

ASEAN RE-gender roadmap: roadmap on accelerating ASEAN renewable energy deployment through gender-responsive energy policy.

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ASEAN RE-Gender Roadmap

Roadmap on Accelerating ASEAN Renewable Energy Deployment through Gender-Responsive Energy Policy

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Executive Summary

The role of the energy-gender nexus in the acceleration of renewable energy deployment in ASEAN remains underexplored. Current gender disparities severely impede the enhancement of women's roles and opportunities in the renewable energy sector, and hinder women's contributions to the energy transition. The gap between male and female labour force participation rates in ASEAN is quite significant. In 2020, ASEAN's labour force participation rate was 82% for the total male population (333.2 million) and 67% for the total female population (334 million).

In addition to bringing attention to gendered issues and solutions at the renewable energy (RE) policy level, ASEAN is also attempting to support the achievement of its RE targets listed in the ASEAN Plan of Action on Energy Cooperation (APAEC) Phase II: 2021-2025 and to realise an inclusive and just energy transition as agreed at the 39th ASEAN Ministers on Energy Meeting (AMEM) Joint Ministerial Statement in 2021. These policies are also aligned with the 1988 ASEAN Declaration on Women's Advancement and supporting policies among others, such as the ASEAN Declaration on Gender-Responsive Implementation and the ASEAN Gender Mainstreaming Strategic Framework 2021-2025.

Hence, ASEAN is developing this regional roadmap in order to incorporate a gender-responsive approach specifically relating to RE policymakers. There are several identified challenges: limited data and awareness about the connection between RE and gender which hinders a science-based approach to solve the issue; low job availability and uncondusive social environments which are generally gender blind; educational, social and cultural norms that are not supportive; and limited access to finance.

Thus, this roadmap aims to chart a pathway which weaves women's potential contributions into ASEAN's emerging renewables market, creating a positive snowball effect which promotes gender equity, accelerates climate mitigation efforts and bolsters RE investments.

To develop the roadmap, the ASEAN Centre for Energy (ACE) organised two workshops with two different topics, namely, gender in the RE sector in general, and women entrepreneurship in the RE sector. A focus group discussion was also held to understand the current challenges and opportunities in developing the "Accelerating ASEAN Renewable Energy Deployment through Gender-Responsive Energy Policy Roadmap" or ASEAN RE-Gender Roadmap.

The Roadmap consists of four phases aimed at facilitating gender integration in RE policy development and implementation:

1) Raising awareness and developing a database on gender in the RE sector

1.1. Gender Awareness in ASEAN's RE Sector

- 1.1.1 Build partnerships with various institutions and establish nodal networks in ASEAN for women in the RE sector
- 1.1.2 Organise a workshop pertaining to gender inclusivity in the RE sector.

1.2. Gender in RE Database

Mandate the ASEAN RE Information and Training Centre to add gender inclusivity in the RE database by:

- 1.2.1 Developing gender inclusivity in the RE database system and mechanism
- 1.2.2 Conducting monitoring and evaluation of the database for continuous improvement
- 1.2.3 Analysing the gender gaps in RE business.

(2) Gender integration in policy design

2.1 Gender-Responsive RE Policy

Incorporate the following policy design processes for ASEAN's RE Long-term Roadmap

- 2.1.1 Identify the absence and policy support needed by the AMS to incorporate gender-responsive RE policy
- 2.1.2 Propose gender-responsive RE policy or whenever possible revise existing RE policy and include gender inclusivity components into the policy
- 2.1.3 Conduct enabling capacity building needed and supporting programmes that involve women in developing RE projects.

2.2 Gender-Responsive Budget and Financial Framework

Incorporate the following activities for the development of a Gender-Responsive Budget and Financial Framework to ASEAN's RE Long Term Roadmap

- 2.2.1 Suggest tailored financing guidelines to enable financial access for women-led RE business e.g., develop dedicated credit lines or other enabling financial schemes.

(3) Monitoring and evaluation framework development

3.1 Develop Monitoring and Evaluation Policy Framework

- 3.1.1 Develop key indicators to assist the roadmap implementation
- 3.1.2 Develop and update key indicators to assist the policy implementation and evaluate the implementation periodically
- 3.1.3 Leverage the Renewable Sub-Sector Network (RE-SSN) to review progress of the Roadmap's implementation and share the current national implementation (achievement, challenges being faced, and way forward by the AMS).

(4) Policy implementation and oversight

4.1 Implementation, review process and policy improvement

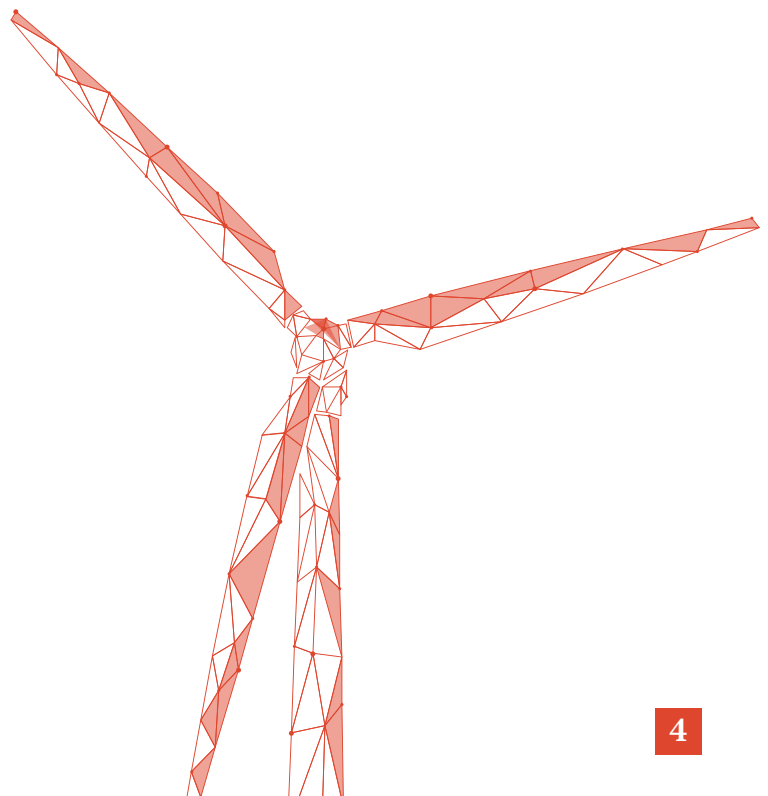
- 4.1.1 Review policy implementation from the key indicators
- 4.1.2 Develop policy impact analysis and improve the policy to create more positive impacts on RE deployment and economy (welfare/livelihood, economic justice)
- 4.1.3 Plan to establish a Renewable Energy and Gender Working Group (REG-WG) as a platform to coordinate the way forward for this roadmap and to continuously share the current national implementation progress (achievements, challenges and way forward by the AMS).

At the regional level, we proposed the Renewable Energy Sub-Sector Network (RE-SSN) to drive the implementation of this roadmap by adopting the actions and milestones as items on the annual meeting agenda. The meeting will update progress and implementation to ensure that the development of the ASEAN RE-Gender Roadmap is on course. The development and early implementation of the Roadmap is scheduled to last five years (including early monitoring and evaluation framework).

Since the gender aspect in the RE sector is relatively new, it is highly recommended that ACE, as the implementing agency, hire gender specialists in the energy sector to reinforce and support the RE-SSN in the implementation of this roadmap.

After completing the Roadmap, in order to sustain the gender mainstreaming efforts, it is recommended that ASEAN establish a Renewable Energy and Gender Working Group (REG-WG) to outline ways to develop gender mainstreaming efforts in ASEAN's energy sector.

There are six key strategies to initiate the development of the ASEAN RE-Gender Roadmap: (1) inclusion of gender aspects in the upcoming ASEAN RE Long-Term Roadmap, (2) initiate discussion among ASEAN Member States, ASEAN Secretariat, and ACE to kick-start this initiative, (3) establish a RE and gender policy development toolkit, (4) approach the key institutions to support this initiative, (5) identify ministries and departments that can be part of this initiative, and (6) identify existing national academic institutions that offer energy and/or RE-related programmes.



Foreword

ASEAN's transition from its heavy reliance on fossil fuels to renewable forms of energy, while meeting its exceptionally high demand for energy requires new strategies. The unprecedented deployment of new technologies based on renewable energy (RE) resources is one of the ASEAN Member States' (AMS) strategic approaches to meeting the continuously increasing energy demand over the next couple of decades.

As a regional guide for energy development, the ASEAN Plan of Action on Energy Cooperation (APAEC) Phase II 2020-2025 set several milestones for the RE programme areas. One is to conduct in-depth planning and analysis to increase RE deployment. We are certain that provision of stable RE supplies is not measured solely by the presence of available natural resources, but also by system sustainability, involving social, economic and knowledge advancement.

At the 39th ASEAN Ministers of Energy Meeting (AMEM) in 2021, the AMS called for just and inclusive concrete actions to develop robust policies and measures. Hence this roadmap is a response to that demand. It embodies the direction and future pathways for the AMS to bridge gender inclusivity impediments at the policy level.

Further, ASEAN planned to launch the ASEAN Long-Term Renewable Energy Roadmap next year. In its preparation, we expect it to serve as a basis for the ASEAN energy sector to improve its existing gender mainstreaming policy basis and to advance the two available frameworks at the ASEAN level, namely (i) the ASEAN Declaration on the gender-responsive implementation of the ASEAN Community Vision 2025, and (ii) the ASEAN Comprehensive Recovery Framework.

I want to convey my sincere gratitude to colleagues from the ASEAN Centre for Energy (ACE) and EmPower Project for their support in developing this roadmap. I hope it will stimulate various gender mainstreaming efforts and generate more concerted collaborations which strengthen ASEAN energy security and energy policies through inclusivity.

Dr. Nuki Agya Utama
Executive Director
ASEAN Centre for Energy

Foreword

Limiting global warming to well below 2 degrees is not possible without equal participation of women in climate action and fast tracking the expansion of emerging energy transition technologies.

The inclusion of women in the renewable energy sector, offers the potential for women and communities to strengthen climate resilience, while promoting their economic empowerment. Using their skills and knowledge as leverage, women can make a significant impact not only to the sector but in paving the way for a greener recovery.

Globally, only 32 per cent of the renewable energy workforce is made up of women, where they predominantly hold non-technical and administrative positions. Women's representation is even lower when it comes to leadership positions – they hold only 4 per cent of top positions in the energy sector in Southeast Asia. We have also seen low representation of women in the science, technology, engineering, and mathematics workforce overall. **The current low levels of gender mainstreaming in renewable energy policy across the region, do little to address the underrepresentation of women.**

Despite the lack of publicly available data, we can appreciate the importance of integrating gender equality perspectives into renewable energy policy. This not only makes sense from a social and environmental perspective, but also makes good economic sense. With access to renewable energy, women can be relieved from the burdens of daily chores such as gathering wood for fuel and give them more time to advance their economic activities.

We hope that the Roadmap on Accelerating ASEAN Renewable Energy Deployment through Gender-Responsive Energy Policy can help our ASEAN Member States to deliver gender-responsive renewable energy policies in the region.

We would also like to extend our appreciation to the Renewable Energy Sub-Sector Network of the ASEAN Energy Cooperation for their commitment and support in ensuring that a renewable energy transition in Southeast Asia leaves no one behind.

Dechen Tsering
Regional Director and Representative for Asia and the Pacific
United Nations Environment Programme

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Contents

Executive Summary	2
Foreword	5
Acknowledgement	7
Contents	8
Abbreviation List	9
1. Introduction	10
2. Regional Status	13
2.1 Current RE Status in ASEAN	13
2.2 ASEAN RE Policy and Gender-Responsive Policy	14
3. The Significance of the ASEAN RE-Gender Roadmap	17
4. Challenges and Opportunities in Developing the ASEAN RE-Gender Roadmap	19
5. Stakeholders' Role	20
6. ASEAN Gender-Responsive RE Policy Roadmap	22
7. Key Strategies and the Way Forward to Implement the Roadmap	30
8. References	32
Annex 1 - Methodology	34

Abbreviation List

ACE	ASEAN Centre for Energy
ADB	Asian Development Bank
AMEM	ASEAN Ministers on Energy Meeting
AMS	ASEAN Member States
APAEC	ASEAN Plan of Action on Energy Cooperation
APS	APAEC Targets Scenario
ASEAN	Association of Southeast Asian Nations
ATS	AMS Targets Scenario
FGDs	Focus Group Discussions
GWNET	Global Women Network in Energy Transition
NGOs	Non-Governmental Organisations
RE	Renewable Energy
RE-SSN	Renewable Energy Sub-Sector Network
REG-WG	Renewable Energy and Gender Working Group
SDG	Sustainable Development Goal
STEM	Science, Technology, Engineering and Mathematics
TPES	Total Primary Energy Supply
UNEP	United Nations Environment Programme

1. Introduction

In the acceleration of renewable energy (RE) deployment in ASEAN, the energy-gender nexus remains underexplored. The current gender inclusivity gaps critically limit the optimisation of women's roles and opportunities in the sector, and ultimately hinder additional contributions to the energy transition.

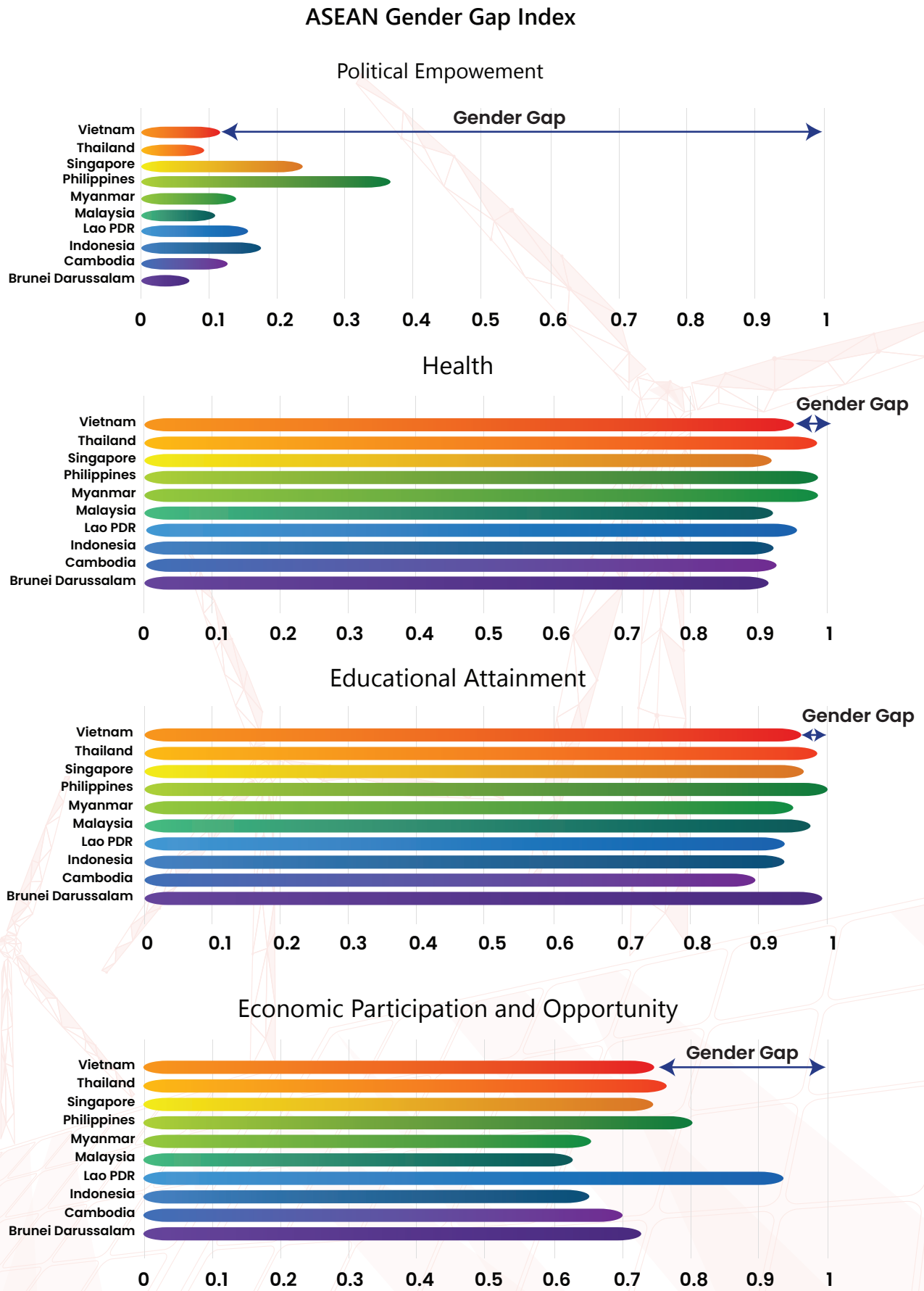
While the growth of the population and economy continue apace throughout the region, the deployment of a significant amount of RE in ASEAN is imperative in its efforts to mitigate climate change while maintaining energy security. Under the ASEAN energy blueprint, the ASEAN Plan of Action for Energy Cooperation (APAEC), the region aims to achieve RE shares of 23% and 35% in the total primary energy supply (TPES) and installed power capacity, respectively, both by 2025. [1].

The lack of support for women's leadership in the energy transition has been an obstacle to achieving the Sustainable Development Goal 5: Gender Equality and Women's Empowerment (SDG 5). Identifying and addressing the need for women to play key roles in the just and inclusive energy transition, as well as the long-term sustainability of environmental policy, planning and programming could amplify the economic and environmental benefits of the energy transition in the region.

The gender gap between males and females in ASEAN's labour force participation rates is significant. In 2020, the total labour force participation rates were 82% for the total male population (333.2 million) and 67% for the total female population (334 million) [2].

The global gender gap index uses four indicators: economic participation and opportunity, educational attainment, health and survival, and political empowerment. Figure 1 shows the overall gender gap index in ASEAN (scale 0 to 1) [3]. The higher the number, the narrower the gender gap between women and men.

Figure 1. Gender Gap Index in ASEAN



Source: Illustrated by ACE from World Economic Forum (2021).

Globally, the representation of women in science, technology, engineering and mathematics (STEM) higher education and in the RE workforce is 35% and 32%, respectively [4]. As can be seen in Figure 1, the gap in women's educational attainment is relatively small, meaning that women are having the same opportunity to pursue tertiary education that men do. This is an opportunity for ASEAN to promote STEM subjects for women and to increase the percentage of women with the necessary skillsets to work in the RE sector. Similar to health equality, the dominance of fossil fuel use means higher exposed levels of indoor air pollution from cooking.

The largest gap is women's involvement in political decision-making processes. Their effective inclusion and participation in political decision-making processes is critical for gender inclusivity policy formulation and implementation. Considering the above gaps, implementing gender-responsive RE policies will be a challenge for ASEAN.

The second largest gap is economic participation and opportunities. There is severe underrepresentation of women in the labour market. Women must have economic empowerment for the development of diverse, inclusive and innovative organisations.

Although the AMS achieved record RE installed capacity in 2020, fossil fuels continue to dominate the power mix with a share of over 65%. To further accelerate the transition to low carbon fuels, gender-responsive policies can effectively improve the economy, sustainability and inclusivity of the policy intervention. They may also catalyse equal access for women to STEM education and RE responsiveness skills development. By having gender-responsive RE policies, ASEAN has the chance to close gender gaps in the RE sector and to accelerate RE deployment in each of the AMS while ensuring a just energy transition.

ASEAN is also attempting to support the achievement of the RE targets listed in the APAEC Phase II: 2021-2025 and realise an inclusive and just energy transition as agreed at the 39th ASEAN Ministers on Energy Meeting (39th AMEM) Joint Ministerial Statement in 2021 [5]. Therefore, ASEAN is developing this Roadmap to assist AMS policymakers incorporate a gender-responsive approach to RE policies.

The Roadmap aims to chart pathways for women's contributions within ASEAN's emerging RE market, creating a positive snowball effect that promotes gender equity, accelerates climate mitigation efforts and bolsters RE investments.

2 Regional Status

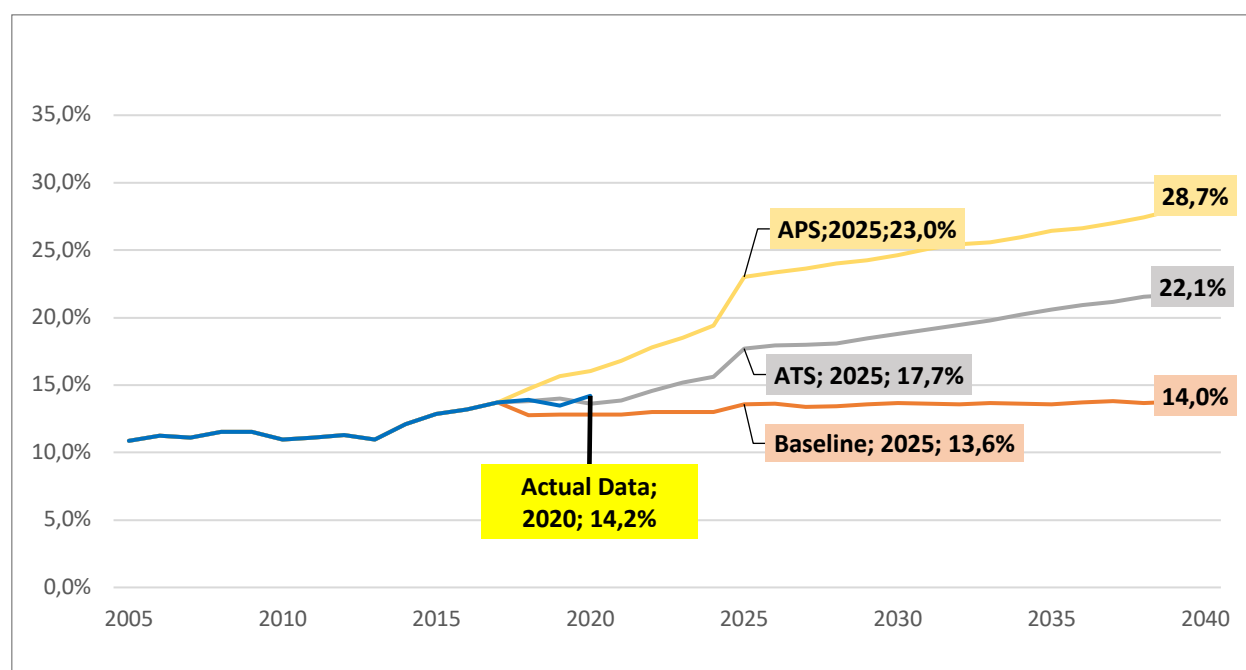
2.1. Current RE Status in ASEAN

The APAEC Phase II: 2021-2025 serves as the blueprint for enhancing energy connectivity and market integration in ASEAN to achieve energy security, accessibility, affordability and sustainability for all of the AMS.

In 2019, the AMS achieved a 33.5% RE share in installed power capacity and a 13.94% RE share in TPES [5], [6], indicating the growing trend towards the use of RE in the region. However, these achievements lag behind the regional targets and projections. The following graphs show the gaps between the Baseline Scenario and two other projections.

Baseline Scenario	<i>This scenario assumes that the AMS' energy systems continue to develop along historical trends, with little effort to meet their national or regional targets.</i>
AMS targets Scenario (ATS)	<i>This scenario projects the future development of ASEAN energy systems when the AMS do what is needed to fully achieve their own national targets.</i>
APAEC Targets Scenario (APS)	<i>This scenario explores what it would take to achieve the regional targets for energy intensity and RE outlined in APAEC 2016-2025.</i>

Figure 2. Baseline and Projections of the Renewable Energy Share in the Total Primary Energy Supply



Source: APAEC Phase II, The 6th ASEAN Energy Outlook, ASEAN Power Updates 2021 and ASEAN Energy Database System.

Despite the significant increase in the RE share, there is still a cumulative 1.5% gap from the 35% targeted RE share in installed power capacity and 8.8% gap in the targeted RE share in

TPES as stated in the APAEC Phase II: 2021-2025. Compared to projections in the 6th ASEAN Energy Outlook (AEO6), the AMS are still also lagging behind the APS scenario.

The graph above indicates that the AMS still need to accelerate their RE deployment to achieve their targets and desired regional projections. While the RE share target for installed capacity was nearly reached in 2020, the target for RE share in TPES was still some way away. To further increase the RE share and ensure a just energy transition in ASEAN, all of the AMS must consider alternative and inclusive ways to reduce the gap (Figure 1). To this end, gender-responsive energy policies could be instrumental.

2.2 ASEAN RE Policy and Gender-Responsive Policy

The AMS already have some RE-related policies and national gender policies in place at various levels of execution.

In 2017, ASEAN declared its commitment to gender-responsive implementation of the ASEAN Community Vision 2025 through the ASEAN Declaration on the Gender-Responsive Implementation of the ASEAN Community Vision 2025 and Sustainable Development Goals, followed by the establishment of the ASEAN Gender Mainstreaming Strategic Framework 2021–2025 and ASEAN Comprehensive Recovery Framework [7]–[9]. Both are aligned to the 1988 ASEAN Declaration on Women's Advancement to endorse women's engagement in politics and economic activities [10].

These documents promote intervention efforts as follows:

- strengthening sex-disaggregated databases establishing reliable regional gender statistics;
- increasing investment in bridging resource gaps;
- promoting women's full and equal involvement in decision-making bodies;
- establishing pro-poor, inclusive, gender- and climate-responsive approaches in integrated policy frameworks.

In addition, at the national level, countries have issued various gender policies and regulations to continue the mainstreaming efforts. Several AMS have also adopted the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) [11]. The following tables list the existing RE policies and national-level gender policies in ASEAN.

Table 1. Renewable Energy Policies and National Gender Policies in ASEAN

ASEAN Member States	Renewable Energy Policy [12]	National Gender Policy and Regulations
Brunei Darussalam	Energy White Paper (2014)	N/A
Cambodia	<ul style="list-style-type: none"> • The Rural Electrification Master Plan (2006) • The National Policy on Rural Electrification by Renewable Energy (2007) • The National Policy on Green Growth and the National Strategy (2007) • Power Development Plan (2008-2020) • Cambodia Green Growth Roadmap (2010) • The National Policy and Strategic Plan for Green Growth (2013-2020) • National Climate Change Strategic Plan (2014-2023) • The National Strategic Development (2014-2018) • Program for the Development of Rural Electrification of Electricité Du Cambodge (2020) 	N/A
Indonesia	<ul style="list-style-type: none"> • Law on Municipal Solid Waste No.18 (2008) • Law on Electricity No.30 (2009) • Geothermal Law No. 21 (2014) • National Energy Policy (2014) • Roadmap for Accelerated Development of New and Renewable Energy (2015-2025) • Regulation on Hydro No.17 (2019) 	<ul style="list-style-type: none"> • Gender Analysis Pathway (1998) • The National Gender Mainstreaming Policy: Presidential Instruction No. 9 (2000) • Inclusion of gender-mainstreaming policy in 38 programmes of the National Development Programme (2000-2004) • Law No. 12 on General Election (2003) • National Strategy to Accelerate Gender Mainstreaming through Gender-Responsive Planning and Budgeting (2009) • The Gender Equity and Equality Index and Gender Mainstreaming Institutionalization Indicators to measure the progress of gender equality in development (2012) • National Action Plan for the Elimination of Violence Against Women (2021 – 2025)
Lao PDR	<ul style="list-style-type: none"> • The Renewable Energy Development Strategy (2011-2025) • The National Policy on Environmental and Social Sustainability of the Hydro Sector (2013) • The Power Sector Policy and Targets (2020) 	<ul style="list-style-type: none"> • Law on Women's Development and Protection (2004) • 10-year Women's Development Strategy (2016-2025)
Malaysia	<ul style="list-style-type: none"> • National Biofuel Policy (2006) • Green Technology Policy (2009) • National Renewable Energy Policy (2009) • Renewable Energy Act (2011) 	<ul style="list-style-type: none"> • Malaysia 5-year Plans (2011-2015)/(2016-2020)/(2021-2025)

	<ul style="list-style-type: none"> • Sustainable Development Authority Act (2011) 	
Myanmar	<ul style="list-style-type: none"> • Electricity Law (2014) • National Electrification Plan 2014 (for 2030) • National Energy Policy (2015) 	N/A
The Philippines	<ul style="list-style-type: none"> • Biofuels Act (2006) • Renewable Energy Act (2008) • The National Renewable Energy Plans and Programmes (NREP) (2011-2030) 	<ul style="list-style-type: none"> • Republic Act No. 9710 an Act Providing for the Magna Carta of Women (2009) • Gender Equality and Women's Empowerment Plan (2019-2025)
Singapore	<ul style="list-style-type: none"> • The Electricity Act (2001) • Handbook for Solar PV Systems (2009) • Singapore's National Climate Change Strategy (2012) • Sustainable Singapore Blueprint (2015) 	N/A
Thailand	<ul style="list-style-type: none"> • National Energy Policy Act (1992) • Renewable Energy Development Plan (2008-2022) • Thailand Integrated Energy Blueprint (2014) • Alternative Energy Development Plan (2015-2036) • The Thailand Power Development Plan (2015-2036) • Thailand Smart Grid Roadmap (2015-2036) 	Gender Equality Act (2015)
Vietnam	<ul style="list-style-type: none"> • The Electricity Law (2004/2013) • Scheme on Development of Biofuels (2007) • Vietnam Renewable Energy Development Strategy (2015) • National Power Development Plan (2021-2030) 	<ul style="list-style-type: none"> • Gender Equality Law (2006) • The National Strategy on Gender Equality (2011-2020)

Source: Authors Compilation and Self-Assessment of ASEAN Member States (2022).

From the above compilation, it is apparent that women's involvement in RE policy as a commercial energy activity remains absent despite ASEAN having adopted regional declarations and frameworks.

"Gender responsiveness" refers to the capacity to recognise gender issues, particularly the capacity to recognise the diverse perceptions and interests of women as a result of their diverse social situations and gender roles. It is defined as the capacity to recognise issues arising from gender inequality and discrimination, even when they are not readily apparent or are "hidden" (i.e., not part of the general or commonly accepted explanation of what and where the problem lies) [13].

ASEAN awareness of the need to balance gender participation across the workforce may be apparent through its declaration and supporting policies. However, implementation in the RE sector remains limited due to the absence of guiding policies. Thus, to reduce the employment gaps, the AMS need detailed guidance in establishing RE energy policies that are more gender-responsive.

3 The Significance of the ASEAN RE-Gender Roadmap

The harnessing of RE is positive for both women and men. A small-scale RE project will not only increase access to clean electricity, but will also support productive activities, reduce drudgery for women, increase the education and quality of life for women and children, and also improve their safety and health. However, in the formulation of the various existing RE policies or programmes, there is no evidence that any gender analysis has been conducted. Including women in the process of RE deployment to the same extent as men will bring many benefits to all levels of society.

Policies which take gender roles, capacities, needs, existing inequalities and socio-cultural norms into account can maximise the impact of the energy projects, programmes and initiatives. Gender-responsive RE policies and initiatives can operate as a tool for resolving gender imbalances throughout the energy value chain, with positive implications for environmental sustainability, social inclusion and economic growth. Electricity access is still a main concern in ASEAN: in 2020, 94% of the population had access to electricity. Electricity access and distinct gendered impacts are interconnected issues that are influencing economic development. Most importantly, gender-responsive RE policies will be more efficient as they are informed by the needs and capacities of the population as a whole.

Women tend to be the energy managers in households across the region and should therefore play a role as agents of change in the energy sector. They have considerable experience and skills that are needed for the energy transitions, such as bringing different perspectives to the RE sector which fit communities better and at the same time drive RE technology innovation. For example, women farmers can be trained to build and operate mini hydropower or solar PV plants to water their rice paddies. This would increase the efficiency of their work so that they can use their time and energy to do other activities that improve their livelihoods, such as opening domestic businesses like restaurants, helping their children to study, etc. As some women in local communities may not have the necessary educational background to be working in RE projects, some small-scale business experiences could be beneficial to them and their communities (e.g. the cassava chips business in East Lombok [14]). Combining RE projects and business skills could help improve women's income and society's welfare.

Enhancing the participation of women in the energy sector has the potential to bring the following positive impacts:

- ***Improves business performance***

Increased diversity in the energy workforce can help with recruitment and retention, as well as contribute to more inclusive work environments, team diversity and revenue growth. Companies with female representation on their boards of directors typically outperform those with only male representation by about 17–26% [15].

- ***Boosts innovation***
Diverse perspectives fostered by gender inclusion can aid in brainstorming and decision-making [16]. Research shows that companies with gender-diverse boards of directors have a lower rate of governance-related controversies (e.g., bribery, corruption and fraud) [17].
- ***Reduces labour shortages***
Gender inclusion maximises the workforce's potential by expanding the talent pool and mitigating the risk of labour shortages. For instance, when Brazil's Energia hydropower project encountered a labour shortage, it trained over 1,000 women to fill the void [17]. Women-led renewable businesses could provide more green job opportunities. They could also open doors for more women to become involved in the industry, develop initiatives to enhance women networks in industry through leadership training and make company policies more equal for all genders.
- ***Increases community buy-in***
Increased participation of women in energy projects can result in increased community buy-in and acceptance of the projects [15].
- ***Increases responsiveness of RE needs***
In their role as "energy managers", women inherently have sound knowledge of local resources and sustainable resource management practices. Hence, they would be able to improve the responsiveness to the needs of the people at the household and community levels [18]. Taking into account women's needs in energy interventions, and strengthening women's leadership and participation in sustainable energy solutions, are critical in the transition to sustainable energy for all and meeting internationally agreed-upon development goals [19]. Determining suitable types of RE could potentially contribute to the sustainability of the plant.
- ***Accelerate the growth of RE capacity***
Women can not only contribute significantly to the green energy transition as responsible consumers, most notably in the home, but also in business and policymaking. Women's empowerment and leadership in the energy sector has the potential to accelerate the transition to a low-carbon economy by promoting clean energy and energy efficiency. Improving the relevant multiple factors pertaining to the sustainability of RE could lead to the construction of more plants being built [16].

As over half of the current total population in ASEAN is female [20], [21], it makes sense to have a gender-responsive policy roadmap to strengthen policies, especially in developing RE in the region, and to support the achievement of SDG 5 which strives to guarantee women's rights.

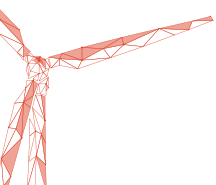
4 Challenges and Opportunities in Developing the ASEAN RE-Gender Roadmap

Prior to developing this roadmap, ACE had identified some challenges and opportunities in developing an ASEAN RE-Gender Roadmap based on the results of the workshops, focus group discussion¹ and desk study as follows:

Table 2: Challenges and Opportunities in Developing the ASEAN RE-Gender Roadmap

	Challenges	Opportunities
Data on gender in the RE sector	There is a lack of data on gender in ASEAN's energy sector in general, and in the RE sector in particular.	ASEAN can attract international financing to develop a database on gender in the energy sector in general, and in the RE sector specifically.
Gender awareness in general, and in the RE sector in particular	There has been lack of gender awareness in general and in the RE energy sector. Women have been underrepresented in the RE sector [22].	As a large community, ASEAN can become a role model in raising gender awareness in the RE sector at the regional level.
Jobs	<ul style="list-style-type: none"> • ASEAN's RE sector is less visible than other sectors as it is still at an early stage. • Ensuring that opportunities for green jobs adhere to the principle of stability, and also provide good general equality (benefits, working conditions, environment, etc.)[23]. • Limited skills and capacity building caused by minimum or no opportunities for women to engage in the RE sector (as users: RE utilisation and maintenance; as producers: RE technologies). 	<ul style="list-style-type: none"> • Since ASEAN's RE sector is in the early stages, ASEAN has great potential to ensure female inclusivity as the sector develops. • Women bring more social perspectives to RE projects that could improve current RE technologies and infrastructure • Involving women in the RE sector injects justice into the process of energy transitions.
Educational, Social and cultural norms	<ul style="list-style-type: none"> • The number of women in STEM education is globally lower than men. • RE technologies and engineering are regarded as male domains. • Women tend to spend more time doing household chores, and are regarded as not having the physical abilities necessary for working in the energy field. • Some cultures may believe that leadership positions belong to men, and that women can be in leadership positions only if they are exceptionally capable. 	<ul style="list-style-type: none"> • There are opportunities to develop RE Studies at ASEAN's universities, and to attract foreign investment in training/education (both formally via universities and informally via local community colleges). • Women who are involved in domestic work can bring different perspectives that could drive social inclusion and innovation in RE technology development and strategies.

¹ The focus group discussion was attended by UNWomen, UNEP, the World Bank, GIZ, Universities, Y20, community representatives, RE companies, Global Women Network in Energy Transition, IESR and IRENA (See Annex).



		<ul style="list-style-type: none"> • ASEAN can become a role model for gender inclusion in RE education programmes.
The nature of RE fieldwork	<ul style="list-style-type: none"> • The nature of the fieldwork could deter women from on-site work due to violence that could occur between men and women (such as unbalanced workloads, verbal harassment, etc.) which makes green jobs unattractive to women. • The employment of women in green jobs in the community that have traditionally been performed by men, may increase the risk of intimate partner violence resulting from the changing economic roles and relationships within the family. 	<ul style="list-style-type: none"> • There is room for improvement in • policymaking related to green jobs and also in the safety of both men and women in the RE sectors. • ASEAN could attract international financing and foreign investment to raise gender awareness in the RE sector in the region.
Access to Finance	<ul style="list-style-type: none"> • So far, only limited financing has been allocated to the RE sector. • So far there has been almost no financing allocated to women working in the RE sector. • Women entrepreneurs often face difficulties in obtaining loans from banks. 	<p>ASEAN could attract international financing and foreign investment to raise gender awareness in the RE sector.</p>

Source: Developed by ACE (2022).

5 Stakeholders' Role

This roadmap is purposely driven by the need to ensure a just energy transition in ASEAN by including women in the RE sector. It is intended to accelerate RE deployment in ASEAN, and at the same time bring social justice to communities and improve welfare and socioeconomic development (to poor households in rural areas and to women throughout the countries). Figure 3 lists the key stakeholders that have the power to influence the implementation of the Roadmap.



Figure 3: Key stakeholders that are able to influence the implementation of the ASEAN RE-Gender Roadmap

Policymakers

Policymakers play significant roles in driving change. This roadmap involves policymakers and will be used by them to establish gender-responsive RE policies.

Renewable Energy Companies

RE companies play significant roles in developing the RE sector technologically. They provide understanding from technological perspectives, and can also be the driver for technology innovation through cross-gender discussions.

Local Communities and Local Non-Governmental Organisations (NGOs)

Local communities and local NGOs play roles in providing current RE sector conditions in the local context. NGOs can support the communities in accessing RE and also play a role in providing data for gender in the energy sector as a whole, and in the RE sector specifically (e.g. data on RE technology users in terms of gender, type of RE deployed, etc.).

Universities

Universities play significant roles in increasing women's capacities in the RE sector through STEM subjects. Universities also bring gender awareness in this sector. More women with RE capacities and knowledge will drive more inclusive RE development, both in policymaking and technology deployment (as engineers and as users - entrepreneurship utilising RE technologies).

Regional and International Societies/Institutions

Advocating for gender inclusion and a just energy transition globally, including ASEAN communities. Regional and International societies/institutions also can provide support to ASEAN by providing financial support and/or technical assistance for developing gender-responsive RE policies and implementation.

Source: Developed by ACE (2022).

6 ASEAN Gender-Responsive RE Policy Roadmap

6.1 Assisting in the development of an ASEAN RE-Gender Roadmap

ASEAN recognises that the RE sector must make progress in gender diversity and inclusivity, and that it is fundamental to ensuring the sector's ability to innovate and be more productive.

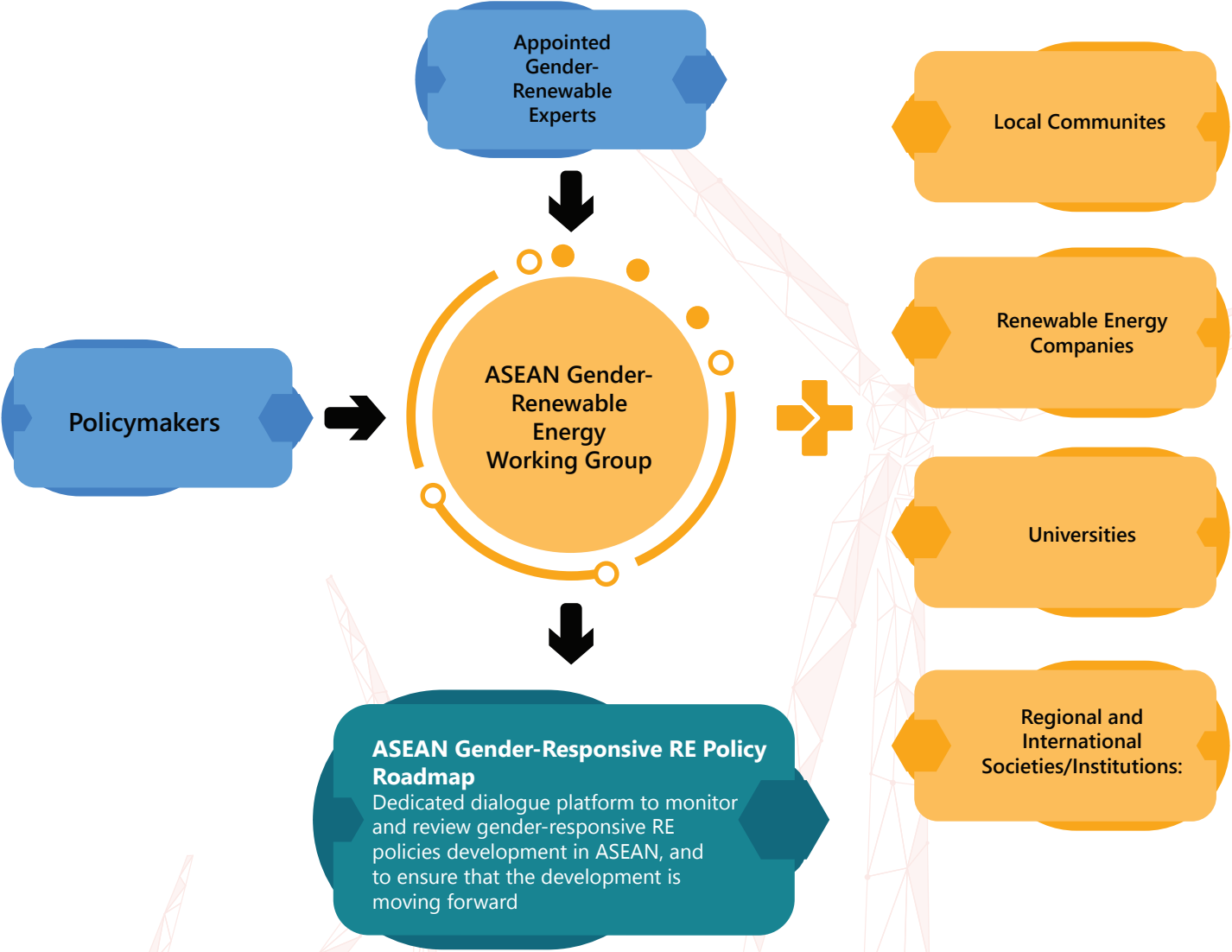
At the regional level, we proposed the Renewable Energy Sub-Sector Network (RE-SSN) to drive the implementation of this roadmap by adopting the actions and milestones on the annual meeting agenda. The annual meeting will need to discuss:

1. policy development progress, for example, the challenges faced when executing the Roadmap's phases, the opportunities missed, strategies to overcome the challenges and achieve the goals (policy development);
2. implementation to ensure that development of the ASEAN RE-Gender Roadmap is occurring and moving forward.

Since gender issues in the RE sector are relatively new in ASEAN, it is highly recommended that ACE be the implementing agency to hire gender specialists in the energy sector to reinforce and support the RE-SSN in implementing this roadmap.

In order to sustain the gender mainstreaming efforts upon completion of the Roadmap, it is recommended that ASEAN establish a Renewable Energy and Gender Working Group (REG-WG). After years of being embedded in the RE-SSN meeting agenda, the energy-gender nexus is assumed to be widely recognised. However, a dedicated platform needs to be established. The working group is tasked with monitoring, reviewing and planning the way forward to ensure the sustainability of the efforts. Box 1 illustrates an example of REG-WG formulation which consists of AMS policymakers, the hired energy-gender experts and engagement groups. These groups aim to enrich the discussions and may include various key stakeholders in the gender and RE sectors such as RE companies, NGOs/think tank organisations, international institutions (UN, World Bank etc.), ASEAN universities and many others.

Figure 4. Suggested ASEAN Working Group Chart

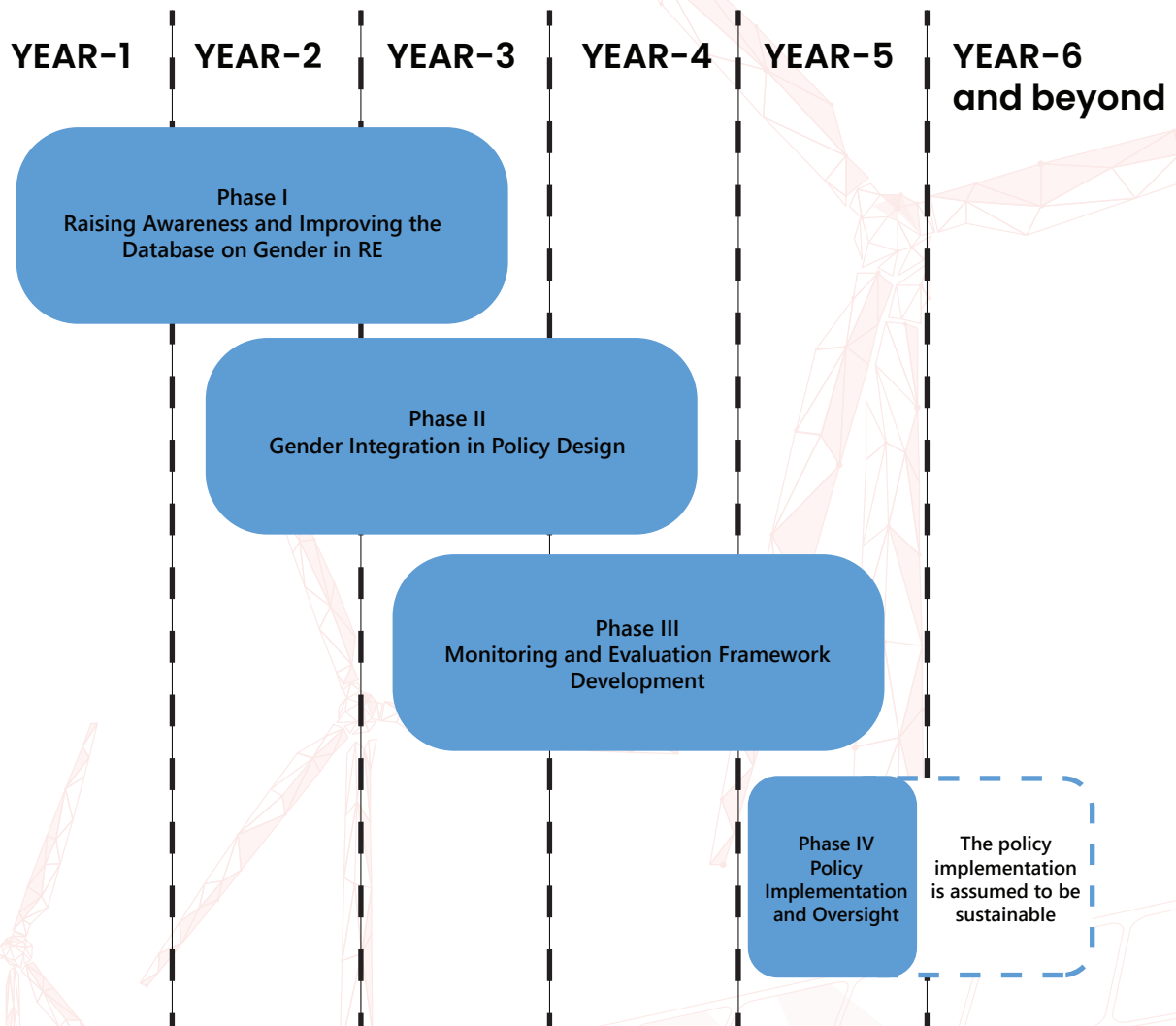


Source: Developed by ACE (2022).

6.2. The Roadmap

The ASEAN RE-Gender Roadmap takes into account and addresses the different situations, roles, needs and interests of all gender in its policy. We offer a four-phase Roadmap to formulate RE-Gender policy:

Figure 4: The Roadmap Phases



Source: Developed by ACE (2022).

Phase 1: Raising Awareness and Improving the Database on Gender in RE

Timelines	Multi years (≤ 3 years)	Targets/Outcomes
Enablers	Milestones Review	
1.1. Gender Awareness in the RE Sector in ASEAN		<ol style="list-style-type: none"> 1. A reliable and high-quality database on gender in the RE database. 2. Increasing rates of women in STEM education. 3. Increasing the number of subjects that are related to the energy sector in general, and the RE sector at university level.
Actions	<p>1.1.1. Build partnerships with various institutions and establish nodal networks in ASEAN for gender in the RE sector by:</p> <ol style="list-style-type: none"> Engaging with universities, RE companies, local communities and prominent NGOs Establishing a regional platform to maintain the network in RE and gender. <p>1.1.2. Organise workshops on relevant topics of gender inclusivity in the RE sector.</p>	
Milestones	<ul style="list-style-type: none"> Partnerships with relevant Dialogue Partners or International Organisations (DPs/IOs). Workshops on relevant topics of gender inclusivity in the RE sector. 	
Targeted Audiences/ Stakeholders	AMS ministries, all RE companies that operate in the AMS, local communities' representatives, all universities' representatives.	
1.2. Gender in the RE Database		
Actions	<p>Mandate the ASEAN RE Information and Training Centre to add gender in the RE sector database and produce information from the gathered data concerning gender gaps by:</p> <ol style="list-style-type: none"> 1.2.1. Developing gender in the RE database system and mechanism. 1.2.2. Conducting monitoring and evaluation for database improvement. 1.2.3. Analysing the gender gaps in RE business. 	
Milestones	Capacity Building for the AMS and ASEAN RE Information and Training Centre on RE and gender data.	
Targeted Audiences/ Stakeholders	AMS ministries, all RE companies that operate in the AMS, local communities' representatives, all universities' representatives.	

Phase 2: Gender Integration in Policy Design

Timelines	Multi years (≤ 3 years)	Target/Outcomes
Enablers	<ol style="list-style-type: none"> 1. ASEAN database on gender in RE as the main baseline to review the increased percentage of women in STEM education and employment. 2. Milestones review 	
2.1. Gender-Responsive RE Policy		<ol style="list-style-type: none"> 1. Increasing rates of women in STEM education 2. Increasing rates of women working in the RE sector
Actions	<p>Incorporate the following policy design processes in the ASEAN RE Long Term Roadmap:</p> <ol style="list-style-type: none"> 2.1.1. Identify the absence and policy support needed by the AMS to incorporate gender-responsive RE policy. 2.1.2. Propose gender-responsive RE policies, or whenever possible revise existing RE policies and include a gender component into the policy. 	

	2.1.3. Suggest enabling capacity building needed along with supporting programmes that involve women in developing RE projects.	(formally and informally) 3. Diversification of RE types being developed and operated by women. 4. Creating enabling environments for women-led RE businesses.
Milestones	<ul style="list-style-type: none"> • Provide suggestions for the gender-responsive RE policy, including targets on raising the number of women in STEM education, and the female employment rate in the RE sector (formal and informal). • AMS capacity building in gender-responsive RE policy. 	
Targeted Audiences / Stakeholders	AMS ministries and related departments.	
2.2. Gender-Responsive Budget and Financial Framework		
Actions	<p>Incorporate the following activities for the development of a gender-responsive budget and financial framework to the ASEAN RE Long Term Roadmap:</p> <p>2.2.1. Develop countries' financing guidelines to enable financial access for women-led RE businesses, e.g., develop dedicated credit lines or other enabling financial schemes.</p>	
Milestones	<ul style="list-style-type: none"> • AMS capacity building in gender-responsive RE policies and responsive budgets and financial frameworks. • Focus group discussions among key stakeholders to develop financial schemes for women in RE. • Publish countries' financing guidelines for women-led RE businesses. 	
Targeted Audiences / Stakeholders	AMS ministries and related departments.	

Phase 3: Monitoring and Evaluation Framework Development

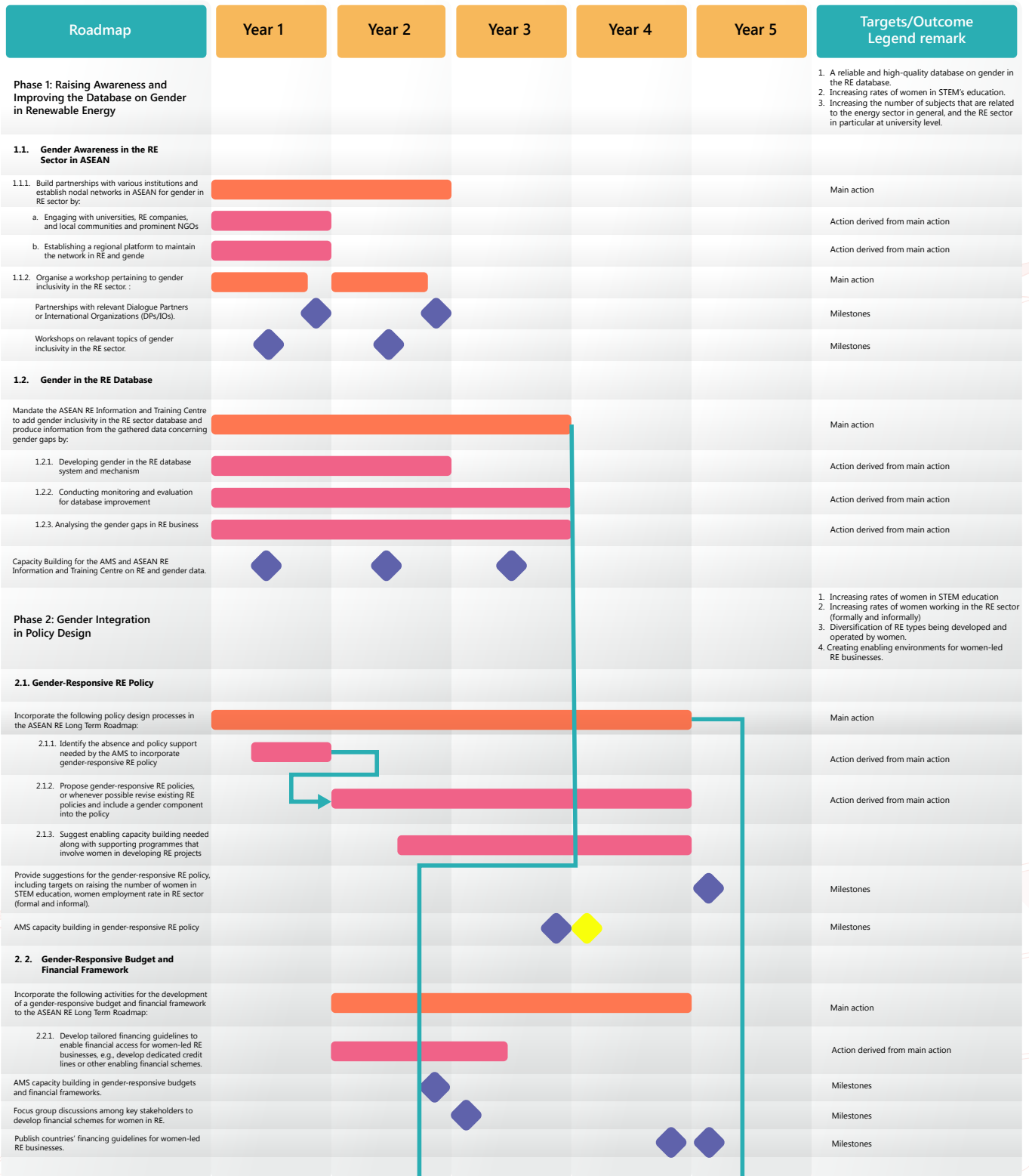
Timelines	Multi years (≤ 3 years)	Targets/Outcomes
Enablers	Key programmes in Gender-Responsive RE Policy	
3.1. Developing Monitoring and Evaluation Policy Framework		
Actions	<p>Develop reliable and accessible monitoring and evaluation frameworks by:</p> <p>3.1.1. Developing key indicators to assist the roadmap implementation.</p> <p>3.1.2. Developing and updating key indicators to assist the policy implementation and evaluate the implementation periodically.</p> <p>3.1.3. Leveraging RE-SSN duties to review progress of the Roadmap's implementation and share the current national implementation (achievement, challenges being faced, and way forward by the AMS).</p>	<ol style="list-style-type: none"> 1. Measurable and feasible Key Performance Indicators. 2. Measurable and valid data on women's participation in STEM education and employment rate increased 3. Inclusive and sustainable RE projects.
Milestones	<ul style="list-style-type: none"> • Capacity building on developing monitoring and evaluation of the policy framework. • Workshop on monitoring and evaluation of gender-responsive RE policies in other countries to serve as benchmarks. 	

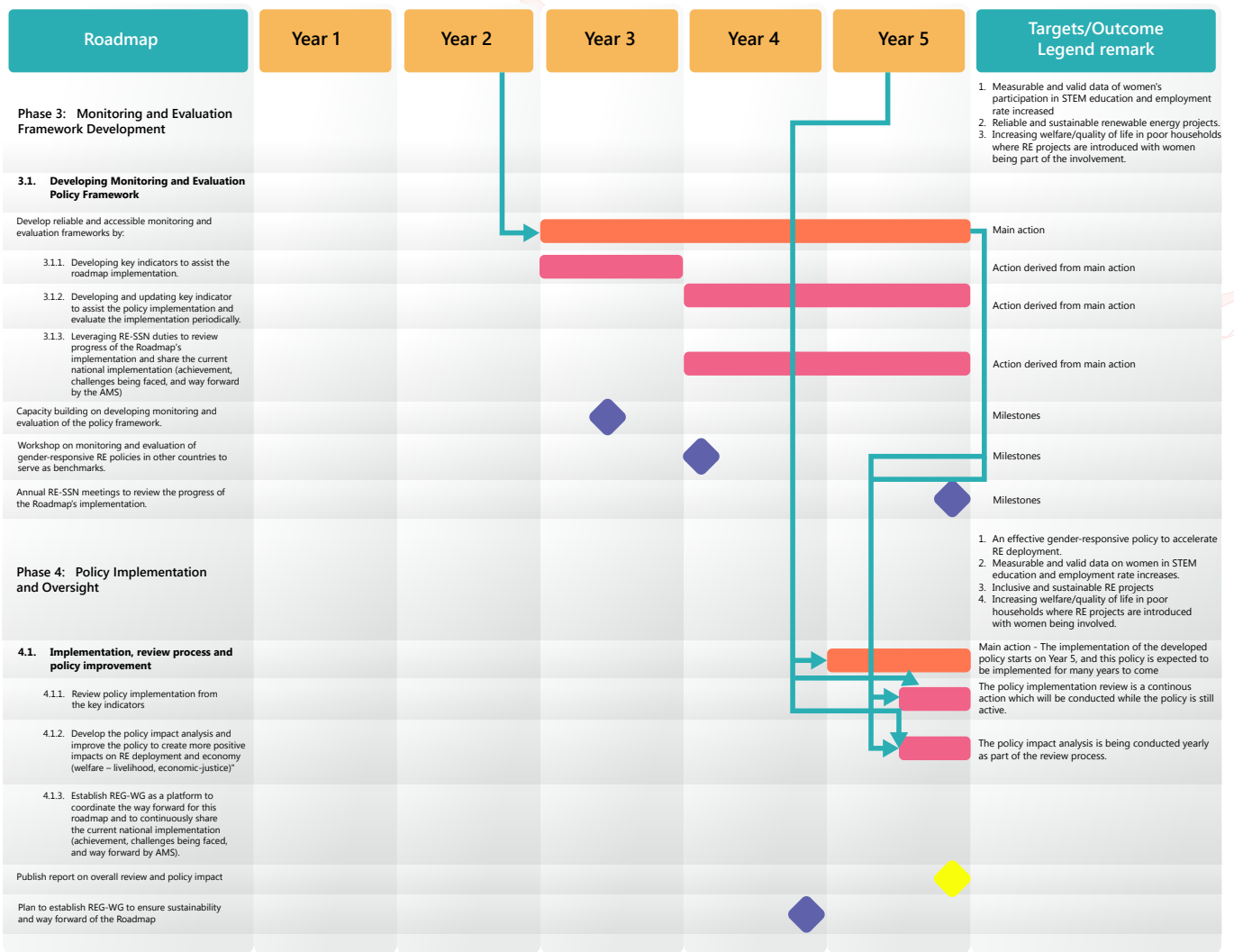
	<ul style="list-style-type: none"> Annual RE-SSN meetings to review the progress of the Roadmap's implementation. 	4. Increasing welfare/quality of life in poor households where RE projects are introduced with women involvement.
Targeted Audiences/ Stakeholders	AMS ministries, all RE companies that operate in the AMS, local communities' representatives, all universities' representatives.	

Phase 4: Policy Implementation and Oversight

Timelines	~ for implementation, review could be conducted yearly.	Target/Outcomes
Enablers	Policy Impact Analysis	
4.1. Implementation, review process and policy improvement		
Actions	4.1.1. Review policy implementation from the key indicators. 4.1.2. Develop the policy impact analysis and improve the policy to create more positive impacts on RE deployment and economy (welfare – livelihood, economic-justice). 4.1.3. Establish REG-WG as a platform to coordinate the way forward for this roadmap and to continuously share the current national implementation (achievement, challenges being faced, and way forward by AMS).	1. An effective gender-responsive policy to accelerate RE deployment. 2. Measurable and valid data on women in STEM education and employment rate increases.
Milestones	<ul style="list-style-type: none"> Publish report on overall review and policy impact. Plan to establish REG-WG to ensure sustainability and way forward of the Roadmap 	3. Inclusive and sustainable RE projects
Targeted Audiences/ Stakeholders	AMS ministries, all RE companies that operate in the AMS, local communities' representatives, all universities' representatives.	4. Increasing welfare/quality of life in poor households where RE projects are introduced with women being involved.

Timeline





7 Key Strategies and the Way Forward to Implement the Roadmap

Inclusion of gender aspects in the upcoming ASEAN RE Long-Term Roadmap

ASEAN plans to develop an ASEAN RE Long-Term Roadmap. This is an opportunity to include gender aspects. Hence, the long-term Roadmap will consider gender perspectives and recognise women's role in the deployment of RE. As written in the actions and milestones of this roadmap, policy and financial framework design activities will be integrated into the ASEAN RE Long-Term Roadmap. In addition, incorporating the implementation of the ASEAN RE-Gender Roadmap in the ASEAN RE Long-Term Roadmap will amplify how gender is being responded to at the regional level. The ASEAN RE Long-Term Roadmap will establish a foundation to continuously create an enabling environment for women to develop innovative RE business models and accelerate RE deployment in the region.

Initiate discussion among the ASEAN Member States, ASEAN Secretariat and ASEAN Centre for Energy (ACE) to kick-start this initiative.

ACE could facilitate a meeting for AMS, ASEAN Secretariat, and ACE to discuss this initiative and develop strategies to map key institutions and universities that have the potential to become partners in developing this Roadmap and implementing a gender-responsive RE policy. AMS can also discuss the challenges they face in their country, such as raising gender awareness in the RE sector, which is tied to regional cultural norms and what kind of gender-related data needed in the database. There is also possibility to engage Poverty and Gender division of ASEAN Secretariat to enrich and align the discussion with updated gender trends in ASEAN. With a solid list of strategies, these stakeholders acquired basis to move forward to having toolkit.

Setting up a RE and gender policy development toolkit

The establishment of a toolkit will allow countries to identify the phase and action plans of each existing AMS policy situation with respect to RE and gender policy. The toolkit will serve as a self-assessment working document to help determine the next steps of the action plan from the acquired country positioning.

Approaching the key institutions to support this initiative

The AMS can approach international institutions which focus on gender equality in the energy sector for financial support and/or technical assistance in taking the first steps of pursuing this initiative. These institutions include international institutions, RE companies, local NGOs, financial institutions and possibly other relevant intergovernmental institutions.

Identifying ministries and departments that can be part of this initiative

The AMS need to identify all ministries and departments in their country which support this initiative. It is important to understand the roles of these ministries and departments in order to achieve the final outcome, i.e. gender-responsive RE policies that ensure gender equality and inclusivity in the policymaking process and policy implementation.

Identifying existing national academic institutions that offer energy and/or RE-related programmes

Academic institutions play significant roles in building knowledge about the energy and/or RE sectors. Identifying the existing national academic institutions that offer energy and/or RE-related subjects can help the AMS map the current gender gaps in the RE sector from educational perspectives. This can be the starting point for increasing the number of women in STEM education by encouraging universities to develop RE programmes in their curriculum.

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Annex 1 - Methodology

The gender dimension in energy policymaking processes, especially in RE, is very novel in ASEAN. Therefore, as an initial step this roadmap provides general guidance to the AMS in initiating RE policies that recognise/include gender.

In compiling this document, we utilised both primary and secondary data to develop this gender-responsive RE policy roadmap which focuses on the role of women. This data reveals gender-responsive policy gaps in ASEAN.

Primary data collection

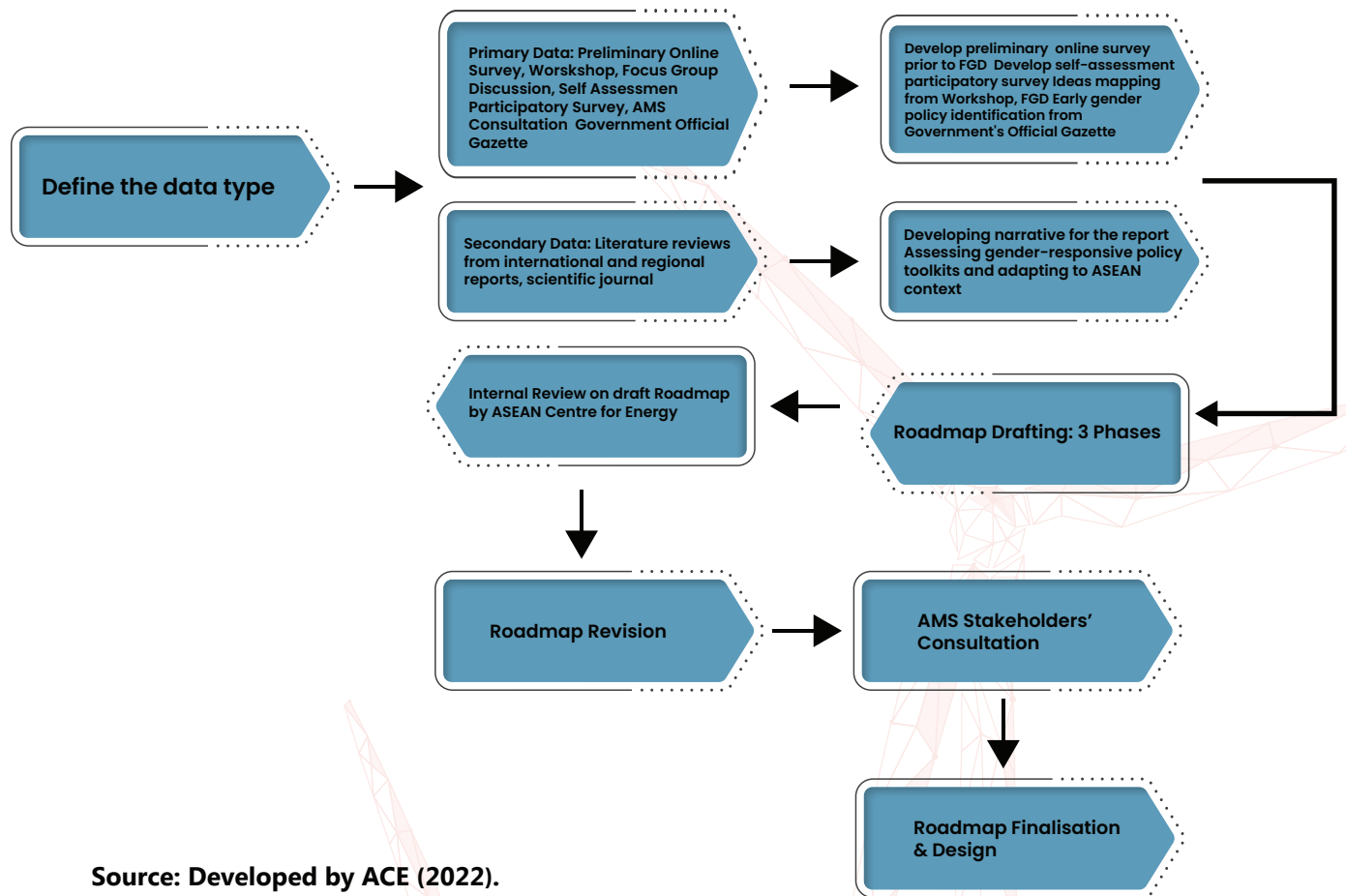
To obtain the primary data, we conducted workshops, focus group discussions (FGDs) and online surveys. The AMS carried out self-assessment participatory surveys and shared the results in interviews and consultations.

We conducted preliminary workshops to gain knowledge and understanding of the current gender issues in the RE sector, and to find out how developing this sector can benefit societies. The workshops strengthened the foundation and background behind this roadmap development. Following this workshop, a FGD was held as a forum for a more diversified discussion among the stakeholders which included community representatives, academics (universities), thinktank organisations, international organisations and RE companies. This FGD contributed to the formulation of the four phases in the Roadmap (**see Section 6**). Both the workshop and FGD strengthened the basis of each of the minor tasks in the action plans and the key strategies. In the following flow chart, it can be seen that they contribute to the development of the report narrative and roadmap drafting, especially in the action and implementation plans.

Secondary data collection

To collect the secondary data, we conducted further desk studies based on publications/reports from international or regional institutions, and also scientific articles and online webinars. The following diagram illustrates the development process of this roadmap:

Figure 6. The Roadmap Development Process



Source: Developed by ACE (2022).

The Roadmap used qualitative analysis based on information collected from literature reviews, preliminary participatory surveys, workshops, FGDs and AMS consultations.

The initial research identified and compared these three existing gender-responsive policy toolkits:

1. Gender-Responsive National Communications Toolkit – UNDP (2015)
2. Gender-Responsive Policymaking Handbook – IRI and Women’s Democracy Network (2020)
3. Gender Integration in Renewable Energy Policy: A Guideline for Renewable Energy Policy and Decision Makers – UNEP (2020)

These findings were then analysed and developed within the ASEAN context. Each phase was divided into implementation plans, actions and narratives to guide the AMS in developing gender-responsive RE policies in their countries.

Preliminary participatory survey

It was the objective of the surveys to validate the current status of the AMS's gender and RE policies identified during the desk-study. The acquired survey entries were used in part to provide an example of how this survey actually relates to the preparation of gender-responsive RE energy policies in the AMS.

Workshops

We conducted the first workshop prior to the development of this Roadmap to obtain more understanding and information about the current narrative of gender-responsive energy policy. A second workshop was held to identify the cross-sector aspects of RE, entrepreneurship and gender to identify and learn how to tap women-led business opportunities from best practices.

The first workshop invited experts from international and regional institutions that cover gender mainstreaming efforts in the energy sector, namely, the ASEAN Centre for Energy, ASEAN Secretariat, UNEP, USAID, Asian Development Bank and IRENA. The second workshop invited speakers from ENERGIA, ILO, USAID Enhancing Equality in Energy for Southeast Asia (E4SEA) and Alliance for Rural Electrification (ARE). The data and information collected from this workshop made up the roadmap narrative.

Focus Group Discussion (FGD)

The FGD began by presenting the FGD mechanism. This was followed by a discussion among the participants for two hours. The community representatives were also invited to provide their thoughts and country knowledge on the questions.

The FGD was attended by various experts from UN Women, UNESCAP, Asian Development Bank, GIZ, IRENA, IESR, GWNEN, Y20 from G20, as well as some experts from universities, community representatives and RE companies (UPC Renewables and BayWa r.e.).

The FGD surfaced all of the challenges and opportunities in developing gender-responsive energy policies. It identified key points on the current status in some of the AMS as they endeavour to develop their gender-responsive energy policies, and these serve as a reference to identify the steps in this roadmap.

Table 3: List of Focus Group Discussion Participants

Panellists	Description
AMS Focal Points	The AMS focal points pinpointed the involvement or lack of involvement of women in the RE sector's policy-making process.
UN Women	UN Women delivers programmes, policies and standards that uphold women's rights and ensures that every woman and girl lives up to her full potential.
United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)	UNESCAP is the most inclusive intergovernmental platform in the Asia-Pacific region. It promotes cooperation among its 53 member states and 9 associate members in pursuit of solutions to sustainable development challenges. UNESCAP is one of the five regional commissions of the United Nations. The UNESCAP Secretariat supports inclusive, resilient and sustainable development in the region by generating action-oriented knowledge, and by providing technical assistance and capacity-building services in support of national development objectives, regional agreements and the implementation of the 2030 Agenda for Sustainable Development.
Asian Development Bank (ADB)	ADB recognises that gender equality and women's empowerment are essential for meeting Asia's and the Pacific's aspirations for inclusive and


	sustainable development. This is part of their support to reduce poverty rates.
International Renewable Energy Agency (IRENA)	IRENA plays a leading role in the energy transformation as a centre of excellence for knowledge and innovation, a global voice for renewables, a network hub and a source of advice and support for countries. IRENA has highlighted gender equality for an inclusive energy transition and has published reports on RE-gender perspectives.
Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)	GIZ is a service provider in the field of international cooperation for sustainable development and international education work. It has over 50 years of experience in a wide variety of areas, including economic development and employment promotion, energy and the environment, and peace and security.
Institutes for Essential Service Reforms (IESR)	IESR is a think-tank in the field of energy and environment. It encourages the transformation into a low carbon energy systems by advocating a public policy that rests on data-driven and scientific studies, conducting capacity development assistance and establishing strategic partnerships with non-governmental actors.
Global Women Network in Energy Transition (GWNET)	GWNET empowers women in energy through interdisciplinary networking, advocacy, training, coaching and mentoring. GWNET seeks to address the current gender imbalances in the energy sector and to promote gender-sensitive action around the energy transition in all parts of the world.
Universities – Lecturers and Local Communities: University of Prasetya Mulya and UKRIM	The universities represent local communities who are directly involved in the deployment of RE in their regions and at the same time represent academic institutions that have active RE programmes in their curriculum.
Youth 20 (Y20)	The Y20 is the official youth engagement group for the G20 (Group of 20), a forum for the world’s largest and most advanced economies. The Y20 brings together young leaders from across the globe to discuss and debate global challenges and agree on policy recommendations that they would like to see the G20 leaders take forward. The list of policy recommendations is known as a communiqué, which is announced publicly at the Y20 Summit and presented to world leaders as part of the official G20 summit.

Source: Summarised by ACE (2022).

The views expressed in this report are those of the author(s) and do not necessarily reflect those of ASEAN Centre for Energy (ACE) as an institution, any associated ASEAN Member States/Institutions Individuals, or partner institutions




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