backing for sustainable energy options. This involves educating individuals on energy-saving practices, adopting eco-friendly technologies, and promoting sustainable energy measures.

The energy sector worldwide, including in Indonesia, has been greatly affected by the COVID-19 pandemic. Restrictions on movement, decreased economic activity, and shifts in energy consumption have all contributed to significant changes in the energy industry. Jiang et al., (2021) have pointed out that the pandemic has created a chance to speed up the transition to a more sustainable energy model, emphasizing the importance of clean energy and decreasing reliance on fossil fuels.

The switch to renewable energy in Indonesia has significant social and economic consequences. Raza et al., (2019) Climate change can disrupt rainfall, cause drought, and lead to sea level rise, all of which directly affect agriculture, food security, and the daily lives of Indonesians. Therefore, it is crucial to develop effective strategies to mitigate and adapt to these challenges.

The involvement of the private sector and foreign investment plays a crucial role in driving the energy transition in Indonesia. According to Smirnova et al., (2021) working together with the government and international financial institutions can

speed up the growth of renewable energy infrastructure and improve access to clean and affordable energy for the population.

The energy transition in Indonesia is connected to the global agenda, specifically in meeting greenhouse gas emission goals outlined in the Paris Agreement. Widya Yudha & Tjahjono, (2019) emphasized that the Indonesian government must take practical actions to decrease emissions, such as implementing policies to improve energy efficiency and promoting the use of renewable energy sources in the country's energy supply.

Innovation and the advancement of new technology are crucial components in driving the energy transition in Indonesia. Fadly, (2019) highlighted the importance of investing in research and development of renewable energy technologies such as solar, wind, and biomass to create opportunities for reducing reliance on fossil fuels and improving access to clean and cost-effective energy sources.

Community Engagement and Education: It is crucial to raise awareness among the public about the significance of transitioning to renewable energy sources. Fobissie, (2019) suggests that by providing education and running information campaigns, we can encourage greater public involvement and backing for renewable energy initiatives. Teaching about energy efficiency, eco-friendly technologies, and sustainable energy strategies can significantly influence people's behaviors and decisions.

Maintaining policy consistency and effective governance is crucial in fostering an environment that encourages investment in renewable energy. Lin & Chen, (2019) emphasize that stable and transparent government policies play a pivotal role in boosting investment and fostering innovation in renewable energy. Ensuring continuity and predictability in energy policies can instill confidence in market participants and expedite the shift towards clean energy.

B. Literature review

1. Justice and Equity in the Energy Transition

The discussion on the energy transition emphasizes the significance of justice and equality, as highlighted by McCauley et al., (2019). It is essential to prioritize social and economic justice in the energy transition to ensure that all members of society can equally benefit. It is crucial to prevent vulnerable or marginalized groups from being left behind during this transition.

According to Fareed et al., (2021) , environmental justice is a significant issue in developing countries like Indonesia. They point out that the extraction of natural resources like coal for export often leads to significant environmental harm and adverse effects on communities. As such, it is crucial for the energy transition to prioritize comprehensive environmental justice.

2. The Role of Society in the Energy Transition

Ram et al., (2022) emphasize the importance of community involvement in driving a successful shift to cleaner and more sustainable energy sources. By actively engaging society in energy planning and decision-making, we can guarantee that the transition is not only efficient but also equitable and socially sustainable.

In this particular situation, the idea of democratized energy is gaining more importance. Szulecki, (2018) describes energy democracy as involving a collaborative approach to making decisions about energy, along with ensuring equal access and fairness in the benefits of energy. By promoting energy

democracy, we can guarantee that energy policies are shaped by the overall needs and desires of society.

3. Challenges in the Energy Transition

While the significance of transitioning to sustainable energy sources is well understood, there are numerous obstacles that need to be addressed to facilitate this shift. Yalew et al., (2020) pointed out that climate change has added urgency to the need for a swift and unified approach to transforming the global energy system. This underscores the complexity involved in achieving a successful energy transition.

Gribkova & Milshina, (2022) emphasize that energy transitions in developing nations encounter particular difficulties like insufficient infrastructure and ineffective policies. As a result, collaborative efforts from different sectors and support from various stakeholders are essential to address these challenges.

C. Research methodology

The study uses a qualitative approach and employs extensive literature review in order to have a deep understanding of the subject. This technique will give us an opportunity to aggregate and pull data from relevant sources to be comprehensively informed of the topic of energy transition.

Literature will be sought through extensive search by means of different key words suitably associated with the research theme. My sources of information will include scientific journals, government reports, policy documents and other useful pieces of writing.

The analysis will consist of discovering, reading and comprehending literature on the topic of energy transition and then updating, identifying patterns, trends, and key findings in the literature and comparing and synthesizing information from various sources to gain a clear picture of the impact of energy transition on welfare.

D. Results and Discussion

1. Education and Public Awareness

elevating focus amongst most of the people about the importance of transitioning to sustainable strength is vital for reaching sustainable development objectives. tasks which includes instructional packages and public information campaigns were a hit in selling knowledge approximately renewable energy and power conservation. latest research suggests that incorporating schooling on renewable energy into faculty curriculums and offering process education centered on easy strength technologies can contribute to the improvement of a talented and versatile group of workers throughout the energy transition duration (Xi & Su, 2021) .

2. The Role of Technology in the Energy Transition

Fossil energy is faced with the challenge of renewable energy technology development that progresses at a very fast pace wich can virtually overwhelm it and thus reduce greenhouse effects. The latest breakthroughs in energy storing technology, in solar panels, wind power turbines, and electric cars have been the source of profound changes in the global landscape of energy. Nonetheless, this hurdle is integrating the system into our infrastructure and making it accessible to the people extends the problem.

Next genre of studies has shown that we need more attention to scientific progress and deployment of renewable energy technologies as well as modern smart grid infrastructure in order to ensure a smooth shift to renewable energy (Kabeyi & Olanrewaju, 2022) .

3. Government Engagement in Supporting the Energy Transition

   The state has a significant task which is laying the foundation for investment in renewable energy. Logical, obvious and concerted policies are needed to serve as a guide and motivating force to the private sector. Albeit the role of the government in the provision of financing instruments and technology renewal must not be failed. According to the new research, fiscal polices, including favourable fixed-feed-tariffs as well as tax breaks are pushing direct investments in the renewable-energy industry and stimulate the building up of new clean-energy-based projects (Polzin et al., 2019) .

4. Social and Economic Implications of the Energy Transition

   The social and economic impacts of energy transition are diverse as they take shift in employment patterns, income distribution and overall well-being of society. While the energy transition can create new jobs in the renewable energy sector, the question of respective implications in job creation in conventional energy industry has to be considered. Recent researches focus on the necessity of fair and eco friendly policies to sustain the workers that are affected and the less privilege communities as the transition progresses (McCauley et al., 2019) .

5. Infrastructure and Energy Access Challenges

   Despite the fact that some advancement has already been made in bringing electricity to Indonesia, a big part of the community is still left without an electric grid which guarantees access to power. Policy challenges, such as expensive technologies, sensitivity to natural disasters, and political uncertainty, are among the major issues of energy infrastructure. In addition, new technologies for example microgrids and decentralized distribution systems showed opportunities to work on improving energy access to far off areas. In addition, the most recent researches estimate that an implication of adopting advanced business methods like solar panel leasing and performance based remuneration is that it also employees the private sector in investment in infrastructure (Loock, 2020) .

6. Policy Consistency and Political Leadership

   Consistent energy policy and intense political leadership are the decisive factors that will determine whether the energy reallocation will be sustainable. The instability in policy frameworks and uncertain political environment often discourage longer-term investment in renewable energies. Hence, it is important that political leaders fully carry out the tasks of undertaking these challenges and build a secure and encouraging situation of investment in clean energy (W. Jiang & Martek, 2021) .

7. Challenges and Opportunities during the COVID-19 Pandemic

   The Covid-19 pandemic has affected the global energy sector as oil prices dropped and fluctuated, also coupled with decreased demand for the energy sector. Yet, at the same time, it brings an opening to encourage us to use energy cleanly as a way to construct a more sustainable energy model. The immense spending of the government on the support of the renewable energy and green infrastructure can be financially beneficial, not

only towards creating new jobs, but also stimulating sustainable economic growth (Zhang et al., 2021) .

8. Integration of Renewable Energy and Community Welfare

   Incorporation of renewable energy in the national energy mix of Indonesia can play an important role in the economy in general bringing about the benefit of the society as a whole. Indonesia can contribute to the reduction of oil and gas imports and to the development of clean, affordable and environmentally friendly energy production just by lowering its dependence on fossil fuels. This will create new jobs, increase access to energy and reduce potential environmental impacts. Nevertheless, in order to meet this objective, only the government, private sector and civil society can satisfy the solution of the need for partnership (Udin, 2020) .

9. Community Engagement in the Energy Transition

   Collective participation of society in an energy transition has to be considered the cornerstone to promote widespread public acceptance and sustainable policy targets. By means of inclusion to decision-making mechanisms, education, and information dissemination, the community members will not only aid but will become major catalysts in supporting green energy and clean energy practices. The latest research on the domain of energy reveals the fact that the government should consider a social aspect of the problem and find the appropriate way to ensure sustainable and inclusive energy planning (Koirala et al., 2018) .

10. Investment Opportunities and International Partnerships

    The international cooperation and foreign capital inflows are intrinsic for realizing a smooth and gradual energy transition in Indonesia. Indonesia can speed up renewable energy infrastructure development, with financial and technical support from international financial organizations and partner countries. Energy access by the people will surely be ensured as a result of the renewable supply of clean energy. Nevertheless, in the name of setting optimal ground for the nationals to reap maximum gain, the government, private sector and international institutions must keep on joint actions (Kennedy, 2018) .

11. Progressive and Adaptive Energy Policy

    Adaptive and progressive changes on both legislative and practical polices will be imperative in order to meet the environmental and societal demands. With precise tracking of advances in technology and overseeing specific market trends, the government can come up with relevant and timely policies. Current studies indicate that among the inclusive, transparent, and participatory policy principles, vigor and credibility of policy could be enforced (Katsonis, 2019) .

12. Community Readiness for Change

    The other key factor that is social acceptance of the transition and abiding by sustainability methods is societal readiness for the change and inclusion in sustainable practices. The adoption of technologies could be easily adopted by mining communities through programs such as education, training and technical assistance. Studies have confirmed that both government and non-governmental organizations are unable to avoid playing the fundamental role that they need to take in order to ease the shift of the mentioned environment (Castells-Quintana et al., 2018) .

13. Inter-Sector Collaboration for Holistic Solutions

    Collaboration with around the circle of parties such as a government, the private sector, civil society, and academic groups should be more present in order to solve a complex challenge of the energy transition. Collaborating across sectors makes room for the development and implementation of comprehensive, interconnected, and effective strategies that will foster successful energy reforms. Scientists' latest findings underpin the necessity of reliable public-private partnerships, knowledge exchange and cooperation on regional and international levels, as it has become evident that the development of renewable energy sources and ensuring global energy access is an interconnected issue (George et al., 2024) .

14. Adaptation to Future Challenges

    Dealing with ever growing and mainly evolving energy problems the fundamental element is adaptation to change which plays the crucial role in the achievement of sustainable development goals. In a way which is oriented to innovation, flexibility, and sustainability, Indonesia is capable of overcoming the issues of the future and using the energy transition's chances. Research in the past few years have indicated the need of strategic sector planning, risk mitigation and energy infrastructure resilience against climate change and fast changing market (Charani Shandiz et al., 2020).

E. Conclusion

The challenge of energy transition is the most complex but additionally important thing that should be achieved to maintain the success of Indonesia in attaining the sustainable development goals. Through engagement of different actors, application of cutting-edge technology, and the implementation of multiple policies, Indonesia has got a chance to achieve more efficient renewable energy implementation and consequently, well-being of the society can be improved. Nevertheless, to make it happen, a highly motivated political decision, effective cross-sector work and visionary leadership is what that matters most of all. As such, the energy transition is more than a necessity, but also a vantage point, for Indonesia to make tangible strides towards a more sustainable, equitable, and competitive society.

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Multidisciplinary Reviews

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1 pesan

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Kepada: Muhammad Bagus Sistriatmaja <sistriatmaja@gmail.com>, Bhimo Rizky Samudro <bhimosamudro@staff.uns.ac.id>, Yogi Pasca Pratama <yogipasca@staff.uns.ac.id>, Andri Prasetyo <prasandri@yahoo.com>

Dear Dr. Muhammad Bagus Sistriatmaja, Bhimo Rizky Samudro, Yogi Pasca Pratama, Andri Prasetyo:

Thank you for submitting your article "**Powering Progress: How Energy Transition Drives Social Well-being in Indonesia"** to our journal. After a thorough review, we have reached the *first decision*.

We appreciate the relevance of your research to our readership. However, **significant improvements are required** before we can consider it for publication. Please see the reviewers' comments at the end of this email.

Both reviewers commented that your article requires a thorough language revision. We recommend conducting a thorough language revision to enhance the clarity and readability of the text. You may consider utilizing our professional proofreading services to assist you in the language revision process.

Note: **Malque Publishing Team** offers language editing services to its authors for **just USD 125**. Please let us know if you want to use our service. **A quick response by July 11, 2024 is appreciated.**

Please resubmit the manuscript for further consideration once you have made the necessary revisions.

We look forward to receiving your updated submission.

You must send us the revised article by July 28, 2024.

We are looking forward to hearing from you.

Best regards,

Dr. Hérica Domingos
Associate Editor
Multidisciplinary Reviews

Reviewer A:

Dear Editor,

I have reviewed the article "**Powering Progress: How Energy Transition Drives Social Well-being in Indonesia**". The article presents an interesting topic and has a high potential to be accepted in *Multidisciplinary Reviews*. However, it requires significant improvements before it can be accepted.

> The language of the article is poor. Some sentences are difficult to understand. A journal indexed in Scopus should have articles with good linguistic quality. I suggest a thorough improvement in this regard.

Recommendation: Revisions Required

Reviewer B:

Dear Editor,

I reviewed the article "**Powering Progress: How Energy Transition Drives Social Well-being in Indonesia**". The article presents an approach with high potential for acceptance in *Multidisciplinary Reviews*. However, it needs significant corrections before it can be accepted.

Corrections:

> The language of the article needs to be improved.

> To ensure a better presentation, be sure to use the Microsoft Word template we have provided attached. You must adjust your manuscript (formatting, citations, references) according to the instructions contained in this template (I am sending attached).

> In the description of the authors' affiliation, do not enter job title, education level, or ranks; only institutions, department (or laboratory), city, country.

> Add "Keywords" (the "keywords" section must not exceed six words. Furthermore, these words should not be included in the title).

> Some citations used in the text do not comply with the journal's standards. All citations must follow the American Psychological Association (APA) standard, authors must correct them. For examples:

Biswas et al., (2022) = correct

Hille & Oelker, (2023) = incorrect

Hille & Oelker (2023) = correct

For other examples, see the instructions available on the template.

> Replace the letters used in the sessions with numbers

> The "**Ethical Considerations**" statement was not responded to. For studies in which procedures with human or animal subjects, the authors must present a statement in the section "Ethical considerations" that the study correctly followed the ethical policies required by your institution/country/international community. For more details on how to report this, see "Publication and Research Ethics": https://malque.pub/ojs/index.php/msj/ethics. Put "Not applicable" if the study does not require an ethical statement.

> Authors make sure to state the "**Conflict of Interest"** and "**Funding**" topics (according to the template).

Recommendation: Revisions Required

Multidisciplinary Reviews

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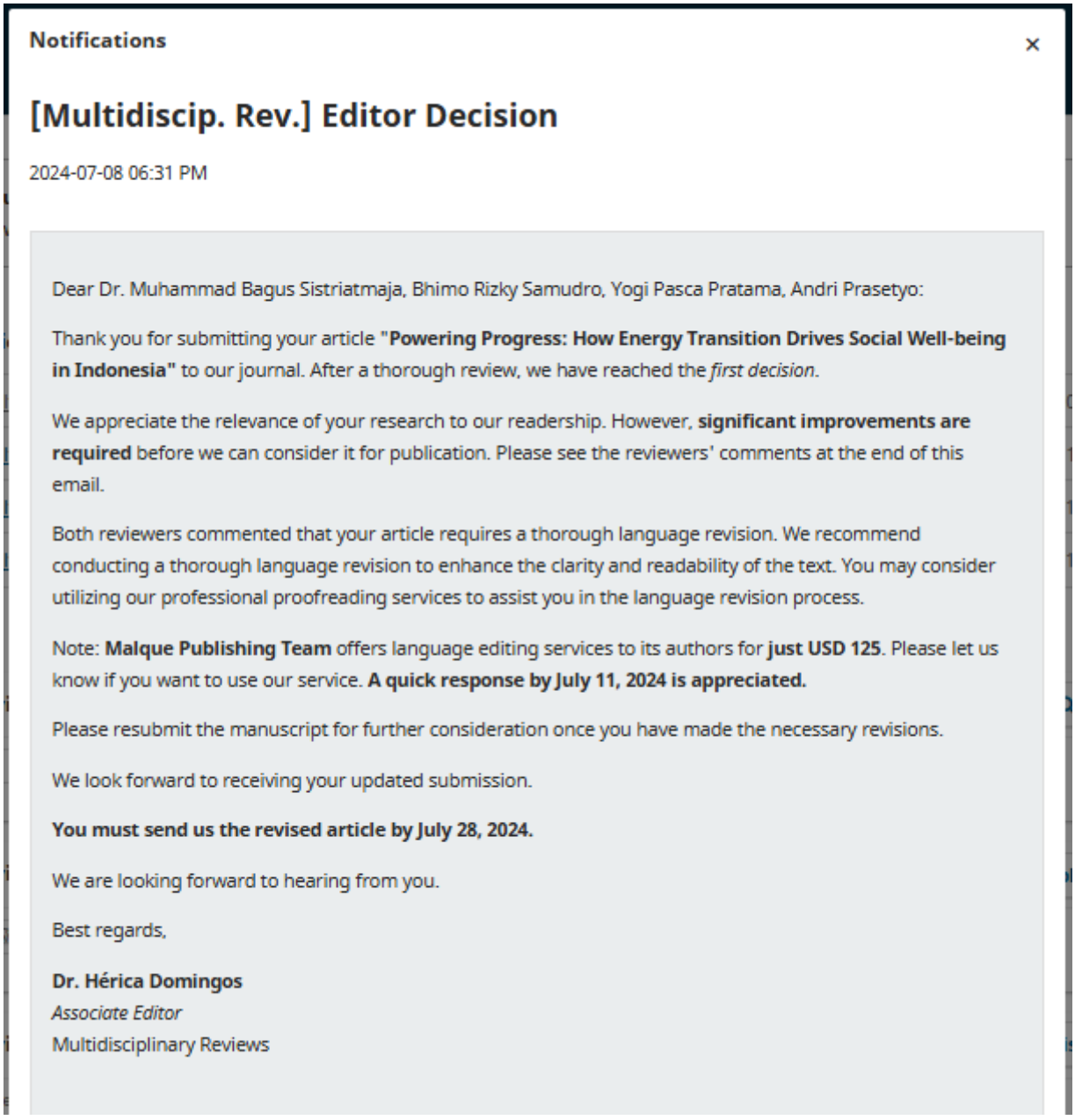

Notifications

[Multidiscip. Rev.] Editor Decision

2024-07-08 06:31 PM

Dear Dr. Muhammad Bagus Sistriatmaja, Bhimo Rizky Samudro, Yogi Pasca Pratama, Andri Prasetyo:

Thank you for submitting your article "**Powering Progress: How Energy Transition Drives Social Well-being in Indonesia**" to our journal. After a thorough review, we have reached the *first decision*.

We appreciate the relevance of your research to our readership. However, **significant improvements are required** before we can consider it for publication. Please see the reviewers' comments at the end of this email.

Both reviewers commented that your article requires a thorough language revision. We recommend conducting a thorough language revision to enhance the clarity and readability of the text. You may consider utilizing our professional proofreading services to assist you in the language revision process.

Note: **Malque Publishing Team** offers language editing services to its authors for **just USD 125**. Please let us know if you want to use our service. **A quick response by July 11, 2024 is appreciated.**

Please resubmit the manuscript for further consideration once you have made the necessary revisions.

We look forward to receiving your updated submission.

You must send us the revised article by July 28, 2024.

We are looking forward to hearing from you.

Best regards,

Dr. Hérica Domingos
Associate Editor
Multidisciplinary Reviews

Reviewer A:

Dear Editor,

I have reviewed the article "**Powering Progress: How Energy Transition Drives Social Well-being in Indonesia**". The article presents an interesting topic and has a high potential to be accepted in *Multidisciplinary Reviews*. However, it requires significant improvements before it can be accepted.

> The language of the article is poor. Some sentences are difficult to understand. A journal indexed in Scopus should have articles with good linguistic quality. I suggest a thorough improvement in this regard.

Recommendation: Revisions Required

Reviewer B:

Dear Editor,

I reviewed the article "**Powering Progress: How Energy Transition Drives Social Well-being in Indonesia**". The article presents an approach with high potential for acceptance in *Multidisciplinary Reviews*. However, it needs significant corrections before it can be accepted.

Corrections:

> The language of the article needs to be improved.

> To ensure a better presentation, be sure to use the Microsoft Word template we have provided attached. You must adjust your manuscript (formatting, citations, references) according to the instructions contained in this template (I am sending attached).

> In the description of the authors' affiliation, do not enter job title, education level, or ranks; only institutions, department (or laboratory), city, country.

> Add "Keywords" (the "keywords" section must not exceed six words. Furthermore, these words should not be included in the title).

> Some citations used in the text do not comply with the journal's standards. All citations must follow the American Psychological Association (APA) standard, authors must correct them. For examples:

Biswas et al., (2022) – correct

Hille & Oelker, (2023) – incorrect

Hille & Oelker (2023) – correct

For other examples, see the instructions available on the template.

> Replace the letters used in the sessions with numbers

> The "**Ethical Considerations**" statement was not responded to. For studies in which procedures with human or animal subjects, the authors must present a statement in the section "Ethical considerations" that the study correctly followed the ethical policies required by your institution/country/international community. For more details on how to report this, see "Publication and Research Ethics": https://malque.pub/ojs/index.php/msj/ethics. Put "Not applicable" if the study does not require an ethical statement.

> Authors make sure to state the "**Conflict of Interest**" and "**Funding**" topics (according to the template).

Recommendation: Revisions Required

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3. Bukti Konfirmasi Submit Revisi Pertama, Respon kepada Reviewer, dan Artikel yang Diresubmit (09 Juli 2024)

Revision Result

Participants Edit

Muhammad Bagus Sistriatmaja (1bagussistr_0508)

Hérica Domingos (hericatertulino)

Messages

Note	From
We have completed and adjusted it, and we have fixed the writing of quotations, keywords, writing of authors even though there are additions to the author, and finally we have tried to fix the language of our writing. Furthermore, we have completed the declaration of ethics and source of funding. Hopefully it can be well received and we are waiting for further good news. Thank you for your attention Malque Revision (rev2).docx	1bagussistr_0508 2024-07-09 02:50 AM

Add Message

ENERGY TRANSITION AS A WAY TO IMPROVE THE WELFARE OF INDONESIAN SOCIETY

Muhammad Bagus Sistriatmaja | Bhimo Rizky Samudro[a] | Yogi Pasca Pratama[a] | Andri Prasetyo[a]

[a]Department Economics Universitas Sebelas Maret, Surakarta, Indonesia.

The shift towards energy is now a priority in Indonesia's efforts to promote sustainable development. With a growing recognition of the effects of climate change and the limitations of energy sources, the urgency to transition to clean and renewable energy options is on the rise. This study aims to investigate how transitioning to energy can enhance the well-being of communities. We aim to highlight critical insights by examining and thoroughly reviewing the literature. Firstly, ensuring energy practices is crucial for attaining development objectives. Energy plays a role in providing services like electricity, transportation, and household heating. Secondly, challenges related to infrastructure and energy accessibility remain hurdles in Indonesia's journey towards an energy transition. Despite advancements in energy initiatives, many remote areas still need access to electricity. Lastly, governmental intervention plays a role in steering a transition towards sustainable energy solutions. Private sector investment in renewable energy sources must be supported and directed through relatively strict policies, fiscal incentives, and regulations. Finally, the energy transition is an essential social and economic event, and appropriate policies need to be developed to promote a just transition and ensure the best outcomes for all stakeholders and society. To conclude, the energy transition in Indonesia requires a combination of government, private sector, civil society, and international stakeholder involvement. By working together across sectors, investing in renewable energy gen technology, and implementing advanced policies, Indonesia promotes transitioning to a more sustainable energy system and improving the overall welfare of society.

Keywords: Energy Transition, Community Well-being, Sustainable Development, Policy Development, Welfare Improvement

1. Introduction

The energy transition has also emerged as an essential issue in the global fight against climate change, energy security, and the need for sustainable development. Since Indonesia is a developing country with a huge population and an intensive growth rate, this topic is highly relevant to the welfare of society.

The significance of energy in driving economic and social progress cannot be understated. As Biswas et al., (2022) highlight, energy is not merely a tangible resource but also a catalyst for holistic human development. Thus, a successful shift towards sustainable energy sources has the potential to enhance overall societal welfare greatly.

The rising use of fossil fuels has resulted in higher levels of greenhouse gas emissions and air pollution, which pose risks to human health. Habib et al., (2023) suggest that solar energy, which is often underestimated, could play a crucial role in mitigating the effects of climate change. Nonetheless, economic, social, and political obstacles frequently impede the widespread adoption of renewable energy sources.

Restricted Energy Accessibility: Despite the abundance of natural resources in Indonesia, many people, particularly in rural and remote regions, still struggle to access energy. Data from the Indonesian Central Bureau of Statistics in 2020 revealed that approximately 7% of households in the country were without electricity. This highlights the necessity for an inclusive strategy in the energy transition to guarantee that all segments of society can enjoy its advantages.

Indonesia heavily depends on fossil energy, particularly oil and coal, to fulfill its energy demands. This reliance threatens a stable energy supply and exposes the country to fluctuations in global prices. Pujiati et al., (2023) highlighted that Indonesia's heavy reliance on coal exports has resulted in significant environmental and social issues, such as deforestation, land disputes, and detrimental effects on indigenous populations.

Connection to Sustainable Development Goals: The shift towards cleaner energy is focused on cutting emissions and meeting broader sustainable development objectives. This involves providing everyone access to affordable, clean, and dependable energy while generating economic prospects and enhancing social well-being. According to Syamsari et al., (2022), addressing climate change adaptation and promoting sustainable economic growth in Indonesia necessitates a comprehensive and coordinated approach.

The role of the government in promoting a sustainable energy transition is crucial. Hille & Oelker (2023) highlight that governments can play a significant role in spurring investment and innovation in renewable energy through clear and consistent energy policies. Nevertheless, challenges such as governance complexity, frequent policy changes, and opposition from various stakeholders can hinder the effective implementation of coordinated energy policies.

For the energy transition to be successful, it is essential to involve various stakeholders such as the government, private sector, civil society, and academia. Virta & Malmelin (2022) collaboration across sectors and public engagement can lead to more innovative and accepted solutions. Ongoing management of conflicts of interest and capacity building are necessary for achieving consensus and practical cooperation.

Technical and Technological Obstacles: Despite significant advancements in renewable energy technology, there are still obstacles to overcome, such as the availability of dependable technology, cost competitiveness, and necessary infrastructure. Prokopenko et al., (2023) emphasize that investing in research and development and technology transfer is crucial in accelerating the integration of renewable energy technologies.

The economic considerations of the energy transition are significant. Schramski et al., (2020) argue that conducting a thorough cost-benefit analysis is crucial for assessing the future economic impact of different energy policy choices. Addressing funding and investment challenges is essential for successfully supporting a sustainable energy transition.

Educating the public and raising awareness about the advantages and significance of transitioning to renewable energy is crucial. According to Lucas et al. (2021), implementing education initiatives and informational campaigns can boost public engagement and backing for sustainable energy options. This involves educating individuals on energy-saving practices, adopting eco-friendly technologies, and promoting sustainable energy measures.

The energy sector worldwide, including in Indonesia, has been dramatically affected by the COVID-19 pandemic. Restrictions on movement, decreased economic activity, and shifts in energy consumption have all contributed to significant changes in the energy industry. Jiang et al., (2021) have pointed out that the pandemic has created a chance to speed the transition to a more sustainable energy model, emphasizing the importance of clean energy and decreasing reliance on fossil fuels.

The switch to renewable energy in Indonesia has significant social and economic consequences. Raza et al., (2019) Climate change can disrupt rainfall, cause drought, and lead to sea level rise, all of which directly affect agriculture, food security, and the daily lives of Indonesians. Therefore, developing effective strategies to mitigate and adapt to these challenges is crucial.

The involvement of the private sector and foreign investment plays a crucial role in driving the energy transition in Indonesia. According to Smirnova et al., (2021), working together with the government and international financial institutions can speed up the growth of renewable energy infrastructure and improve access to clean and affordable energy for the population.

The energy transition in Indonesia is connected to the global agenda, specifically in meeting greenhouse gas emission goals outlined in the Paris Agreement. Widya Yudha & Tjahjono (2019) emphasized that the Indonesian government must take practical actions to decrease emissions, such as implementing policies to improve energy efficiency and promoting renewable energy sources in the country's energy supply.

Innovation and the advancement of new technology are crucial components in driving the energy transition in Indonesia. Fadly (2019) highlighted the importance of investing in research and development of renewable energy technologies such as solar, wind, and biomass to create opportunities for reducing reliance on fossil fuels and improving access to clean and cost-effective energy sources.

Community Engagement and Education: It is crucial to raise awareness among the public about the significance of transitioning to renewable energy sources. Fobissie (2019) suggests that providing education and running information campaigns can encourage greater public involvement and backing for renewable energy initiatives. Teaching about energy efficiency, eco-friendly technologies, and sustainable energy strategies can significantly influence people's behaviors and decisions.

Maintaining policy consistency and effective governance is crucial in fostering an environment that encourages investment in renewable energy. Lin & Chen (2019) emphasize that stable and transparent government policies are pivotal in boosting investment and fostering innovation in renewable energy. Ensuring continuity and predictability in energy policies can instill confidence in market participants and expedite the shift toward clean energy.

2. Materials and Methods

The study uses a qualitative approach and employs an extensive literature review to understand the subject better. This technique will allow us to aggregate and pull data from relevant sources to be comprehensively informed on energy transition.

Literature will be searched extensively using keywords suitably associated with the research theme. My sources of information will include scientific journals, government reports, policy documents, and other valuable pieces of writing.

The analysis will consist of discovering, reading, and comprehending literature on energy transition and then updating, identifying patterns, trends, and key findings in the literature and comparing and synthesizing information from various sources to gain a clear picture of the impact of energy transition on welfare.

3. Results and Discussion

A. Education and Public Awareness

Elevating focus amongst most people about the importance of transitioning to sustainable strength is vital for reaching sustainable development objectives. Tasks, which include instructional packages and public information campaigns, were a hit in selling knowledge about renewable energy and power conservation. The latest research suggests that incorporating schooling on renewable energy into faculty curriculums and offering process education centered on accessible strength technologies can contribute to the improvement of a talented and versatile group of workers throughout the energy transition duration (Xi & Su 2021).

B. The Role of Technology in the Energy Transition

Fossil energy is faced with the challenge of renewable energy technology development that progresses very fast, which can virtually overwhelm it and thus reduce greenhouse effects. The latest breakthroughs in energy-storing technology, in solar panels, wind power turbines, and electric cars, have produced profound changes in the global energy landscape. Nonetheless, this hurdle is integrating the system into our infrastructure and making it accessible to the people extends the problem. The next genre of studies has shown that we need more attention to scientific progress and the deployment of renewable energy technologies and modern intelligent grid infrastructure to ensure a smooth shift to renewable energy (Kabeyi & Olanrewaju 2022).

C. Government Engagement in Supporting the Energy Transition

The state has a significant task laying the foundation for investment in renewable energy. Logical, obvious, and concerted policies are needed to serve as a guide and motivating force to the private sector. However, the government's role in providing financing instruments and technology renewal must be successful. According to new research, fiscal policies, including favorable fixed-feed-tariffs as well as tax breaks, are pushing direct investments in the renewable-energy industry and stimulating the building up of new clean-energy-based projects (Polzin et al., 2019).

D. Social and Economic Implications of the Energy Transition

Energy transition's social and economic impacts are diverse as they shift in employment patterns, income distribution, and society's overall well-being. While the energy transition can create new jobs in the renewable energy sector, the question of respective implications in job creation in the conventional energy industry has to be considered. Recent researches focus on the necessity of fair and eco-friendly policies to sustain the affected workers and the less privileged communities as the transition progresses (McCauley et al., 2019).

E. Infrastructure and Energy Access Challenges

Even though some advancements have already been made in bringing electricity to Indonesia, a big part of the community still needs an electric grid that guarantees access to power. Policy challenges, such as expensive technologies, sensitivity to natural disasters, and political uncertainty, are among the significant issues of energy infrastructure. In addition, new technologies, such as microgrids and decentralized distribution systems, showed opportunities to improve energy access to far-off areas. In addition, the most recent research estimates that an implication of adopting advanced business methods like solar panel leasing and performance-based remuneration is that it also employs the private sector in investment in infrastructure (Loock, 2020).

F. Policy Consistency and Political Leadership

Consistent energy policy and intense political leadership are the decisive factors that will determine whether the energy reallocation will be sustainable. The instability in policy frameworks and uncertain political environment often discourage longer-term investment in renewable energies. Hence, it is essential that political leaders fully carry out the tasks of undertaking these challenges and build a secure and encouraging situation of investment in clean energy (W. Jiang & Martek 2021).

G. Challenges and Opportunities during the COVID-19 Pandemic

The COVID-19 pandemic has affected the global energy sector as oil prices dropped and fluctuated, coupled with decreased demand for the energy sector. However, at the same time, it brings an opening to encourage us to use energy cleanly to construct a more sustainable energy model. The immense spending of the government on the support of renewable energy and green infrastructure can be financially beneficial, not only towards creating new jobs but also stimulating sustainable economic growth (Zhang et al., 2021).

H. Integration of Renewable Energy and Community Welfare

Incorporating renewable energy in Indonesia's national energy mix can play an essential role in the economy in general, benefiting society as a whole. Indonesia can contribute to reducing oil and gas imports and developing clean, affordable, and environmentally friendly energy production by lowering its dependence on fossil fuels. This will create new jobs, increase access to energy, and reduce potential environmental impacts. Nevertheless, to meet this objective, only the government, private sector, and civil society can solve the need for partnership (Udin, 2020).

I. Community Engagement in the Energy Transition

The collective participation of society in an energy transition has to be considered the cornerstone of promoting widespread public acceptance and sustainable policy targets. Using inclusion in decision-making mechanisms, education, and information dissemination, the community members will aid and become significant catalysts in supporting green energy and clean energy practices. The latest research on the energy domain reveals that the government should consider the social aspect of the problem and find the appropriate way to ensure sustainable and inclusive energy planning (Koirala et al., 2018).

J. Investment Opportunities and International Partnerships

InternationalInternational cooperation and foreign capital inflows are intrinsic to realizing Indonesia's smooth and gradual energy transition. Indonesia can speed up renewable energy infrastructure development with financial and technical support from international financial organizations and partner countries. Energy access by the people will undoubtedly be ensured due to the renewable supply of clean energy. Nevertheless, to set the optimal ground for the nationals to reap the maximum gain, the government, private sector, and international institutions must keep on joint actions (Kennedy, 2018).

K. Progressive and Adaptive Energy Policy

Adaptive and progressive legislative and practical policy changes will be imperative to meet environmental and societal demands. With precise tracking of technological advances and overseeing specific market trends, the government can develop relevant and timely policies. Current studies indicate that the vigor and credibility of policy could be enforced through inclusive, transparent, and participatory policy principles (Katsonis, 2019).

L. Community Readiness for Change

The other vital factors, which are social acceptance of the transition and abiding by sustainability methods, are societal readiness for change and inclusion in sustainable practices. Mining communities could quickly adopt technologies through programs such as education, training, and technical assistance. Studies have confirmed that government and non-governmental organizations must refrain from playing the fundamental role they must take to ease the shift in the mentioned environment (Castells-Quintana et al., 2018).

M. Inter-Sector Collaboration for Holistic Solutions

Collaboration with the circle of parties such as the government, the private sector, civil society, and academic groups should be more present to solve the complex challenge of the energy transition. Collaborating across sectors allows for developing and implementing comprehensive, interconnected, and practical strategies to foster successful energy reforms. Scientists' latest findings underpin the necessity of reliable public-private partnerships, knowledge exchange, and cooperation on regional and international levels, as it has become evident that developing renewable energy sources and ensuring global energy access is an interconnected issue (George et al., 2024).

N. Adaptation to Future Challenges

In dealing with ever-growing and mainly evolving energy problems, the fundamental element is adaptation to change, which is crucial in achieving sustainable development goals. In a way that is oriented to innovation, flexibility, and sustainability, Indonesia is capable of overcoming future issues and using the energy transition's chances. Research in the past few years has indicated the need for strategic sector planning, risk mitigation, and energy infrastructure resilience against climate change and fast-changing markets (Charani Shandiz et al., 2020).

5. Final considerations

The challenge of energy transition is the most complex but essential thing that should be achieved to maintain Indonesia's success in attaining sustainable development goals. Through the engagement of different actors, the application of cutting-edge technology, and the implementation of multiple policies, Indonesia has a chance to achieve more efficient renewable energy implementation, and consequently, the well-being of the society can be improved. Nevertheless, to make it happen, a highly motivated political decision, practical cross-sector work, and visionary leadership are what matters most of all. As such, the energy transition is more than a necessity; it is also a vantage point for Indonesia to make tangible strides toward a more sustainable, equitable, and competitive society.

Acknowledgment

I dedicate this article to Sebelas Maret University and colleagues who have helped smoothen the running of this article.

Ethical considerations

It is not applicable since human or animal participation was absent in this research; therefore, such consent does not apply.

Conflict of Interest

The authors declare no conflicts of interest.

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4. Bukti Konfirmasi Accepted dan Hasil Review Kedua (19 Juli 2024)

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Bagus Sistriatmaja <sistriatmaja@gmail.com>

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Kepada: Muhammad Bagus Sistriatmaja <sistriatmaja@gmail.com>, Bhimo Rizky Samudro <bhimosamudro@staff.uns.ac.id>, Yogi Pasca Pratama <yogipasca@staff.uns.ac.id>, Andri Prasetyo <prasandri@yahoo.com>

Title: Powering Progress: How Energy Transition Drives Social Well-being in Indonesia

Dear Dr. Muhammad Bagus Sistriatmaja, Bhimo Rizky Samudro, Yogi Pasca Pratama, Andri Prasetyo:

Thank you for sending your manuscript to the *Multidisciplinary Reviews*. I have completed my evaluation. I am pleased to inform you that your above-mentioned article has been **Accepted for Publication** with *Minor corrections*.

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Please submit your revised article by July 26, 2024.

Best regards,

Dr. Hérica Domingos
Associate Editor
Multidisciplinary Reviews

Reviewer A:

Dear Editor,

The authors have made significant improvements to the English. I recommend that the manuscript be accepted for publication.

Recommendation: Accept Submission

Reviewer B:

Dear Editor,

The authors responded to my considerations and considerably improved the quality of the language and presentation of the manuscript. However, I still suggest two small corrections:

1. Include a section (section 4) called study limitations and challenges encountered, this may include methodological issues, data limitations, and other obstacles.

2. Include a session (section 5) called future perspectives, where authors can discuss the main results found in this literature review and suggest areas for future research based on the results obtained. This can help guide subsequent studies and show the continued relevance of the topic.

The final considerations become session 5.

3. The citations highlighted in yellow in the attached file need to be corrected.

Recommendation: **Accepted for Publication** with *Minor corrections*.

[Multidiscip. Rev.] Editor Decision

2024-07-19 12:39 PM

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5. Bukti Konfirmasi Submit Revisi Kedua, Respon kepada Reviewer, dan Artikel yang Diresubmit (19 Juli 2024)

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ENERGY TRANSITION AS A WAY TO IMPROVE THE WELFARE OF INDONESIAN SOCIETY

Muhammad Bagus Sistriatmaja[a] ✉ | **Bhimo Rizky Samudro**[a] | **Yogi Pasca Pratama**[a] | **Andri Praeetyo**[a]

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The shift towards energy is now a priority in Indonesia's efforts to promote sustainable development. With a growing recognition of the effects of climate change and the limitations of energy sources, the urgency to transition to clean and renewable energy options is on the rise. This study aims to investigate how transitioning to energy can enhance the well-being of communities. We aim to highlight critical insights by examining and thoroughly reviewing the literature. Firstly, ensuring energy practices is crucial for attaining development objectives. Energy plays a role in providing services like electricity, transportation, and household heating. Secondly, challenges related to infrastructure and energy accessibility remain hurdles in Indonesia's journey towards an energy transition. Despite advancements in energy initiatives, many remote areas still need access to electricity. Lastly, governmental intervention plays a role in steering a transition towards sustainable energy solutions. Private sector investment in renewable energy sources must be supported and directed through relatively strict policies, fiscal incentives, and regulations. Finally, the energy transition is an essential social and economic event, and appropriate policies need to be developed to promote a just transition and ensure the best outcomes for all stakeholders and society. To conclude, the energy transition in Indonesia requires a combination of government, private sector, civil society, and international stakeholder involvement. By working together across sectors, investing in renewable energy gen technology, and implementing advanced policies, Indonesia promotes transitioning to a more sustainable energy system and improving the overall welfare of society.

Keywords: Energy Transition, Community Well-being, Sustainable Development, Policy Development, Welfare Improvement

1. Introduction

The energy transition has also emerged as an essential issue in the global fight against climate change, energy security, and the need for sustainable development. Since Indonesia is a developing country with a huge population and an intensive growth rate, this topic is highly relevant to the welfare of society.

The significance of energy in driving economic and social progress cannot be understated. As Biswas et al., (2022) highlight, energy is not merely a tangible resource but also a catalyst for holistic human development. Thus, a successful shift towards sustainable energy sources has the potential to enhance overall societal welfare greatly.

The rising use of fossil fuels has resulted in higher levels of greenhouse gas emissions and air pollution, which pose risks to human health. Habib et al., (2023) suggest that solar energy, which is often underestimated, could play a crucial role in mitigating the effects of climate change. Nonetheless, economic, social, and political obstacles frequently impede the widespread adoption of renewable energy sources.

Restricted Energy Accessibility: Despite the abundance of natural resources in Indonesia, many people, particularly in rural and remote regions, still struggle to access energy. Data from the Indonesian Central Bureau of Statistics in 2020 revealed that approximately 7% of households in the country were without electricity. This highlights the necessity for an inclusive strategy in the energy transition to guarantee that all segments of society can enjoy its advantages.

Indonesia heavily depends on fossil energy, particularly oil and coal, to fulfill its energy demands. This reliance threatens a stable energy supply and exposes the country to fluctuations in global prices. Pujiati et al., (2023) highlighted that Indonesia's heavy reliance on coal exports has resulted in significant environmental and social issues, such as deforestation, land disputes, and detrimental effects on indigenous populations.

Connection to Sustainable Development Goals: The shift towards cleaner energy is focused on cutting emissions and meeting broader sustainable development objectives. This involves providing everyone access to affordable, clean, and dependable energy while generating economic prospects and enhancing social well-being. According to Syamsari et al., (2022), addressing climate change adaptation and promoting sustainable economic growth in Indonesia necessitates a comprehensive and coordinated approach.

The role of the government in promoting a sustainable energy transition is crucial. Hille & Oelker (2023) highlight that governments can play a significant role in spurring investment and innovation in renewable energy through clear and consistent energy policies. Nevertheless, challenges such as governance complexity, frequent policy changes, and opposition from various stakeholders can hinder the effective implementation of coordinated energy policies.

For the energy transition to be successful, it is essential to involve various stakeholders such as the government, private sector, civil society, and academia. Virta & Malmelin (2022) collaboration across sectors and public engagement can lead to more innovative and accepted solutions. Ongoing management of conflicts of interest and capacity building are necessary for achieving consensus and practical cooperation.

Technical and Technological Obstacles: Despite significant advancements in renewable energy technology, there are still obstacles to overcome, such as the availability of dependable technology, cost competitiveness, and necessary infrastructure. Prokopenko et al., (2023) emphasize that investing in research and development and technology transfer is crucial in accelerating the integration of renewable energy technologies.

The economic considerations of the energy transition are significant. Schramski et al., (2020) argue that conducting a thorough cost-benefit analysis is crucial for assessing the future economic impact of different energy policy choices. Addressing funding and investment challenges is essential for successfully supporting a sustainable energy transition.

Educating the public and raising awareness about the advantages and significance of transitioning to renewable energy is crucial. According to Lucas et al. (2021), implementing education initiatives and informational campaigns can boost public engagement and backing for sustainable energy options. This involves educating individuals on energy-saving practices, adopting eco-friendly technologies, and promoting sustainable energy measures.

The energy sector worldwide, including in Indonesia, has been dramatically affected by the COVID-19 pandemic. Restrictions on movement, decreased economic activity, and shifts in energy consumption have all contributed to significant changes in the energy industry. Jiang et al., (2021) have pointed out that the pandemic has created a chance to speed the transition to a more sustainable energy model, emphasizing the importance of clean energy and decreasing reliance on fossil fuels.

The switch to renewable energy in Indonesia has significant social and economic consequences. Raza et al., (2019) Climate change can disrupt rainfall, cause drought, and lead to sea level rise, all of which directly affect agriculture, food security, and the daily lives of Indonesians. Therefore, developing effective strategies to mitigate and adapt to these challenges is crucial.

The involvement of the private sector and foreign investment plays a crucial role in driving the energy transition in Indonesia. According to Smirnova et al., (2021), working together with the government and international financial institutions can speed up the growth of renewable energy infrastructure and improve access to clean and affordable energy for the population.

The energy transition in Indonesia is connected to the global agenda, specifically in meeting greenhouse gas

emission goals outlined in the Paris Agreement. Widya Yudha & Tjahjono (2019) emphasized that the Indonesian government must take practical actions to decrease emissions, such as implementing policies to improve energy efficiency and promoting renewable energy sources in the country's energy supply.

Innovation and the advancement of new technology are crucial components in driving the energy transition in Indonesia. Fadly (2019) highlighted the importance of investing in research and development of renewable energy technologies such as solar, wind, and biomass to create opportunities for reducing reliance on fossil fuels and improving access to clean and cost-effective energy sources.

Community Engagement and Education: It is crucial to raise awareness among the public about the significance of transitioning to renewable energy sources. Fobissie (2019) suggests that providing education and running information campaigns can encourage greater public involvement and backing for renewable energy initiatives. Teaching about energy efficiency, eco-friendly technologies, and sustainable energy strategies can significantly influence people's behaviors and decisions.

Maintaining policy consistency and effective governance is crucial in fostering an environment that encourages investment in renewable energy. Lin & Chen (2019) emphasize that stable and transparent government policies are pivotal in boosting investment and fostering innovation in renewable energy. Ensuring continuity and predictability in energy policies can instill confidence in market participants and expedite the shift toward clean energy.

2. Materials and Methods

The study uses a qualitative approach and employs an extensive literature review to understand the subject better. This technique will allow us to aggregate and pull data from relevant sources to be comprehensively informed on energy transition.

Literature will be searched extensively using keywords suitably associated with the research theme. My sources of information will include scientific journals, government reports, policy documents, and other valuable pieces of writing.

The analysis will consist of discovering, reading, and comprehending literature on energy transition and then updating, identifying patterns, trends, and key findings in the literature and comparing and synthesizing information from various sources to gain a clear picture of the impact of energy transition on welfare.

3. Results and Discussion

A. Education and Public Awareness

Elevating focus amongst most people about the importance of transitioning to sustainable strength is vital for reaching sustainable development objectives. Tasks, which include instructional packages and public information campaigns, were a hit in selling knowledge about renewable energy and power conservation. The latest research suggests that incorporating schooling on renewable energy into faculty curriculums and offering process education centered on accessible strength technologies can contribute to the improvement of a talented and versatile group of workers throughout the energy transition duration (Xi & Su 2021).

B. The Role of Technology in the Energy Transition

Fossil energy is faced with the challenge of renewable energy technology development that progresses very fast, which can virtually overwhelm it and thus reduce greenhouse effects. The latest breakthroughs in energy-storing technology, in solar panels, wind power turbines, and electric cars, have produced profound changes in the global energy landscape. Nonetheless, this hurdle is integrating the system into our infrastructure and making it accessible to the people extends the problem. The next genre of studies has shown that we need more attention to scientific progress and the deployment of renewable energy technologies and modern intelligent grid infrastructure to ensure a smooth shift to renewable energy (Kabeyi & Olanrewaju 2022).

C. Government Engagement in Supporting the Energy Transition

The state has a significant task laying the foundation for investment in renewable energy. Logical, obvious, and concerted policies are needed to serve as a guide and motivating force to the private sector. However, the government's role in providing financing instruments and technology renewal must be successful. According to new research, fiscal policies, including favorable fixed-feed-tariffs as well as tax breaks, are pushing direct investments in the renewable-energy industry and stimulating the building up of new clean-energy-based projects (Polzin et al., 2019).

D. Social and Economic Implications of the Energy Transition

Energy transition's social and economic impacts are diverse as they shift in employment patterns, income distribution, and society's overall well-being. While the energy transition can create new jobs in the renewable energy sector, the question of respective implications in job creation in the conventional energy industry has to be considered. Recent researches focus on the necessity of fair and eco-friendly policies to sustain the affected workers and the less privileged communities as the transition progresses (McCauley et al., 2019).

E. Infrastructure and Energy Access Challenges

Even though some advancements have already been made in bringing electricity to Indonesia, a big part of the community still needs an electric grid that guarantees access to power. Policy challenges, such as expensive technologies, sensitivity to natural disasters, and political uncertainty, are among the significant issues of energy infrastructure. In addition, new technologies, such as microgrids and decentralized distribution systems, showed opportunities to improve energy access to far-off areas. In addition, the most recent research estimates that an implication of adopting advanced business methods like solar panel leasing and performance-based remuneration is that it also employs the private sector in investment in infrastructure (Loock, 2020).

F. Policy Consistency and Political Leadership

Consistent energy policy and intense political leadership are the decisive factors that will determine whether the energy reallocation will be sustainable. The instability in policy frameworks and uncertain political environment often discourage longer-term investment in renewable energies. Hence, it is essential that political leaders fully carry out the tasks of undertaking these challenges and build a secure and encouraging situation of investment in clean energy (W. Jiang & Martek 2021).

G. Challenges and Opportunities during the COVID-19 Pandemic

The COVID-19 pandemic has affected the global energy sector as oil prices dropped and fluctuated, coupled with decreased demand for the energy sector. However, at the same time, it brings an opening to encourage us to use energy cleanly to construct a more sustainable energy model. The immense spending of the government on the support of renewable energy and green infrastructure can be financially beneficial, not only towards creating new jobs but also stimulating sustainable economic growth (Zhang et al., 2021).

H. Integration of Renewable Energy and Community Welfare

Incorporating renewable energy in Indonesia's national energy mix can play an essential role in the economy in general, benefiting society as a whole. Indonesia can contribute to reducing oil and gas imports and developing clean, affordable, and environmentally friendly energy production by lowering its dependence on fossil fuels. This will create new jobs, increase access to energy, and reduce potential environmental impacts. Nevertheless, to meet this objective, only the government, private sector, and civil society can solve the need for partnership (Udin, 2020).

I. Community Engagement in the Energy Transition

The collective participation of society in an energy transition has to be considered the cornerstone of promoting widespread public acceptance and sustainable policy targets. Using inclusion in decision-making mechanisms, education, and information dissemination, the community members will aid and become significant catalysts in supporting green energy and clean energy practices. The latest research on the energy domain reveals that the government should consider the social aspect of the problem and find the appropriate way to ensure sustainable and inclusive energy planning (Koirala et al., 2018).

J. Investment Opportunities and International Partnerships

InternationalInternational cooperation and foreign capital inflows are intrinsic to realizing Indonesia's smooth and gradual energy transition. Indonesia can speed up renewable energy infrastructure development with financial and technical support from international financial organizations and partner countries. Energy access by the people will undoubtedly be ensured due to the renewable supply of clean energy. Nevertheless, to set the optimal ground for the nationals to reap the maximum gain, the government, private sector, and international institutions must keep on joint actions (Kennedy, 2018).

K. Progressive and Adaptive Energy Policy

Adaptive and progressive legislative and practical policy changes will be imperative to meet environmental and societal demands. With precise tracking of technological advances and overseeing specific market trends, the government can develop relevant and timely policies. Current studies indicate that the vigor and credibility of policy could be enforced through inclusive, transparent, and participatory policy principles (Katsonis, 2019).

L. Community Readiness for Change

The other vital factors, which are social acceptance of the transition and abiding by sustainability methods, are societal readiness for change and inclusion in sustainable practices. Mining communities could quickly adopt technologies through programs such as education, training, and technical assistance. Studies have confirmed that government and non-governmental organizations must refrain from playing the fundamental role they must take to ease the shift in the mentioned environment (Castells-Quintana et al., 2018).

M. Inter-Sector Collaboration for Holistic Solutions

Collaboration with the circle of parties such as the government, the private sector, civil society, and academic groups should be more present to solve the complex challenge of the energy transition. Collaborating across sectors allows for developing and implementing comprehensive, interconnected, and practical strategies to foster successful energy reforms. Scientists' latest findings underpin the necessity of reliable public-private partnerships, knowledge exchange, and cooperation on regional and international levels, as it has become evident that developing renewable energy sources and ensuring global energy access is an interconnected issue (George et al., 2024).

N. Adaptation to Future Challenges

In dealing with ever-growing and mainly evolving energy problems, the fundamental element is adaptation to change, which is crucial in achieving sustainable development goals. In a way that is oriented to innovation, flexibility, and sustainability, Indonesia is capable of overcoming future issues and using the energy transition's chances. Research in the past few years has indicated the need for strategic sector planning, risk mitigation, and energy infrastructure resilience against climate change and fast-changing markets (Charani Shandiz et al., 2020).

5. Final considerations

The challenge of energy transition is the most complex but essential thing that should be achieved to maintain Indonesia's success in attaining sustainable development goals. Through the engagement of different actors, the application of cutting-edge technology, and the implementation of multiple policies, Indonesia has a chance to achieve more efficient renewable energy implementation, and consequently, the well-being of the society can be improved. Nevertheless, to make it happen, a highly motivated political decision, practical cross-sector work, and visionary leadership are what matters most of all. As such, the energy transition is more than a necessity; it is also a vantage point for Indonesia to make tangible strides toward a more sustainable, equitable, and competitive society.

Acknowledgment

I dedicate this article to Sebelas Maret University and colleagues who have helped smoothen the running of this article.

Ethical considerations

It is not applicable since human or animal participation was absent in this research; therefore, such consent does not apply.

Conflict of Interest

The authors declare no conflicts of interest.

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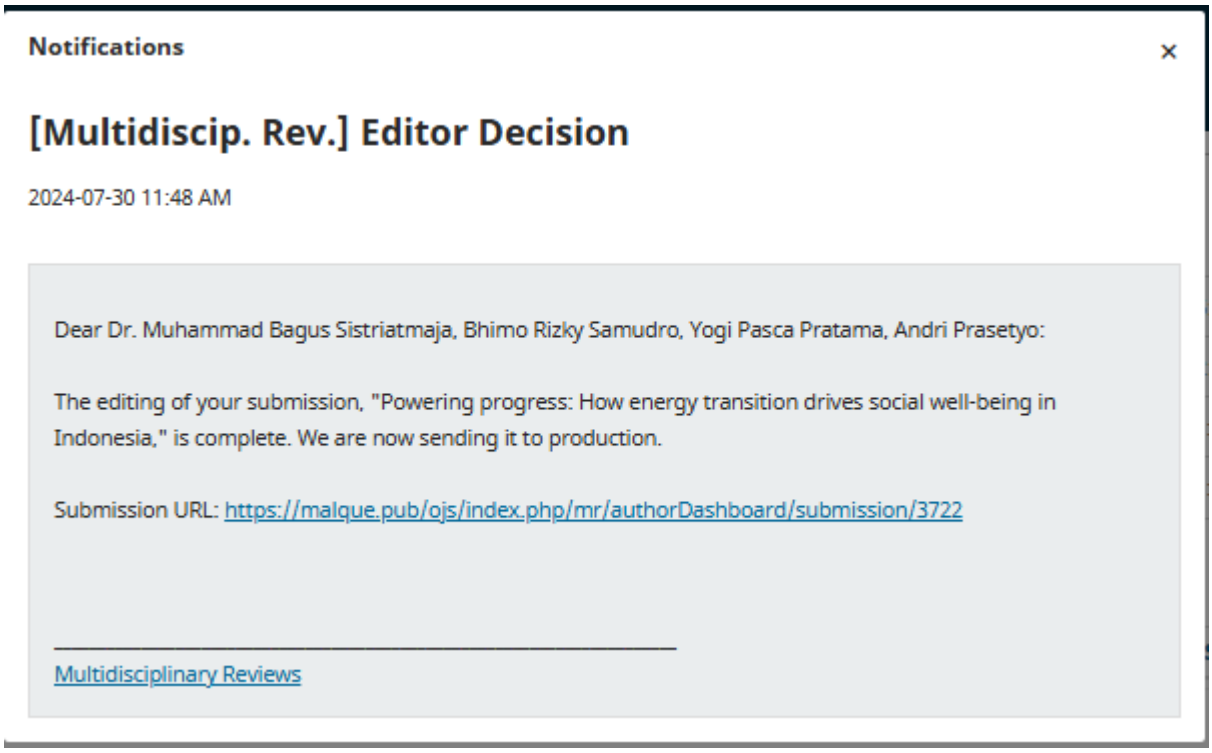
6. Bukti konfirmasi masuk dalam produksi (20 Juli 2024)



Notifications

[Multidiscip. Rev.] Editor Decision

2024-07-30 11:48 AM

Dear Dr. Muhammad Bagus Sistriatmaja, Bhimo Rizky Samudro, Yogi Pasca Pratama, Andri Prasetyo:

The editing of your submission, "Powering progress: How energy transition drives social well-being in Indonesia," is complete. We are now sending it to production.

Submission URL: https://malque.pub/ojs/index.php/mr/authorDashboard/submission/3722

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[Multidiscip. Rev.] Editor Decision

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Kepada: Muhammad Bagus Sistriatmaja <sistriatmaja@gmail.com>, Bhimo Rizky Samudro <bhimosamudro@staff.uns.ac.id>, Yogi Pasca Pratama <yogipasca@staff.uns.ac.id>, Andri Prasetyo <prasandri@yahoo.com>

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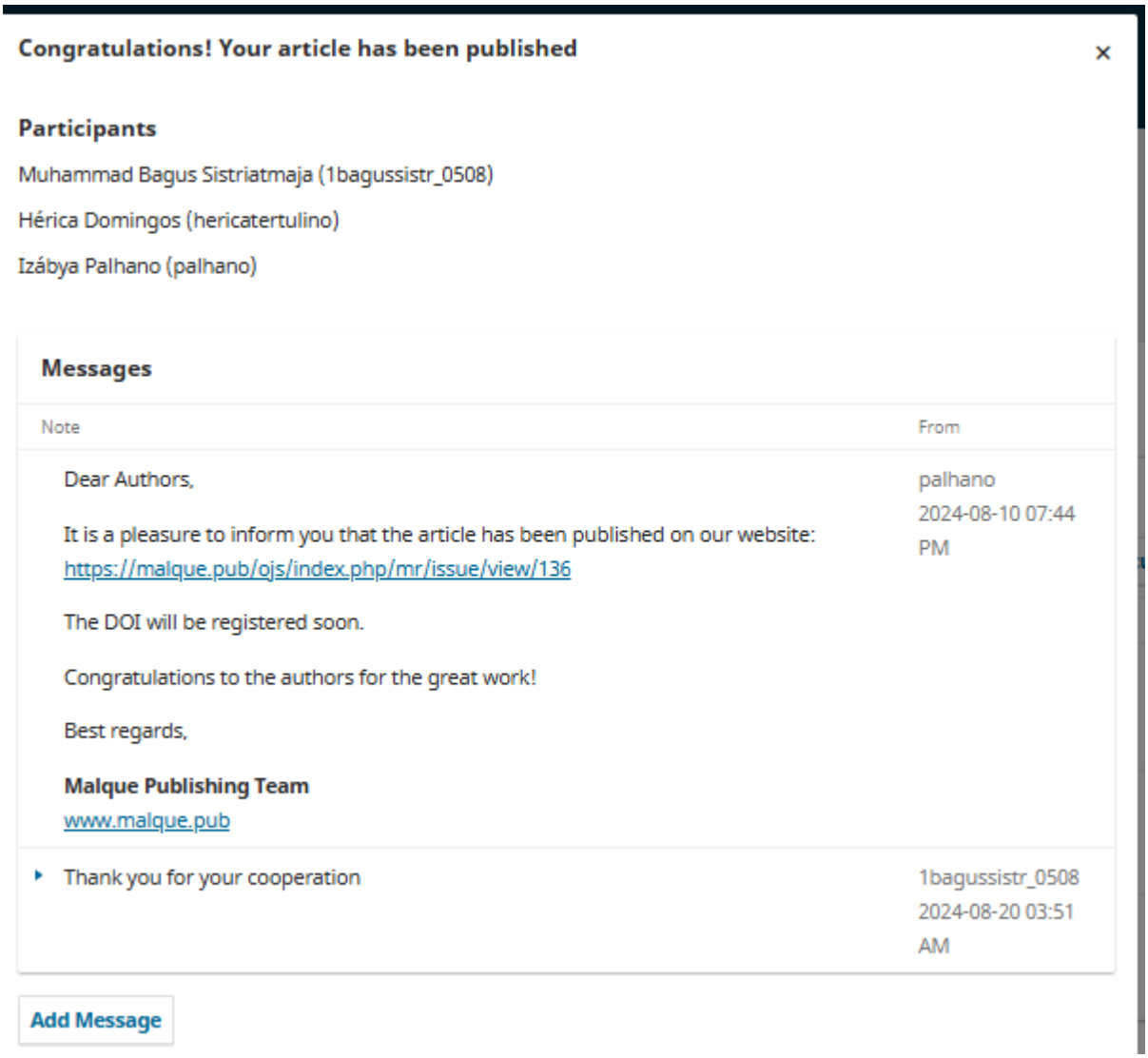

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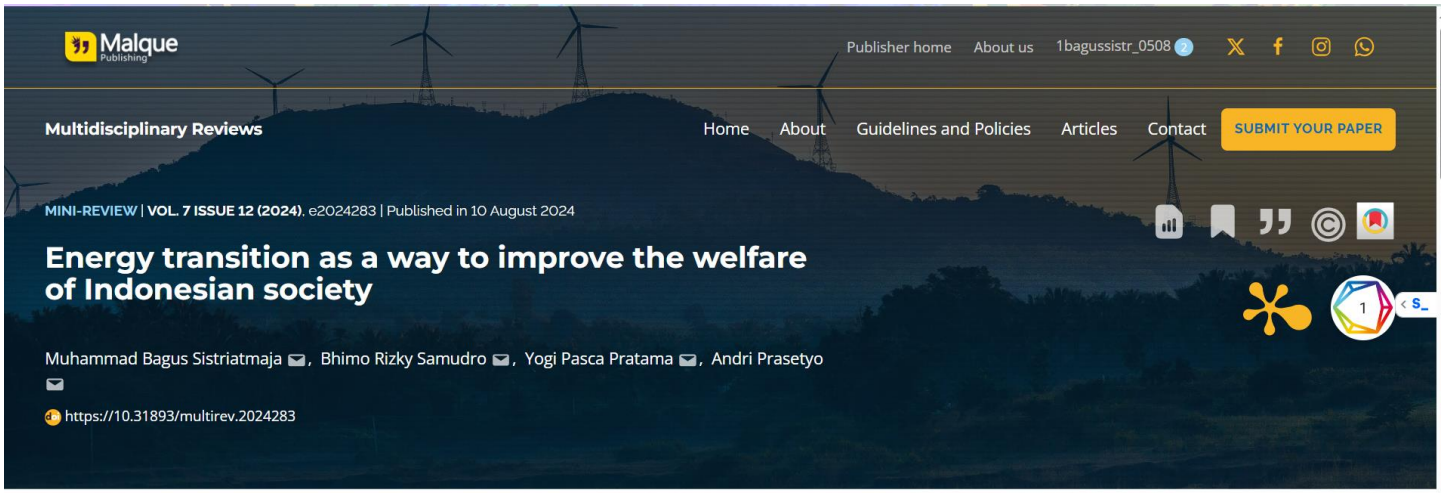

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Energy transition as a way to improve the welfare of Indonesian society

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Abstract The shift toward energy is now a priority in Indonesia's efforts to promote sustainable development. With a growing recognition of the effects of climate change and the limitations of energy sources, the urgency to transition to clean and renewable energy options is on the rise. This study aims to investigate how transitioning to energy can enhance the well-being of communities. We aim to highlight critical insights by examining and thoroughly reviewing the literature. Firstly, ensuring energy practices is crucial for attaining development objectives. Energy plays a role in providing services like electricity, transportation, and household heating. Secondly, challenges related to infrastructure and energy accessibility remain hurdles in Indonesia's journey towards an energy transition. Despite advancements in energy initiatives, many remote areas still need access to electricity. Lastly, governmental intervention plays a role in steering a transition towards sustainable energy solutions. Private sector investment in renewable energy sources must be supported and directed through relatively strict policies, fiscal incentives, and regulations. Finally, the energy transition is an essential social and economic event, and appropriate policies need to be developed to promote a just transition and ensure the best outcomes for all stakeholders and society. To conclude, the energy transition in Indonesia requires a combination of government, private sector, civil society, and international stakeholder involvement. By working together across sectors, investing in renewable energy gen technology, and implementing advanced policies, Indonesia promotes transitioning to a more sustainable energy system and improving the overall welfare of society.

Keywords: energy transition, community well-being, sustainable development, policy development, welfare improvement

1. Introduction

The energy transition has also emerged as an essential issue in the global fight against climate change, energy security, and the need for sustainable development. Since Indonesia is a developing country with a huge population and an intensive growth rate, this topic is highly relevant to the welfare of society.

The significance of energy in driving economic and social progress cannot be understated. As Biswas et al., (2022) highlight, energy is not merely a tangible resource but also a catalyst for holistic human development. Thus, a successful shift towards sustainable energy sources has the potential to enhance overall societal welfare greatly.

The rising use of fossil fuels has resulted in higher levels of greenhouse gas emissions and air pollution, which pose risks to human health. Habib et al., (2023) suggest that solar energy, which is often underestimated, could play a crucial role in mitigating the effects of climate change. Nonetheless, economic, social, and political obstacles frequently impede the widespread adoption of renewable energy sources.

Restricted Energy Accessibility: Despite the abundance of natural resources in Indonesia, many people, particularly in rural and remote regions, still struggle to access energy. Data from the Indonesian Central Bureau of Statistics in 2020 revealed that approximately 7% of households in the country were without electricity. This highlights the necessity for an inclusive strategy in the energy transition to guarantee that all segments of society can enjoy its advantages.

Indonesia heavily depends on fossil energy, particularly oil and coal, to fulfill its energy demands. This reliance threatens a stable energy supply and exposes the country to fluctuations in global prices. Pujiati et al., (2023) highlighted that Indonesia's heavy reliance on coal exports has resulted in significant environmental and social issues, such as deforestation, land disputes, and detrimental effects on indigenous populations.

Connection to Sustainable Development Goals: The shift towards cleaner energy is focused on cutting emissions and meeting broader sustainable development objectives. This involves providing everyone access to affordable, clean, and dependable energy while generating economic prospects and enhancing social well-being. According to Syamsari et al., (2022), addressing climate change adaptation and promoting sustainable economic growth in Indonesia necessitates a comprehensive and coordinated approach.

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The role of the government in promoting a sustainable energy transition is crucial. Hille & Oelker (2023) highlight that governments can play a significant role in spurring investment and innovation in renewable energy through clear and consistent energy policies. Nevertheless, challenges such as governance complexity, frequent policy changes, and opposition from various stakeholders can hinder the effective implementation of coordinated energy policies.

For the energy transition to be successful, it is essential to involve various stakeholders such as the government, private sector, civil society, and academia. Virta & Malmelin (2022) collaboration across sectors and public engagement can lead to more innovative and accepted solutions. Ongoing management of conflicts of interest and capacity building are necessary for achieving consensus and practical cooperation.

Technical and Technological Obstacles: Despite significant advancements in renewable energy technology, there are still obstacles to overcome, such as the availability of dependable technology, cost competitiveness, and necessary infrastructure. Prokopenko et al., (20 emphasize that investing in research and development and technology transfer is crucial in accelerating the integration of renewable energy technologies.

The economic considerations of the energy transition are significant. Schramski et al., (2020) argue that conducting a thorough cost-benefit analysis is crucial for assessing the future economic impact of different energy policy choices. Addressing funding and investment challenges is essential for successfully supporting a sustainable energy transition.

Educating the public and raising awareness about the advantages and significance of transitioning to renewable energy is crucial. According to Lucas et al. (2021), implementing education initiatives and informational campaigns can boost public engagement and backing for sustainable energy options. This involves educating individuals on energy-saving practices, adopting eco-friendly technologies, and promoting sustainable energy measures.

The energy sector worldwide, including in Indonesia, has been dramatically affected by the COVID-19 pandemic. Restrictions on movement, decreased economic activity, and shifts in energy consumption have all contributed to significa changes in the energy industry. Jiang et al., (2021) have pointed out that the pandemic has created a cha to speed the transition to a more sustainable energy model, emphasizing the importance of clean energy and decreasing reliance on fossil fuels.

The switch to renewable energy in Indonesia has significant social and economic consequences. Raza et al., (2019) Climate change can disrupt rainfall, cause drought, and lead to sea level rise, all of which directly affect agriculture, food security, and the daily lives of Indonesians. Therefore, developing effective strategies to mitigate and adapt to these challenges is crucial.

The involvement of the private sector and foreign investment plays a crucial role in driving the energy transition in Indonesia. According to Smirn et al., (2021), working together with the government and international financial institutions can speed up the growth of renewable energy infrastructure and improve access to clean and affordable energy for the population.

The energy transition in Indonesia is connected to the global agenda, specifically in meeting greenhouse gas emission goals outlined in the Paris Agreement. Widya Yudha & Tjahjono (2019) phasized that the Indonesian government must take practical actions to decrease emissions, such as implementing policies to improve energy efficiency and promoting renewable energy sources in the country's energy supply.

Innovation and the advancement of new technology are crucial components in driving the energy transition in Indonesia. Fadly (2019) highlighted the importance of investing in research and development of renewable energy technologies such as solar, wind, and biomass to create opportunities for reducing reliance on fossil fuels and improving access to clean and cost-effective energy sources.

Community Engagement and Education: It is crucial to raise awareness among the public about the significance of transitioning to renewable energy sources. Fobissie (2019) suggests that providing education and running information campaigns can encourage greater public involvement and backing for renewable energy initiatives. Teaching about energy efficiency, eco-friendly technologies, and sustainable energy strategies can significantly influence people's behaviors and decisions.

Maintaining policy consistency and effective governance is crucial in fostering an environment that encourages investment in renewable energy. Lin & Chen (2019) emphasize that stable and transparent government policies are pivotal in boosting investment and fostering innovation in renewable energy. Ensuring continuity and predictability in energy policies can instill confidence in market participants and expedite the shift toward clean energy.

2. Materials and Methods

The study uses a qualitative approach and employs an extensive literature review to understand the subject better. This technique will allow us to aggregate and pull data from relevant sources to be comprehensively informed on energy transition.

Literature will be searched extensively using keywords suitably associated with the research theme. My sources of information will include scientific journals, government reports, policy documents, and other valuable pieces of writing.

The analysis will consist of discovering, reading, and comprehending literature on energy transition and then updating, identifying patterns, trends, and key findings in the literature and comparing and synthesizing information from various sources to gain a clear picture of the impact of energy transition on welfare.

3. Results and Discussion

3.1. Education and public awareness

Elevating focus amongst most people about the importance of transitioning to sustainable strength is vital for reaching sustainable development objectives. Tasks, which include instructional packages and public information campaigns, were a hit in selling knowledge about renewable energy and power conservation. The latest research suggests that incorporating schooling on renewable energy into faculty curriculums and offering process education centered on accessible strength technologies can contribute to the improvement of a talented and versatile group of workers throughout the energy transition duration (Xi & Su 2021).

3.2. The role of technology in the energy transition

Fossil energy is faced with the challenge of renewable energy technology development that progresses very fast, which can virtually overwhelm it and thus reduce greenhouse effects. The latest breakthroughs in energy-storing technology, in solar panels, wind power turbines, and electric cars, have produced profound changes in the global energy landscape. Nonetheless, this hurdle is integrating the system into our infrastructure and making it accessible to the people extends the problem. The next genre of studies has shown that we need more attention to scientific progress and the deployment of renewable energy technologies and modern intelligent grid infrastructure to ensure a smooth shift to renewable energy (Kabeyi & Olanrewaju 2022).

3.3. Government engagement in supporting the energy transition

The state has a significant task laying the foundation for investment in renewable energy. Logical, obvious, and concerted policies are needed to serve as a guide and motivating force to the private sector. However, the government's role in providing financing instruments and technology renewal must be successful. According to new research, fiscal policies, including favorable fixed-feed-tariffs as well as tax breaks, are pushing direct investments in the renewable-energy industry and stimulating the building up of new clean-energy-based projects (Polzin et al., 2019).

3.4. Social and economic implications of the energy transition

Energy transition's social and economic impacts are diverse as they shift in employment patterns, income distribution, and society's overall well-being. While the energy transition can create new jobs in the renewable energy sector, the question of respective implications in job creation in the conventional energy industry has to be considered. Recent researches focus on the necessity of fair and eco-friendly policies to sustain the affected workers and the less privileged communities as the transition progresses (McCauley et al., 2019).

3.5. Infrastructure and energy access challenges

Even though some advancements have already been made in bringing electricity to Indonesia, a big part of the community still needs an electric grid that guarantees access to power. Policy challenges, such as expensive technologies, sensitivity to natural disasters, and political uncertainty, are among the significant issues of energy infrastructure. In addition, new technologies, such as microgrids and decentralized distribution systems, showed opportunities to improve energy access to far-off areas. In addition, the most recent research estimates that an implication of adopting advanced business methods like solar panel leasing and performance-based remuneration is that it also employs the private sector in investment in infrastructure (Loock, 2020).

3.6. Policy consistency and political leadership

Consistent energy policy and intense political leadership are the decisive factors that will determine whether the energy reallocation will be sustainable. The instability in policy frameworks and uncertain political environment often discourage longer-term investment in renewable energies. Hence, it is essential that political leaders fully carry out the tasks of undertaking these challenges and build a secure and encouraging situation of investment in clean energy (W. Jiang & Martek 2021).

3.7. Challenges and opportunities during the covid-19 pandemic

The COVID-19 pandemic has affected the global energy sector as oil prices dropped and fluctuated, coupled with decreased demand for the energy sector. However, at the same time, it brings an opening to encourage us to use energy cleanly to construct a more sustainable energy model. The immense spending of the government on the support of renewable energy and green infrastructure can be financially beneficial, not only towards creating new jobs but also stimulating sustainable economic growth (Zhang et al., 2021).

3.8. Integration of renewable energy and community welfare

Incorporating renewable energy in Indonesia's national energy mix can play an essential role in the economy in general, benefiting society as a whole. Indonesia can contribute to reducing oil and gas imports and developing clean, affordable, and environmentally friendly energy production by lowering its dependence on fossil fuels. This will create new jobs, increase access to energy, and reduce potential environmental impacts. Nevertheless, to meet this objective, only the government, private sector, and civil society can solve the need for partnership (Udin, 2020).

3.9. Community engagement in the energy transition

The collective participation of society in an energy transition has to be considered the cornerstone of promoting widespread public acceptance and sustainable policy targets. Using inclusion in decision-making mechanisms, education, and information dissemination, the community members will aid and become significant catalysts in supporting green energy and clean energy practices. The latest research on the energy domain reveals that the government should consider the social aspect of the problem and find the appropriate way to ensure sustainable and inclusive energy planning (Koirala et al., 2018).

3.10. Investment opportunities and international partnerships

InternationalInternational cooperation and foreign capital inflows are intrinsic to realizing Indonesia's smooth and gradual energy transition. Indonesia can speed up renewable energy infrastructure development with financial and technical support from international financial organizations and partner countries. Energy access by the people will undoubtedly be ensured due to the renewable supply of clean energy. Nevertheless, to set the optimal ground for the nationals to reap the maximum gain, the government, private sector, and international institutions must keep on joint actions (Kennedy, 2018).

3.11. Progressive and adaptive energy policy

Adaptive and progressive legislative and practical policy changes will be imperative to meet environmental and societal demands. With precise tracking of technological advances and overseeing specific market trends, the government can develop relevant and timely policies. Current studies indicate that the vigor and credibility of policy could be enforced through inclusive, transparent, and participatory policy principles (Katsonis, 2019).

3.12. Community readiness for change

The other vital factors, which are social acceptance of the transition and abiding by sustainability methods, are societal readiness for change and inclusion in sustainable practices. Mining communities could quickly adopt technologies through programs such as education, training, and technical assistance. Studies have confirmed that government and non-governmental organizations must refrain from playing the fundamental role they must take to ease the shift in the mentioned environment (Castells-Quintana et al., 2018).

3.13. Inter-sector collaboration for holistic solutions

Collaboration with the circle of parties such as the government, the private sector, civil society, and academic groups should be more present to solve the complex challenge of the energy transition. Collaborating across sectors allows for developing and implementing comprehensive, interconnected, and practical strategies to foster successful energy reforms. Scientists' latest findings underpin the necessity of reliable public-private partnerships, knowledge exchange, and cooperation on regional and international levels, as it has become evident that developing renewable energy sources and ensuring global energy access is an interconnected issue (George et al., 2024).

3.14. Adaptation to future challenges

In dealing with ever-growing and mainly evolving energy problems, the fundamental element is adaptation to change, which is crucial in achieving sustainable development goals. In a way that is oriented to innovation, flexibility, and sustainability, Indonesia is capable of overcoming future issues and using the energy transition's chances. Research in the past few years has indicated the need for strategic sector planning, risk mitigation, and energy infrastructure resilience against climate change and fast-changing markets (Charani Shandiz et al., 2020).

4. Study Limitation

A. Limitations of Empirical Data: This study relies heavily on secondary literature and available literature reviews. Limitations in access to primary data and direct case studies from the field may affect the depth of the analysis presented. In addition, the data used may not fully reflect current conditions or recent changes in the energy sector.
B. Limitations of Regional Context: Although this study focuses on the Indonesian context, most of the literature reviewed covers global studies or from other countries that may have different social, economic, and policy conditions. This may limit the relevance and applicability of the findings to the specific local context of Indonesia.
C. Measurement of Social Impact: Measurement of the social impact of the energy transition is often qualitative and difficult to measure quantitatively. This study faces limitations in measuring social impacts comprehensively and objectively, especially related to changes in community welfare and quality of life.
D. Limited Literature: Some specific aspects of the energy transition, such as impacts on certain community groups or specific regions, may be underrepresented in the available literature. This may limit a comprehensive understanding of all aspects of the energy transition.

5. Future Perspective

Energy transition is a complex and evolving topic, offering a range of opportunities and challenges that require further research to comprehensively understand its impacts. Based on the results of this literature review, there are several key areas for future research to consider:

5.1. Deeper empirical research

Future studies should focus on deeper primary data collection through field surveys, interviews, and local case studies. This will provide a better understanding of how the energy transition directly impacts local communities and economies in Indonesia. Empirical data collection can help fill gaps in the literature that currently relies heavily on secondary sources.

5.2. Local energy policy analysis

Further research is needed to explore energy policies at the local and regional levels. Given the variability of energy policies across Indonesia, studies that focus on specific policies and their implementation can provide insights into best practices and barriers faced in the energy transition. Evaluation of local energy policies can help in formulating more effective and contextualized strategies.

5.3. Social impacts on vulnerable groups

While the energy transition brings many benefits, there is an urgent need to understand its impacts on vulnerable groups, such as indigenous peoples, conventional energy workers, and rural communities. Future research should focus on how the energy transition affects the well-being of these groups and how policies can be designed to ensure inclusiveness and social equity.

5.4. Renewable energy technologies and innovations

Future studies should continue to explore technological developments and innovations in the renewable energy sector. In-depth research on technology efficiency, costs, and adoption at different scales can provide important insights into how to accelerate the energy transition. In addition, analysis of the potential of new technologies, such as hydrogen and energy storage, is also needed.

5.5. Energy economics and investment

Economic analysis and investment models in the renewable energy sector are important areas for further research. Studies on how to finance renewable energy projects, reduce investment risks, and increase private sector participation can help drive the growth of the sector. Research should also consider the long-term economic impacts and how the energy transition can be integrated with national economic development strategies.

5.6. Community participation and empowerment

Research on community participation and empowerment strategies in the energy transition is essential. Exploring how communities can be involved in decision-making processes, design renewable energy projects, and gain economic benefits from the energy transition will help ensure that the energy transition is inclusive and sustainable.

5.7. Environmental impacts and sustainability

Future research should continue to assess the environmental impacts of the energy transition, including carbon emission reductions, waste management, and impacts on local ecosystems. Studying how to achieve environmental sustainability at scale will be key to ensuring that the energy transition not only addresses climate change but also protects biodiversity and natural resources.

6. Final Considerations

The challenge of energy transition is the most complex but essential thing that should be achieved to maintain Indonesia's success in attaining sustainable development goals. Through the engagement of different actors, the application of cutting-edge technology, and the implementation of multiple policies, Indonesia has a chance to achieve more efficient renewable energy implementation, and consequently, the well-being of the society can be improved. Nevertheless, to make it happen, a highly motivated political decision, practical cross-sector work, and visionary leadership are what matters most of all. As such, the energy transition is more than a necessity; it is also a vantage point for Indonesia to make tangible strides toward a more sustainable, equitable, and competitive society.

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Ethical considerations

It is not applicable since human or animal participation was absent in this research; therefore, such consent does not apply.

Conflict of Interest

The authors declare no conflicts of interest.

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