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Malaysia's Forest Pledges and The Bornean State of Sarawak: A Policy Perspective

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Abstract: Malaysia deforested 6.3 million hectares since independence; 91% of which occurred before Malaysia pledged, at the Earth Summit in 1992, to maintain a minimum 50% of its terrestrial area under forest cover. However, under economic and population pressure, Sarawak—the largest contributing state to the country's current forest cover of 54.8%—shows continuing deforestation even after 1992. This paper reviews land use policies underpinned by economic development and environmental protection considerations, land rights issues that complicate land use planning, and legislation that regulates land use change. The objective is to investigate the adequacy of existing policies and legislation in governing forest cover in Sarawak and to recommend improvement measures. If the Sarawak Land Use Policy that allocates seven million hectares for forest is realized, Malaysia's forest cover would drop to 53%, assuming other states maintain their forests. It is recommended that legislation governing the designation of permanent forest and conversion of forest for other land use to be strengthened, civil society to be enlisted to enhance knowledge level, and carbon credit production to be promoted as alternative land use that keeps forests standing. With these measures, it is hopeful that Malaysia's aspirations regarding forest cover can be achieved.

Keywords: Sarawak; deforestation; agriculture expansion; policies; land rights



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1. Introduction

Malaysia lost 23% of its forest in the first 28 years since independence (1963–1991, see Figure 1 and Appendix A). In the limelight of deforestation, Malaysia boldly made a pledge at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992 (also known as the 'Earth Summit') that the country is committed to maintain a minimum 50% of its terrestrial area under forest cover. While this pledge is not legally binding, the Malaysian government has consistently reiterated this commitment (bynamed 'Rio Pledge') at domestic and international events, including the United Nations Framework Convention on Climate Change's (UNFCCC) 26th Conference of the Parties (COP26) that took place in Glasgow in November 2021 [1]. Additionally, at COP26, Malaysia joined the other 140 parties to endorse the Glasgow Leaders' Declaration On Forests And Land Use (also called 'Glasgow Forest Declaration') and committed to halt and reverse forest loss and land degradation by 2030 [2]. Malaysia has kept its promise thus far. In the subsequent 28 years (1992–2020), deforestation reduced to 2.6% as a result of policy direction change. In 2020, the forest cover in protected areas, permanent forests (including forest plantations) and state land forests tallied at 54.8% or 18.1 million hectares (Mha) [3–7], having deforested 6.3 Mha since independence to make space for other land use, including agriculture plantations.

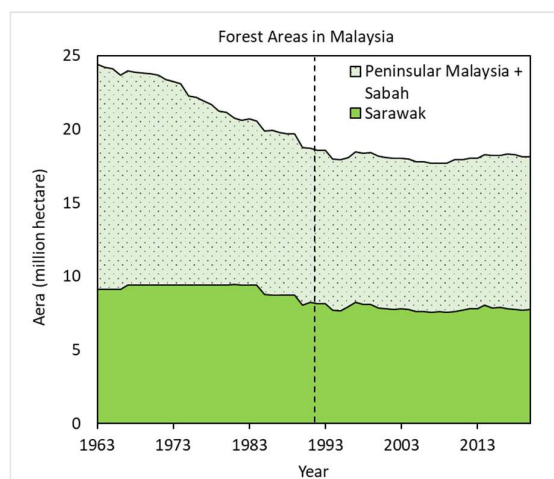


Figure 1. Forest area in Malaysia. Data sourced from Ministry of Energy and Natural Resources [8], Forestry Department Peninsular Malaysia [4], Forest Department Sarawak [5], Sabah Forestry Department [6], and Yearbooks of Statistic Malaysia [7].

In 2020, there were 5.9 Mha oil palm (*Elaeis guineensis*) plantations [9]. Even though deforestation has slowed post-1992, with the palm oil price hitting an all time high in 2022—quadrupled that in 1992 (see Figure 2), and 75% population growth during the same period [10], therein lies the problem that deforestation in Malaysia may regain momentum under economic and population pressure. It is thus imperative to examine whether the current policies and legislation can cope with this increased pressure.

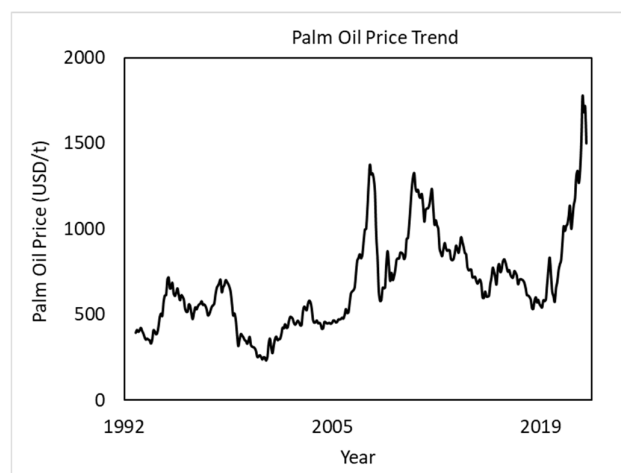


Figure 2. Palm Oil Price Trend. Data sourced from Palm Oil-Price Charts, Data, and News <https://www.indexmundi.com/commodities/?commodity=palm-oil&months=360> (accessed on 27 November 2022) [11].

1.1. Geographical Context

Malaysia is a tropical country situated between the coordinates of $0^{\circ}51' \text{ N}$ and $7^{\circ}33' \text{ N}$, and $98^{\circ}01' \text{ E}$ and $119^{\circ}30' \text{ E}$. Malaysia has a terrestrial area of 33 Mha with about 8840 km of coastline. Geographically, the country primarily consists of two large contiguous land masses, separated by more than 600 km by the South China Sea. In the west, the Peninsular Malaysia is connected to the Eurasia continent; in the east, Sarawak and Sabah occupy 26% of Borneo Island. Malaysia is endowed with high annual rainfall of average 2000 to 4000 mm without any prolonged dry season [12]. These geographical attributes bestow Malaysia with dense humid tropical forests that are rich in flora and fauna. With its dipterocarp forests, peat swamp forests, mangrove forests and small areas of montane and ericaceous

forests—not forgetting its aquatic ecosystems—Malaysia is one of the 17 megadiverse countries in terms of biological diversity [13]. Deforestation in Malaysia would contribute to global climate change as well as biodiversity loss of the planet.

Politically, Malaysia is a federation consisting of 13 states and three federal territories. Under the Federal Constitution of Malaysia, the legislative and executive powers are divided by subject matters between the federal and state governments. It is noteworthy regarding this topic that external affairs, including international treaties, are under the jurisdiction of the federal government, whereas the state governments control land and forest matters [14]. Without the cooperation of state governments, Malaysia will not be able to fulfil the Rio Pledge and the Glasgow Forest Declaration.

Sarawak is the largest state, with land mass of 12.4 Mha; 7.7 Mha or 62% of which is covered by forest that makes up 43% of total forest cover or 23% of total land mass of Malaysia. 11% of its forest is in totally protected areas (TPA), 51% in gazetted permanent forest estates (PFE) and 37% on state land [5,15] (see Figure 3). With the vast forest area, Sarawak is the most influential state in Malaysia's forest statistics.

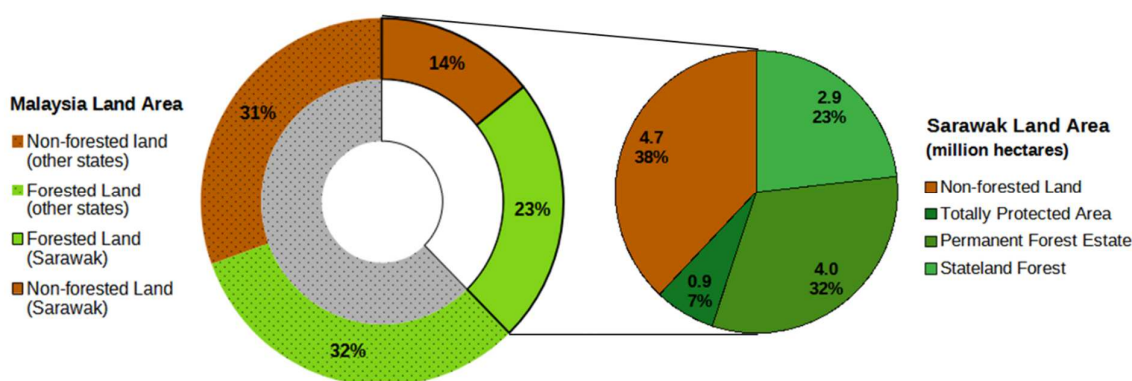


Figure 3. Forest areas in Malaysia and the state of Sarawak, 2020. Data sourced from Forest Department Sarawak [5] and Department of Statistics Malaysia [15].

As of 2021, 1.6 Mha in Sarawak is planted with oil palm [16]. Sarawak is regarded as the last frontier for expansion of oil palm plantation in Malaysia [17]. Development of oil palm plantations only accelerated in the ‘post-timber era’ in the late 1990s [18], and it is evident in the steady decline of forest post-1992. The late start of oil palm means Sarawak could regain the momentum of deforestation and potentially jeopardise Malaysia's performance in maintaining forest cover.

1.2. Research Objective

The objective of this paper is to investigate whether the policies, legislation and institutional frameworks are adequate to control forest cover in Sarawak against current circumstances. This will, in turn, determine Malaysia's ability to fulfil the minimum 50% forest cover and no forest loss pledges. Policy determination is not within the scope of this research; nonetheless, improvement measures will be recommended as necessary.

This paper uses deforestation drivers discerned from literature review in the research design. A description of legal and institutional frameworks provides context for the succeeding expositions on economic development and environmental protection considerations in land use policies. Land rights issue and its impact on land use planning is also discussed. Land use and land use change legislation is analysed before a summary, conclusion and recommendations are provided.

1.3. Studies on Forest Policies

Forest-related policies of Malaysia have been studied by a few researchers. Policies implemented over the past decades have led to successful forestry and wood-based industries. These include certification for sustainable forest management and the development

of forest plantations [19]. The consumption of forest resources changed with national development plans, and challenged by transboundary environmental discourses in the last two decades [20]. There were thus studies on forest laws and policies in relation to environmental quality, forest and biodiversity conservation, water, land use, as well as indigenous people [21,22].

While various literature exists to analyse forest policies and legislation for Malaysia, they are not reviewed together in the light of forest cover, especially for the state of Sarawak, which is autonomous in forest governance. This paper aims to fill the gap by bringing the reader's attention to the many facets of forest-related policies in Sarawak.

1.4. Deforestation Drivers

Deforestation in Malaysia has been under international attention for a few decades. The main direct drivers of deforestation in Malaysia were found to be logging, agriculture, mining, infrastructure (including mega hydroelectric dams) and urban development [23–27]. In earlier literature, swidden cultivation was also found to be a key driver of deforestation in Borneo as it was widely practiced by the natives with traditional understanding of land rights [24,28,29]. While its impact has decreased considerably over the past few decades compared to commercial logging and plantation expansion [30,31], the authors argue that the underlying land rights issue continues to affect forest cover in different ways.

With legal pluralism, native land rights is a contentious issue in Sarawak [32–34]. While there were conflicts between rural native communities and businesses over commercial logging and agro-conversion of forests, land development schemes were established by the government to convert native lands into professionally-run plantations under the agenda of rural economic development [35,36], which also leads to deforestation.

Deforestation is often blamed on illegal logging. Albeit not as prevalent as some other countries, Sarawak was highlighted as a state with forest related corruption and illegal activities [25]. However, only 91 cases of illegal logging were officially reported in Malaysia between 2006 and 2017 [37]. The political economy of the timber industry in Sarawak was described as a domination of a few conglomerates and political elites [38]; over-exploitation would have been easily omitted in official reports of illegal logging or deforestation.

The high deforestation rate pre-1992 was sanctioned by public discourse and policies. The prevailing policies in the 1980s generally placed heavier emphasis upon the wood-producing potential, rather than the protective functions of the forests. Historical agro-conversion from forest to rubber and oil palm plantations was credited as a contributor to the increased income level and disregarded as an environmental disaster with the argument that soil and water catchment protection functions are also provided by perennial agricultural crops. The underlying factors responsible for deforestation in Malaysia was aptly described as 'poverty, institutions and public policies' [24] (p. 115).

2. Research Design and Materials

The Rio Pledge signifies a shift in Malaysia's discourse towards a development pathway that is more sustainable. This research is a case study that compiles the current policies applicable to Sarawak concerning forest as a resource for development with considerations on environmental protection. It studies the relevant legislation that empower this policy direction, especially with regards to governance of land use change from forest to non-forest. Other institutions that may impact land use, namely native land rights and the associated dynamics, will be discussed too.

Figure 4 illustrates the research framework that incorporates these different aspects.

The primary data for this research are legislation and government policies at multiple levels of the government available from the public domain. Starting from the country's constitution, relevant policies and legislation at various scales were selected for systematic review and detailed analysis based on the research framework in Figure 4. Websites and reports of government agencies were also reviewed to analyse the institutional framework that effectuates the relevant legislation and policies. Media releases in these websites and

reports snowballed to secondary data from industry news, non-governmental organisations' (NGOs') blogs, academic and grey literature. Secondary data are triangulated to seek corroborative evidence, before they are analysed together with primary data to provide industry context, NGO and academic views on the policies and the legislation in question.

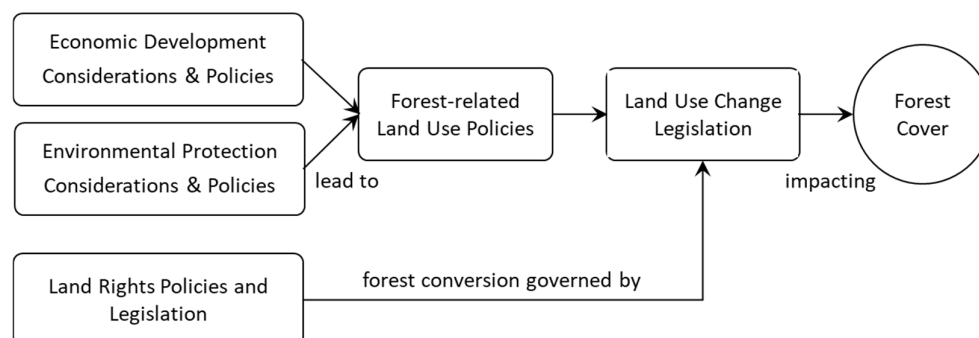


Figure 4. Research framework: Policies and legislation that affect forest cover in Sarawak.

3. Results and Discussions

3.1. Legal and Institutional Framework

Sarawak has a different colonial history from that of Peninsular Malaysia. From 1841 to 1941, Sarawak was under the rule of a British family, with three ‘white Rajahs’—James Brooke, Charles Brooke and Charles Vyner Brooke. The reign was only ceded to the British Crown in 1946, after the Japanese occupation. In comparison, different parts of Peninsular Malaysia were made British colonies starting 1824. Nine Malay states and two Strait Settlements gained independence from the British to form the Federation of Malaya in 1957. In 1963, Sarawak and Sabah left the British’s rule to merge with Malaya to form the Federation of Malaysia [39].

The states, each with their own ruler (sultan or governor), retain a fair amount of power in the Federation. These are clearly spelled out in the Federal Constitution Article 73 to 95E, with the Ninth Schedule listing distribution of power according to subject matters. Due to the two-stage country formation process, Sarawak and Sabah are given total and concurrent power for a few more items, as listed under List IIA and List IIIA of the Schedule, respectively. A summary of the distribution of legislative and executive power is listed in Table 1.

External affairs, the first item under List I of the Schedule, are clearly in charge of the federal government. Signing party to Rio Pledge, Glasgow Forest Declaration, and other international treaties is the federal government who represents the sovereign nation of Malaysia.

Land, agriculture and forestry matters are governed by individual states, as specified in List II. Only the research and pest control aspects of these matters are concurrently governed by the federal and state governments. Native laws and customs are placed under the legislative power of state governments of Sarawak and Sabah under List IIA. List III defines subjects that are governed concurrently by both the federal and state governments. As Sarawak and Sabah does not share a contiguous land mass with Peninsular Malaysia, even though wildlife protection and national parks, town and country planning are listed in List III, the federal laws of National Parks Act 1980 (Act 226), Wildlife Conservation Act 2010 (Act 716), and Town and Country Planning Act 1974 (Act 172) do not cover Sarawak and Sabah. The exclusion is explicitly provided for in Articles 95D and 95E of the Federal Constitution, whereby Sarawak and Sabah are not subjected to the power of the federal Parliament to pass uniform laws about land, and they are excluded from national plans for land utilisation. Even though Article 91 established the National Land Council to formulate national policies on the utilisation of land, such as mining, agriculture, forestry, etc., Sarawak and Sabah are not bound by the decision of the Council on issues that they abstain from.

Table 1. Distribution of legislative and executive power between federal and state governments in Malaysia.

List I: Federal Government	List II: State Governments	List III: Concurrent Power of Federal and State Government
External affairs		Social welfare
Defence		Scholarships
Internal security		Wildlife protection and national parks
Civil and criminal law and the administration of justice	Islamic law	Animal husbandry and veterinary
Citizenship	Land	Town and country planning
Machinery of government	Agriculture and forestry	Vagrancy and itinerant hawkers
Finance	Local governments	Public health and sanitation
Trade, commerce and industry	Local services	Drainage and irrigation
Shipping, navigation and fisheries	State works and water	Rehabilitation of land
Communications and transport	Machinery of the State Government	Fire safety ²
Federal works and power	State holidays	Culture and sports
Survey, inquiries and research	State law	Housing
Education	Inquiries for state purposes	Water supplies and services
Medicine and healthcare	Indemnity of state law	Preservation of heritage
Labour and social security	Turtles and riverine fishing	List IIIA: Sarawak and Sabah only
Welfare of the aborigines	Libraries, museums, historical monuments and records	Personal law
Professional occupations	List IIA: Sarawak and Sabah only	Adulteration of goods
Holidays	Native law and custom	Shipping (<15 tons), maritime and estuarine fisheries
Unincorporated societies	Incorporation of authorities set up by State law	Water and electricity
Agricultural pest control	Ports and harbours, river transport	Agriculture and forestry research, agricultural pest control
Newspapers, publications	Cadastral land surveys	Charities
Censorship	Water supplies and services	Cinematograph films and places of amusement ¹
Cinematograph, places of amusement ¹		Election to the State Assembly
Co-operative societies		
Tourism		
Fire brigade services ²		
Federal Territories		

Note: ¹ Licensing is excluded from List I and included in List IIIA. ² Fire safety measures in the construction and maintenance of buildings is excluded from List I and included in List III. Source: Ninth Schedule of the Federal Constitution of Malaysia.

Notwithstanding the distribution of legislative power is unambiguously specified in the Federal Constitution, the titles of some laws and policies could be misleading. Misnomers include the ‘National’ Forestry Policy 1978, ‘National’ Land Code 1965 and ‘National’ Physical Plan that do not apply to Sarawak and Sabah. Institutional frameworks show inter-scalar overlaps, as Article 94 Clause (3) allows the federal government to establish ministries or departments of government even in subject matters under the executive power of the states. In Sarawak and Sabah, the leading governmental institution for each subject matter is designated as ‘ministry’, which is the same as their federal counterparts, thus adding more confusion.

For Sarawak, the current policies and legislation that are applicable to forest cover are listed in Table 2 and discussed in the succeeding paragraphs.

3.2. Economic Development Considerations

There is short-term economic gain to clear-fell forests and convert them for other land use. Monetary value is realised immediately when a mature forest is harvested for timber. While forests can regenerate naturally, other industrial crops (including fast-growing timber species, rubber and oil palm) grow faster and yield better economic return for the land. The demand for land also increases with growing population as space is needed for settlements, infrastructure, and other economic activities. Economic development considerations are thus an important part of land use planning that determines forest cover. These are embodied in the national, state and regional economic policies discussed in the paragraphs below.

Table 2. Policies and legislations relevant to forest cover in Sarawak.

Scale	Title	Relevance
National	The Federal Constitution, 1957	The highest law of Malaysia
National	Shared Prosperity Vision, 2021–2030	National level economic policy
National	Twelfth Malaysia Plan, 2021–2025	National level economic policy
State	Sarawak Digital Economy Strategy 2018–2022	State level economic policy
State	Sarawak Post COVID-19 Development Strategy 2030	State level economic policy
State	Sarawak Land Use Policy	State level land use plan
National	Malaysia Policy on Forestry, 2021	Forestry, conservation
State	Sarawak Forest Policy, 2019	Forestry, conservation
State	Forests Ordinance, 2015 (Cap. 71)	Forestry, conservation
State	The Forests (Planted Forests) Rules, 1997	Forestry
State	Sarawak Forestry Corporation Ordinance, 1995 (Cap. 17)	Conservation
National	National Policy on Biological Diversity 2016–2025	Conservation
National	National Action Plan for Peatlands, 2011	Conservation
State	National Parks and Nature Reserves Ordinance, 1998 (Cap. 27)	Conservation
State	Wild Life Protection Ordinance, 1998 (Cap. 26)	Conservation
National	National REDD Plus Strategy, 2017	Conservation, climate change
National	REDD Plus Finance Framework, 2021	Conservation, climate change
National	National Policy on Climate Change, 2009	Climate change
National	National Policy on the Environment, 2002	Environmental protection
National	Environmental Quality Act, 1974 (Act 127)	Environmental protection
State	Natural Resources and Environment Ordinance, 1958 (Cap. 84)	Environmental protection
State	Natural Resources and Environment (Prescribed Activities) Order, 1994	Environmental protection
State	Sarawak Timber Industry Development Corporation Ordinance, 1973 (Ord. 3/73)	Timber industry
National	National Agricommodity Policy 2021–2030	Agriculture
National	National Agrofood Policy 2021–2030	Agriculture
State	Land Code, 1958 (Cap. 81)	Land rights
State	Land Custody and Development Authority Ordinance, 1981 (Ord. 4/81)	Land development
State	Native Customs (Declaration) Ordinance, 1996 (Cap. 22)	Native customary law

3.2.1. National Development Plans

The long-term and medium-term economic planning in Malaysia is done at the federal government level, with cascading plans and programmes at the state level. The objective of the previous long-term holistic development plan ‘Vision 2020 (1991–2020)’ is for the nation to become a self-sufficient industrialised nation by 2020. Forest was viewed as a resource for national economic development [40]. The new long-term plan titled ‘Shared Prosperity Vision (2021–2030)’ shifts the focus and lists ‘sustainability’ as one of the eight enablers for this vision to drive national development through green growth. However, the new medium-term plan, the Twelfth Malaysia Plan (2021–2025) also aims to multiply growth in Sarawak and Sabah to reduce the development gap with other states. Strategies such as provision of infrastructure, modernisation of agriculture, enhancement of resource-based manufacturing and construction sectors [41,42] could lead to deforestation in these two states.

3.2.2. State Economic and Development Strategies

Guided by the national plan, Sarawak has introduced strategies according to the circumstances of the state that has a sparse population and a natural resource-dominated economy. The Sarawak Digital Economy Strategy 2018–2022 is not only about industrialisation and e-commerce, but also modernisation of agriculture [43]. The Sarawak Post COVID-19 Development Strategy 2030 includes forestry and agriculture as key economic sectors alongside manufacturing, tourism, mining and services [44]. This is because forestry, agriculture and fisheries are significant sectors that contributed 12% of Sarawak's gross domestic product (GDP) and employed 21% of the labour force in 2019 [45].

This state level development strategy aims to achieve 8% annual GDP growth. One of its targets is to increase the export earnings of timber and non-wood forest products while pursuing sustainable forest management certification and conservation activities. In 2019, timber and wood-based products contributed 5% of exports with earnings totalling MYR4.5 billion [46]; the 2030 target is MYR8 billion [44]. This target of a 78% increase in earnings would mean more forest loss and land degradation if the source of timber is not managed sustainably.

3.2.3. Sarawak Corridor of Renewable Energy (SCORE)

For Sarawak, the direction of Shared Prosperity Vision (2021–2030) is a continuation of that of the Ninth Malaysia Plan, when SCORE was established. SCORE is a long-term development plan (2008–2030) for the central and northern region of Sarawak that leverages on abundant clean renewable energy and natural resources. Currently there are three large-scale hydroelectric power plants in Sarawak: Batang Ai, Bakun and Murum; the fourth plant, Baleh, will come onstream in 2027. All hydroelectric dams are located within SCORE's perimeter, except for Batang Ai [47].

The objectives of SCORE are: (1) To move the state's economy up the value chain, (2) to achieve higher per capita income, (3) to enhance quality of life, (4) to achieve balanced regional development, and (5) to eradicate poverty. The priority industries of SCORE include energy intensive industries to take advantage of the ample electricity supplied by hydroelectric power plants. Timber, palm oil and livestock are among other priority industries [48]. These priority industries, planned township expansion in growth nodes and supporting infrastructure, such as new hydroelectric dams, electricity grid, communication towers and connecting roads, will lead to land use change or even deforestation.

3.3. Environmental Protection Considerations

The transboundary haze problems caused by agriculture land preparation and uncontrolled peat fire in Malaysia and Indonesia in the late 1990s illustrated the clash of economic development priorities and the environment. Maintaining forests is not only for long-term timber supply and genetic pool, but also for immediate environmental protection at local and global scale. Local environmental considerations such as water, soil and air quality protection can be incorporated into local governance. Global considerations often involve multilateral agreements, some of which became the impetus for national policies; these are discussed in the paragraphs below.

3.3.1. National Policy on the Environment

The National Policy on the Environment (2002) sets the tone of environmental management in Malaysia within the context of sustainable development that embodies three pillars: Economic development, social development and environmental protection. It seeks to integrate environmental considerations into development activities to foster long-term economic growth, human development and environmental enhancement. Instead of the ministry in charge of the environment, the implementation of the National Policy on the Environment (2002) was placed under the purview of the National Development Council [49]. This reporting line reveals that the policy is treated as a strategy paper for development,

rather than an action roadmap for environmental protection. Nonetheless, this policy is currently under review [42].

3.3.2. National Policy on Climate Change

The National Policy on Climate Change (2009) continued in the same tone. The policy statement of ‘ensure climate-resilient development to fulfil national aspirations for sustainability’ insinuates that the priority is on national development despite the fact that climate change, especially tropical deforestation, are issues debated in the international arena. Unlike the National Policy on the Environment (2002), this policy includes a long list of principles, strategic thrusts and key actions across multiple disciplines. This long list ultimately points towards the goals of the sustainable use of natural resources and balanced adaptation and mitigation responses to ensure climate-resilient and sustainable development [50].

3.3.3. The National REDD Plus Strategy

REDD Plus (or ‘REDD+’) officially refers to ‘Reducing Emissions from Deforestation and Forest Degradation in Developing Countries, and the Role of Conservation, Sustainable Management of Forests, and Enhancement of Forest Carbon Stocks in Developing Countries’, as coined at COP19 of the UNFCCC. It is a transboundary climate change initiative that provides result-based finance to developing countries to maintain the quantity and quality of their forests, and is an example of a non-traditional form of carbon-pricing [51]. As a participant of this initiative, Malaysia implemented the National REDD Plus strategy, a national forest reference level, a national forest monitoring system and an information system on safeguards of REDD+ activities. These systems help the country to monitor forest activities in all the states, thus aligning efforts to prevent unaccounted deforestation.

Malaysia’s National REDD Plus Strategy explicitly describes itself as an ambitious initiative that facilitates transformational change in the forestry sector. The first objective is “to promote consistency and synergies in the implementation of climate change, forest and biodiversity related policies between federal and state levels”. The strategy touches on biodiversity and ecosystem conservation, sustainable management of forest and agriculture production, involvement of indigenous communities and private sectors [52].

REDD Plus is a welcomed booster for Malaysia to honour the Rio Pledge. The REDD Plus Finance Framework includes two instruments: (1) the non-market-based Forest Conservation Certificate, and (2) Forest Carbon Offset for domestic carbon trading. These are mechanisms to incentivise activities that help to keep forests standing while delivering environmental, socio-economic and climate change mitigation benefits [53]. At the time of writing, these instruments are yet to be implemented.

3.4. Sarawak Land Use Policy

Taking into account economic development and environmental protection considerations, the Sarawak Land Use Policy allocates 4.0 Mha for agriculture, 7.0 Mha for forest, and the balance 1.4 Mha for miscellaneous land use such as townships, industries and infrastructure (see Table 3) [54]. If this land use policy is fully realised, the forest cover for Sarawak would be 56%, and it would contribute 21% to Malaysia’s total forest cover. Assuming other states would not change their total forested area, Malaysia would still have 53% forest cover.

Out of the 7.0 Mha allocated for forest, the targets are to gazette 6.0 Mha as PFE, and 1.0 Mha as TPA [54]. These gazette targets are essential to maintain forest cover of Sarawak as there is no legal restriction against land use change for forested areas on state land, much less on private land—except for disapproval on the ground of environmental impact assessment (EIA). For state land forests, relevant authorities would assess the economic development needs against environmental protection considerations to decide whether to develop them into townships or industries or infrastructure, to convert them

into agriculture estates, to maintain them as forest for timber production, or to conserve them for ecological protection.

Table 3. Land Use Policy of Sarawak, Malaysia.

Land Use	Area (Mha)	% of Sarawak Land Mass
Forest		
Permanent Forest Estates (PFE)	6.0	48%
Totally Protected Area (TPA)	1.0	8%
Agriculture		
Oil Palm	2.0	16%
Other crops	2.0	16%
Others (settlements, industries, infrastructure)	1.4	11%
Total	12.4	100%

Source: State Economic Planning Unit [54].

Currently, out of the 7.7 Mha forested land in Sarawak, 4.0 Mha is gazetted as PFE [55] and 0.9 Mha as TPA [56] and the balance is on state land. The target of the Forest Department of Sarawak is to gazette another 0.85 Mha of PFE by 2025 [57].

3.4.1. Forestry Policies

The Sarawak Forest Policy 2019 continues the spirit of its pre-independence version, the Forest Policy of Sarawak 1954, with a succinct mission statement: “to manage and develop forest resources for socio-economic and environmental sustainability” [58,59]. The current first version of Malaysia Policy on Forestry (2021) is not more than a simple compilation of the Forestry Policy Of Peninsular Malaysia, Sabah Forest Policy and Sarawak Forest Policy 2019 [60].

The Sarawak Forest Policy defines five categories of forest land: totally protected area (TPA), forest reserve, protected forest, communal forest and state land forest. Forest reserve, protected forest and communal forest are collectively called ‘permanent forest estates’ (PFE) [61]. The attributes of these categorisations are listed in Table 4 below.

Table 4. Categories of forests in Sarawak.

Totally Protected Area	Permanent Forest Estates			State Land Forest
	Forest Reserve	Protected Forest	Communal Forest	
Conservation areas including national parks, nature reserves and wildlife sanctuaries. No logging, restricted usufruct.	Production forest. Allow usufructuary rights for specific communities only.	Production forest. Allow usufructuary rights for all communities.	Not for commercial logging. Managed by specified communities.	Can be converted to other land use.

Source: Forest Department Sarawak (2019).

Besides the gazettement of TPA and PFE as per the Sarawak Land Use Policy, the Sarawak Forest Policy 2019 listed a few objectives that manages forest in Sarawak as an economic resource. These include sustainable forest management, forest landscape restoration and planted forest development [59].

Industrial tree plantations of fast-growing timber species have been encouraged by the government since the Ninth Malaysia Plan. It is highlighted again in the National Agricommodity Policy 2021–2030 [62]. Sarawak’s Timber Industry Master Plan relies on planted tree crops as the main source of raw material for downstream wood-based industry [63]. Sarawak’s target is to have 1.0 Mha of industrial tree plantations by 2025 [57]. As of December 2020, out of the 2.5 Mha Licence for Planted Forest (LPF) concession areas, 0.52 Mha has been planted with fast-growing exotic species such as *Acacia spp*, *Eucalyptus sp*, *Paraserianthes Falcataria (batai)* and local species such as *Neolamarckia cadamba*

(*kelampayan*) [64]. Some of these concession areas overlap with that of the Forest Timber License [65], indicating that some natural forests are intended to be clear-felled and converted into tree plantations.

The establishment of industrial tree plantations on unforested land would increase forest cover. However, converting an existing natural forest to a monocrop planted forest will deprive the land of biodiversity and destroy the in-situ carbon pool even though the forest cover will resume within a few years. As tree plantations involve high upfront capitals, The Forests Ordinance (Planted Forests) Rules (1997) initially allowed LPF holders to plant oil palm on 20% of the plantable area for one crop cycle of 25 years [66,67]. This provision was rescinded in 2021 [68]. The Forest Department aims to have 100% of LPF areas monitored annually using geographic information systems to ensure that no new oil palm is planted in areas meant for tree crops [57]. Enforcement is also necessary to make sure that 20% is converted from oil palm (which is not considered as 'forest') back to forest tree crops after 25 years.

3.4.2. Conservation and Restoration Policies

In order to meet the country's commitment at the Convention on Biological Diversity, the National Policy on Biological Diversity (2016–2025) sets a target to protect at least 20% of terrestrial areas and inland waters by 2025, through a representative system of protected areas and other effective area-based conservation measures [13,69]. The policy also incorporates targets formulated under the National Action Plan for Peatlands 2011 [70]. Besides the 1.0 Mha allocation under Sarawak Land Use Policy that will contribute 15% to this target, the Sarawak Forest Policy 2019 also aims to establish corridors and buffer zones linking and surrounding TPA and high conservation value areas.

The National Policy on Biological Diversity aims to explore new financing mechanisms for conservation such as payment for ecosystem services (PES) and carbon credit [69]. This initiative is echoed by the Forest Department Sarawak Strategic Plan 2021–2025 [57]. Meanwhile, ecological fiscal transfer mechanism was introduced in 2019, with an allocation of MYR70 million in the National Budget 2022 to encourage the gazetting of protected areas by state governments and to fund other biodiversity conservation programmes [71].

In 2021, the federal Ministry of Energy and Natural Resources launched the 100 Million Trees Planting Campaign aims to plant 100 million trees within five years throughout the country [72]. Not all the trees planted will contribute directly to the forest cover of Malaysia because they can be any tree species, planted by anybody anywhere, including public parks and home gardens. This programme also serves as an awareness campaign for the public, which may help indirectly in the conservation of forest.

However, at the state level, Sarawak incorporates the cascaded target of 35 million trees into its forest landscape restoration agenda, which includes the directive of planting the same number of indigenous trees as that harvested in the logging areas [57,73]. Detailed guidelines for silviculture and enrichment planting that include soil treatment, species matching, etc, are provided to timber concessionaires [74]. Forest Department Sarawak committed a strategic action plan to audit, inspect and verify the progress of planting under this directive [57]. The state government has allocated MYR62 million under the Twelfth Malaysia Plan for forest restoration efforts [75]. This approach would help to maintain the quantity and quality of forests in Sarawak.

3.4.3. Agriculture Policies

Agriculture in Malaysia can be described as a dualism of smallholders with an average farm size of one to two hectares and plantations with estates of exceeding 500 ha [76]. Thus, there are two national policies: National Agrofood Policy 2021–2030 and National Agricommodity Policy 2021–2030. For the purpose of federal government administration, the plantation-based and commodity industries include oil palm, rubber, timber, cocoa, pepper and plant-based fibre [62,77]. The predecessor of these policies, the Third National

Agriculture Policy 1998–2010 intended for more land in Sarawak for planting of oil palm, one of the most valuable cash crops in Malaysia [78].

Historically, however, only 28% (3.5 Mha) of Sarawak's land mass was considered suitable for commercial agriculture; with 58% being steep slopes, 13% peatland, and 1% infertile land [79]. The Sarawak government commissioned a study in 1999 to develop coastal peatland, which led to the conversion of 'unproductive' peat swamp forests to farmlands despite international debates [80]. Oil palm, along with pineapple, sago, etc., are found to be suitable crops on peatland, especially with techniques developed by the Sarawak Tropical Peat Research Institute [81]. This enabled the Sarawak government to expand the agriculture land allocation to 4.0 Mha, of which 2.0 Mha is for oil palm estates and smallholdings. At the end of 2021, 1.6 Mha in Sarawak was already planted with oil palm, whereas the total planted area in Malaysia was 5.7 Mha [16]. The federal government has committed to cap any palm oil expansion to a maximum of 6.5 Mha [82], which still allows Sarawak to achieve the 2.0 Mha target.

Other principal crops in Sarawak include rubber, paddy and pepper, which together occupies less than 300 kha [77,83]. Sarawak aspires to be a net food exporter by 2030 [44]. Agriculture in Sarawak has intensified from the traditional small farms into large-scale estates under the direction of the state Ministry of Modernisation of Agriculture and Regional Development (renamed Ministry of Food Industry, Commodity and Regional Development in 2022). With this aspiration and the allocation of 2.0 Mha agriculture land for crops other than oil palm, more forest loss will be inevitable before the Glasgow Forest Declaration deadline of 2030.

3.4.4. Sustainability Certifications and Policies

Even as Malaysia strives to honour its international commitments on forest cover, most international forest governance and policy arrangements have not achieved the intended results [84]. Trade and market approaches are the current trends to tackle this global concern although they do not lack criticism in issues such as fair trade, inclusion of smallholders, effectiveness against deforestation, etc [85,86]. Two prominent trade approaches are the European Commission Renewable Energy Directive (RED II) that will phase out palm oil in biofuel by 2030 [87], and the European Union Forest Law Enforcement, Governance and Trade (EU FLEGT) that will ban the import of any illegally produced timber and wood-based products as defined in voluntary partnership agreements [88]. The Malaysian government views these as 'discriminatory campaigns against Malaysia's agricommodity products', and raises concerted efforts to counter them [42].

One of the efforts is to use the market-based approach of eco-labelling or sustainability certification. Sustainability certification schemes are normally initiated by representatives from civil society groups, suppliers and customers in the industry. Unbiased standards are established for certification and independent audits are required to ensure credibility. Suppliers voluntarily seek certification in order to gain access to customers who demand verified sustainable products and would pay higher prices. For the collective reputation of the country, certifications of key commodities are encouraged or even compelled by the governments. In these cases, e.g., oil palm and forest management certifications in Malaysia, the neoliberal voluntary aspect of market approach is replaced by legal coercion.

For the palm oil industry, the Roundtable on Sustainable Palm Oil (RSPO) was established in 2004. The Malaysian government established the Malaysian Sustainable Palm Oil (MSPO) certification scheme in 2015 for the interest of national reputation, taking into account local circumstances and the needs of smallholders. With mounting pressure from foreign trade partners, e.g., the EU, the Malaysian government makes certification mandatory for all oil palm growers, including smallholders. As of March 2022, 5.6 Mha of oil palm plantations and smallholdings are certified under MSPO (representing 97.3% of planted areas) [89]; 1.2 Mha are also under RSPO certification [90]; a few companies further declare 'no deforestation, no peat and no exploitation' (NDPE) policy. The target of the National Agricommodity Policy 2021–2030 is to achieve 100% certification by 2030 [62]. Uncertified

growers will be denied license and consequently access to downstream processing facilities and markets. The Malaysian Palm Oil Board Act, 1998 (Act 582) empowers the Malaysia Palm Oil Board (MPOB) in all matters concerning licensing and penalty of palm oil supply chain in the country [91]. Certification and licensing requirements raise the entry barrier for smallholders and should discourage rampant conversion of forest for oil palm planting on private land or native customary land.

Sustainable forest management certification schemes have been around since the 1990s. Forest Stewardship Council is an international certification scheme established in 1993. The Malaysian Timber Certification Scheme (MTCS) was established in 2001. It was endorsed by the international Programme for the Endorsement of Forest Certification (PEFC) in 2009. 29% of natural and planted forest in Malaysia is certified for sustainable forest management in 2020. The target of the National Agricommodity Policy 2021–2030 is to achieve 50% by 2030 [62]. For Sarawak, the current achievement is 1.2 Mha of certified natural and planted forest, and the target is to have all the long-term timber licence holders (4.5 Mha) certified by 2022 [44,92]. Failure to achieve certification could lead to retraction of the license.

Indeed, sustainable forest management certification schemes have been incorporated into forest governance in Malaysia. With third party audit mechanisms, these certification schemes promote transparency, encourage community participation and provide a safeguard against political pressure on forest resources [93]. Each timber producing state in Peninsular Malaysia is organised as a forest management unit under MTCS. Amongst its nine principles, the criteria and indicators of MTCS include compliance with laws and hence adherence to annual allowable cut quota negotiated by the states at the National Land Council with consideration of forest yield [93]. The integrity of MTCS is preserved when the Kelantan state forest management unit has been denied certification since 2016 due to infringement of allowable cut quota. Timber and wood products produced in Kelantan are not allowed to carry MTCS and PEFC certification marks and thus suffer from poorer market access [94].

Besides forest management, controls along the chain of custody are important to ascertain that timber products manufactured or exported are sourced from legal and certified forests, either domestically or internationally. These controls are built into the Peninsular Malaysia Timber Legality Assurance Scheme, the Sabah Timber Legality Assurance Scheme and the Sarawak Timber Legality Verification System that meet the requirements of the Voluntary Partnership Agreement negotiated between the Malaysian government and the EU under the Action Plan for Forest Law Enforcement, Governance and Trade [95]. With sustainable management of forest and tight control along the chain of custody, timber yield would be optimised, therefore reducing the threat of forest degradation.

3.5. Land Rights and Native Customary Laws

The property rights to land in Sarawak is still going through a transition from the traditional understanding of land rights to the ‘western’ concept of land titling. The traditional concept of land is based on communal resources, with individual pioneer rights to cultivation plots agreed among the community. The line between ownership and usage rights is blurred; but the rights are clearly understood within the communities who practise native customs. With the establishment of *Majlis Adat Istiadat Sarawak* (Council for Native Customs and Traditions), the government encourages the codification of native customs into modern forms of customary laws. As of 2018, seven communities have codified their *adat* or *adet* (customary laws) and gazetted them under the Native Customs (Declaration) Ordinance 1996 (Cap. 22) [96,97].

3.5.1. Native Customary Land

Since the era of Rajah Brooke, native customary rights (NCR) to land have been recognized [32,34]. The Sarawak Land Code 1958 (Cap. 81) categorises the land into mixed zone land, native land, government reserve land and interior land. The code provides that NCR land established before 1 January 1958 are given legitimate titles under the Torrens

System. Native communal reserves and native territorial domains can be gazetted under Section 6 and Section 6A, respectively, and native land titles can be granted to individuals under Section 18 of Land Code 1958 [98]. Controversies lie in the rights of communities established after this date. The onus to provide proofs that an area had been settled and cultivated by their ancestors, or a piece of forest has been used for hunting and gathering to meet their subsistence needs is placed on the claimants. This is not an easy task as the native history has been oral-based for the longest time. Overlapping claims and disputes of NCR areas are common phenomena, some of which are adjudicated by Native Courts established by the Native Courts Ordinance 1992 (Ord 9/92) [99]. Surveys are thus required by Section 28 of the Land Code before alienation of any state land.

As of 2020, only around 2.8 Mha (23%) of land in Sarawak is titled [100]. The Sarawak Land and Survey Department is tasked with the enormous responsibility to conduct surveys for NCR land claimed by communities and individuals. The target for the Eleventh Malaysia Plan was to survey 350 kha of NCR land by 2020, but only 251 kha was achieved. The target for the Twelfth Malaysia Plan is to survey 397 kha in Sarawak [42].

The fact that any unalienated land could be subject to NCR claims complicates land use planning in Sarawak. Furthermore, NCR land treatments administered by the government could be disputed and challenged in the judicial system. Section 38 of the Land Code 1958 reserves margin of land along all rivers, sea coasts, roads, borders, etc. for the government, while the Forests Ordinance 2015, the National Parks and Nature Reserves Ordinance 1998 and Wild Life Protection Ordinance 1998 either extinguish or admit and restrict usufructuary rights exercisable [61,98,101,102]. Yet, there is no shortage of lawsuits against the government. Two landmark cases that went through multiple appeal steps to the superior courts are listed here to illustrate the complexities of land rights related legislations in Sarawak.

Nor Anak Nyawai & Ors v Borneo Pulp Plantation Sdn Bhd & Ors, 2001 6 MLJ 241 (HC) and *Superintendent of Lands & Surveys, Bintulu v Nor Anak Nyawai & Ors and another*, 2006 1 MLJ 256 (COA). The Court of Appeal ruled that although the natives may not hold any title to the land and may be termed licensees, such licence “cannot be terminable at will. Theirs are native customary rights which can only be extinguished in accordance with the laws and this is after payment of compensation” [32,103,104].

Director of Forest, Sarawak & Anor v TR Sandah ak Tabau & Ors (suing on behalf of themselves and 22 other proprietors, occupiers, holders and claimants of native customary rights (‘NCR’) land situated at Rumah Sandah and Rumah Lanjang, Ulu Machan Kanowit) and other appeals, 2017 2 MLJ 281 (FC). There was no majority judgement by the Federal Court, which is the highest court in Malaysia. The justices concurred that while the concept of native territorial domain is part of customary law, it fell short of Section 5 of Land Code 1958 in the establishment of NCR and thus did not have the force of law under Article 160 of the Federal Constitution. This case occurred before the 2018 Amendment to Land Code 1958, when ‘native territorial domain’ was inserted as Section 6A [104].

The complexities in land rights lead to uncertainty in forest cover in the future. While NCR land is still largely under-utilised at the moment, exposure and immersion in the cash economy means that land alienated to native communities would ultimately evolve into income-generating assets, likely with forest as collateral damage.

3.5.2. Native Land Development Schemes

It is estimated that around 1.5 Mha of land in Sarawak is attached with native customary rights; most of it is deemed to be under-utilised [36,105] by the rural communities for subsistence farming, hunting and gathering. As the country progresses, these ‘land-rich’ rural indigenous communities are left behind in the development of cash economy because their lands are used in the traditional ways that provide them with subsistence needs but not cash income. Inspired by the success of the Federal Land Development Authority (FELDA) in Peninsular Malaysia in the 1950s, a few land development schemes have been introduced in Sarawak since the 1960s.

The earliest of these efforts was a resettlement scheme administered by the Sarawak Land Development Board (SLDB) with the combined objectives of agrarian reform, security and hydropower construction. This scheme was based on rubber and pepper plantations and was abandoned in 1972. An in-situ land development scheme was introduced by the Sarawak Land Consolidation and Rehabilitation Authority (SALCRA) in 1976. This scheme helps the NCR land owners to develop oil palm, rubber and tea plantations. The public–private partnership model was introduced in the third scheme whereby government agencies, either SLDB, SALCRA or Land Custody and Development Authority (LCDA), co-invest and facilitate the formation of joint ventures with private investors and NCR land owners [106,107].

These state government-facilitated land development schemes, together with schemes led by federal government agencies, namely FELDA and Federal Land Consolidation and Rehabilitation Authority (FELCRA), have developed 190 kha into oil palm plantations and various other agriculture estates by 2016 [108]. These land consolidation and development schemes have the benefit of being professionally run and are less likely to result in undesired deforestation and land degradation.

3.6. Land Use and Land Use Change Legislation

Policy intentions and objectives can only be effectuated with the backbone of legislation. In the case of forest cover, legislation is needed to maintain and protect existing forests, and to regulate the conversion of forest into other land use.

3.6.1. Legislation That Maintains and Protects Forests

The legislation that gives legal protection to forests in Sarawak are the Forests Ordinance 2015 (Cap. 71) that gazette PFE, and the National Parks and Nature Reserves Ordinance 1998 (Cap. 27) and Wild Life Protection Ordinance 1998 (Cap. 26) that gazette TPA [61,101,102].

While forests in Sabah and Peninsular Malaysia are legally categorised based on the objective of maintaining the forests [109,110], these Sarawak ordinances also categorise forests based on the implications on usufructuary rights of the forest dependent people, i.e., whether people can hunt, fish, and gather forest produce from forests for subsistence purposes (see Table 4). Therefore, these ordinances go into great details to deal with NCR in establishment of forest reserves, protected forests and TPAs. They prescribe the process of gazettement that includes notification, claim, enquiry, report, compensation, proclamation and appeal mechanisms. NCR could be extinguished or admitted with clearly defined usufructuary rights. In principle, with proper enforcement and barring further legal challenges, TPAs and PFEs constituted under these ordinances should remain as forest *permanently* [61,101,102].

However, the status of forest reserve and protected forest can be revoked according to Clause 29, and communal forest can be abolished according to Clause 38 of the Forests Ordinance 2015 [61]. Since the gazettement of the first forest reserve in 1920, 1.0 Mha has been excised to give way to development, conversion to TPAs and other needs. The ordinance does not mention replacement of excised PFE. This could potentially be a loophole to deplete forest resources, as happened in Peninsular Malaysia [111], where the pressure on forest resources is greater. The replacement of excised PFE is listed in the Thrust 1 of Strategy 1 of the Sarawak Forest Policy 2019, with a target to formulate a replacement policy by 2022 [57]. At the time of writing, this replacement policy has not been announced yet.

There is no revocation clause in the National Parks and Nature Reserves Ordinance 1998 and Wild Life Protection Ordinance 1998. TPAs established in forested areas in Sarawak will remain securely under forest cover [101,102].

The Forests Ordinance 2015 is also a law that regulate the forestry industry. It dictates that the taking of any forest produce (including payable ecosystem services and carbon sequestration [112]) from any land in Sarawak for commercial purposes requires a licence. Licensing and permitting processes of commercial timber production and sawmills, regis-

tration of workmen, certification of exports, as well as payment of royalty, premium, cess and fees are also included herein. The lack of transparency in the licence-granting process is a long-standing criticism on forest governance of Sarawak [25,113]. Clause 40.1 (b) mentions a tendering process, but with the added caveat of ‘when necessary’. This leeway may lead to forest degradation and deforestation when timber harvesting is not carried out in a sustainable manner, or according to Sarawak Land Use Policy. Evidence of misuse of this leeway can be inferred when forest concessions totalling 2.8 Mha were found to be in the hands of political allies of Abdul Rahman Ya’kub (the third chief minister) and Abdul Taib Mahmud (the fourth chief minister) in 1987—most likely a cause of the high rate of deforestation during this period.

Forests Ordinance 2015 also specifies offences and penalties. Under the ordinance, authorised forest officers are given power to arrest without warrant. Collection of any forest produce without licence, logging in excess of the production limit, or export of timber from the state without export clearance are liable to fines or imprisonment [61]. Toughened penalties were introduced since 2015. This, together with the implementation of monitoring technology, has successfully halved the number of forest offences compared to the late 1990s [114–116], contributed to the lower rate of deforestation in the state.

3.6.2. Legislation That Governs Land Use Change

Due to the segregation of legislative power between federal and state governments, different aspects of environmental quality are governed by different government agencies. The Sarawak Natural Resources and Environment Ordinance 1958 (Cap. 84) governs land use, water, forestry, mining and quarry, agricultural estate development, clearing and burning of vegetation, inland and foreshore fishery. Meanwhile, all other aspects are governed by the federal Environmental Quality Act 1974 (Act 127) [117,118].

Under the Natural Resources and Environment (Prescribed Activities) Order 1994, large-scale agricultural development activities in Sarawak require approval based on environmental impact assessment (EIA). These include: (i) The development of an area exceeding 500 ha from forested land or from different land use, or resettlement of more than 100 families, and (ii) conversion of mangrove swamps exceeding 50 ha. Other items included in this order are: logging in previously logged or closed-coupe areas larger than 500 ha, or in any declared water catchment areas; establishment of planted forest; clearing of any land larger than 50 ha, etc [119].

Vested with the power to prosecute, the Natural Resources and Environment Ordinance 1958 (Cap. 84) could stop deforestation activities that are deemed to have unnecessary negative impact to the environment or not adhering to the state’s land use policies. The short-coming of this ordinance is the lack of mandate for public participation in the EIA process [120]. Even though the ordinance provides room to have ‘other members with appropriate experience, knowledge or expertise’ on the board of directors, there is currently no evidence that civil society and academia are included to provide counter-balance to government’s perspectives [121].

4. Summary

Even though 62% of the land mass of Sarawak is currently under forest cover, policy and legislative framework will decide whether Sarawak will maintain sufficient forest to contribute to Malaysia’s Rio Pledge of minimum 50% forest cover in the future. Policies are formulated at the national and state levels based on economic development and environmental protection considerations that drive towards opposite results in terms of forest cover. Taking these into account, the Sarawak Land Use Policy sets the allocation for forest, agriculture and other land use. With the realisation of this policy, the forest cover for Sarawak would drop to 56%, and that for Malaysia would be 53%—assuming other states do not change their forest cover.

This controlled deforestation, however, needs to be scheduled before 2030 to meet the commitment of no forest loss. This schedule is in line with the agriculture policies that target

to increase oil palm and other food crops. The Sarawak Forest Policy 2019 include strategy thrusts that manage forests for conservation and long-term sustainability. This would help to halt and reverse land degradation as committed under the Glasgow Forest Declaration.

Legislation that maintains and protects forests in Sarawak include the Forests Ordinance 2015 that constitutes PFEs and the National Parks and Nature Reserves Ordinance 1998 and Wild Life Protection Ordinance 1998 constitute TPAs. PFEs and TPAs would eventually make up the entire allocation of forests under Sarawak Land Use Policy as state land forests can be converted for other land use.

Land use change is regulated by the Natural Resources and Environment Ordinance 1958. Large scale vegetation clearing and land use change are subject to EIA and the approval of Natural Resources and Environment Board. This legal setup prevents undesired large-scale deforestation and land degradation beyond the allocation under Sarawak Land Use Policy.

Land ownership and land rights of native communities must be considered alongside land use policies and legislations, as alienated land can be deforested for subsistence or commercial use, subject to EIA approval. The Land Code 1958 provides that native communities can claim titles for their NCR land, but the government reserve land (including PFEs and TPAs) are extinguished of such rights except where limited usufructuary rights are specified. Provided that gazettlements of PFEs and TPAs are not reversed by the court in favour of NCR claims, the full attainment of the Sarawak Land Use Policy will contribute significantly to Malaysia's forest pledges.

5. Recommendations and Conclusions

Interpreting with a purposive approach, the ordinances that constitute PFEs and TPAs should be able to clearly demarcate land that will stay as forest in perpetuity, except for some weaknesses especially with regards to the revocation of PFE status. Currently, the status of forest reserve or protected forest could be revoked by the Minister, and the legislation does not require constitution of similar size and quality of PFEs to offset the excised forested areas [61]. It is thus recommended that the PFE replacement requirement to be legislated, rather than merely formulated as a policy as stipulated in the Forest Department Sarawak Strategic Plan 2021–2025 [57]. Besides maintaining the total forest area, legislating PFE replacement would also lead to more attention to its excision, hence preventing corruption and erroneous decisions. This is important as state land forest left for conversion to other land use are decreasing, while population growth and economic development continues to tempt the compromise of the Sarawak Land Use Policy.

The Sarawak Land Use Policy is a long-term strategy that needs to be followed through by all functions of the state government regardless of political inclination. Even as it is cascaded to various government agencies for implementation, it is essential that a tally is kept by an appointed agency and the progress or deviation is made known to the stakeholders, including the people of Sarawak. Transparency and regular reviews are foundations of good governance that could help to ensure that rules are enforced and policies are executed accordingly. As government agencies in Malaysia are encouraged to implement an independently certified quality management system under the ISO 9000 family of standards, it is recommended that the governance of the Sarawak Land Use Policy be included as a scope subject to audits [122].

The Land Code 1958 amalgamates the native customary rights to land into the Torrens System by incorporating both the usufructuary and ownership rights to land. Under the legal pluralism of federal laws, state laws and native customary laws, land gazetted to be PFEs and TPAs could be challenged by natives with substantiated claims to land, and thus subject to the eventuality of deforestation. While small-scale deforestation for personal and subsistence use is difficult to avoid, large-scale conversion of forest into other land use (more than 50 ha) can be managed using the EIA process as prescribed under the Natural Resources And Environment Ordinance (Prescribed Activities) Order [119]. EIA is thus an important governance tool. It is recommended that the EIA process be strengthened,

notably with mandatory public review, and possibly the inclusion of NGOs on the Board of Directors or Policy-making Body.

NGOs provide check-and-balance for good governance; they convey voices of communities in matters regarding forest and the environment. NGOs can be made allies in the quest for sustainable natural resource management of Sarawak and forest cover commitment in Malaysia. Communication, education and public awareness campaigns about environmental protection can be implemented through environmental NGOs, and best practices for the sustainable management of smallholdings can be disseminated in similar ways. An example is the Dayak Oil Palm Planters Association (DOPPA) who helps its members to obtain MSPO certification [123]. Enhancement of knowledge and the enforcement of mandatory MSPO certification would ensure sustainable management of oil palm plantations and avoid unnecessary deforestation, even for smallholdings that do not require approval based on EIA.

Ultimately, a piece of forest will be conserved if the combined intrinsic and instrumental value to its owner is higher than the value of deforested land [124]. The value of standing forest can be increased by payment for ecosystem services and carbon credit production. The Sarawak government have legislated the policy instrument to enable the production of carbon credit or carbon offset by carbon sequestration of forest in May 2022 [112]. It is recommended that the government encourage the development of supporting services around forest carbon credit production, e.g., knowledge workers such as project developers and auditors, thus making forest carbon credit production accessible to all, including owners of ancestral forested land.

Even though the fate of forest cover is far from certain under this complex interplay of native land rights, economic development and environmental protection considerations for land use, the above-mentioned measures could further strengthen the policies and legislations in place, reducing unplanned deforestation and making Malaysia's aspiration of forest cover an attainable target.

It is not the authors' intention to formulate new policies based on this research. Forest utilisation and conservation is a political ecology issue that deserves detailed studies from socioeconomic and political perspectives. This paper serves as a departure point for future researchers who would like to study various forest and land use aspects in Malaysia, including, *inter alia*, timber production, biodiversity conservation, payment for ecosystem services, and forest carbon credit.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Historical Forest Cover of Malaysia (million hectare).

Year	Sarawak	Peninsular Malaysia + Sabah	Total Malaysia	Year	Sarawak	Peninsular Malaysia + Sabah	Total Malaysia
1963	9.141	15.263	24.404	1992	8.162	10.429	18.591
1964	9.141	15.065	24.206	1993	8.166	10.402	18.568
1965	9.141	14.992	24.133	1994	7.707	10.267	17.974
1966	9.136	14.538	23.674	1995	7.675	10.281	17.956
1967	9.433	14.553	23.986	1996	7.961	10.141	18.102
1968	9.433	14.428	23.861	1997	8.244	10.226	18.470
1969	9.433	14.395	23.828	1998	8.123	10.274	18.397
1970	9.433	14.369	23.802	1999	8.095	10.343	18.438
1971	9.433	14.235	23.668	2000	7.861	10.335	18.196
1972	9.433	13.947	23.380	2001	7.816	10.280	18.096
1973	9.433	13.810	23.243	2002	7.780	10.256	18.036
1974	9.433	13.679	23.112	2003	7.800	10.219	18.019
1975	9.433	12.828	22.261	2004	7.782	10.183	17.966
1976	9.433	12.737	22.170	2005	7.624	10.190	17.815
1977	9.433	12.485	21.918	2006	7.600	10.194	17.795
1978	9.433	12.276	21.709	2007	7.550	10.163	17.713
1979	9.431	11.802	21.233	2008	7.606	10.074	17.681
1980	9.432	11.717	21.149	2009	7.558	10.148	17.707
1981	9.441	11.306	20.747	2010	7.627	10.300	17.927
1982	9.432	11.200	20.632	2011	7.688	10.243	17.931
1983	9.430	11.268	20.698	2012	7.795	10.218	18.013
1984	9.438	11.118	20.556	2013	7.795	10.261	18.056
1985	8.768	11.130	19.898	2014	8.034	10.243	18.278
1986	8.757	11.192	19.949	2015	7.869	10.343	18.212
1987	8.729	11.065	19.794	2016	7.910	10.331	18.241
1988	8.728	10.979	19.707	2017	7.799	10.533	18.332
1989	8.715	10.991	19.706	2018	7.748	10.525	18.273
1990	8.072	10.710	18.782	2019	7.722	10.408	18.130
1991	8.226	10.480	18.706	2020	7.722	10.368	18.090

Source: Ministry of Energy and Natural Resources [8], Forestry Department Peninsular Malaysia [4], Forest Department Sarawak [5], Sabah Forestry Department [6], Yearbooks of Statistic Malaysia [7].

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