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The ontological dimension of energy security in Guatemala: Towards energy systems from below and with the Earth

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ABSTRACT

Taking Guatemala as a case study, this case study helps understand energy governance where multiethnicity and pluriculturality should inform decisions on energy systems' design. To do so, drawing on a mixed methodological approach that involves content and narrative analysis, coupled with a proposed theory framework articulated from the constructivist approaches of Foucault, discourse analysis, critical discourse analysis, and discursive psychology, this research mainly analyses two documents: the Energy Policy 2019–2050 elaborated by the Mines and Energy Ministry (MEM) of Guatemala and, the Study on the Guatemalan energy model and its socio-environmental repercussions by the Asociación Comisión Paz y Ecología (COPAE). The COPAE document represents the only alternative energy model proposed so far. Such a proposal is based on the perspective of Maya's People Board. This research seeks to answer the following questions: How do energy security discourses produce and reproduce worlds and subjectivities? What are the implications of energy security discourses over the right of existence, decolonial justice, and territorial sovereignty? Are current energy justice frameworks enough to capture what is at stake? Given Guatemala's pluricultural and multiethnic nature and its implications for energy policy and vice versa, this case study can inform energy governance in other contexts, especially where socio-cultural conflicts linked to energy transition emerge.

The ontological awareness this research raises unveils that "the world that we design [through energy security discourses], designs us back."

1. Introduction

Over the past century, energy security has been a field predominantly shaped by realist and liberalist discourses. Driven by economic growth-oriented goals, nations formulate their political strategies along these two poles or adopt hybrid approaches. Realism develops global relations as a zero-sum game, where States seek control over natural resources through strategic alliances, such as the OPEC cartel or military interventions [1]. Before the Cold War, realism dominated the global landscape. In its aftermath, liberalism emerged as a promising paradigm for fostering international peace. Liberalism is founded on democracy and liberal capitalism, advocating for interdependencies among nations through global markets rather than the self-sufficiency and anarchy of realist nation-States [1]. A prime example of this liberalist framework is the European Union (EU, see Table A.1 for the whole list of abbreviations used in this research), characterized by its mutual dependencies facilitated through international trade, long-term contracts, and strategic partnerships [2]. Nonetheless, with few exceptions, most nations adopt a hybrid stance between these two discourses.

The prevalence of realist and liberalist discourses has had far-reaching consequences for global peace and social and environmental justice. The overt realism of the United States is exemplified by its military occupation of territories to secure energy supply chains in the Middle East [3]. On the other hand, the EU's liberalism, manifested through unfair international trade agreements, has led to the over-exploitation of natural resources in regions such as Africa, Azerbaijan, and Latin America [4]. In Guatemala, the EU's leading importation of sugarcane bioethanol and palm oil has resulted in land grabbing, food insecurity, environmental pollution, and the spread of diseases [5,6].

The emphasis on economic growth and resource exploitation, intrinsic to realism and liberalism, has triggered social unrest and territorial conflicts. In response, the past two decades have witnessed the emergence of emancipatory discourses on energy security. Critical of prevailing paradigms, these discourses advocate for a holistic approach to energy transitions. Central to their vision is the re-localization of energy production, the reduction of consumption, and the establishment of autonomous energy systems within a framework of radical democracy [7].

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A growing number of scholars have turned their attention to the emancipatory discourses emerging from social movements and municipalities worldwide. Alarcon and Constanza [8], examining a municipally-owned energy company in Sweden from a degrowth and energy democracy perspective, found that despite the re-localization of energy production and consumption, the municipality remained driven by economic growth, adhering to a liberal trajectory. Kunze and Becker [9] contribute to the theoretical development of energy democracy (ED), offering an analysis of social movements in the EU that focus on ED and its future potential. They present an outlook of social movements in the EU that target ED and their future possibilities. Capellán-Pérez et al. [10] provide an overview of 16 community energy (CE) initiatives across post-socialist European countries (PSECs), revealing that CE initiatives in these regions possess "great potential to contribute to a transition towards democratic, sustainable, and decentralized energy system[s]." Del Bene, Soler, and Roa [7] underscore how the discourse on energy sovereignty (ES) has gained momentum in Latin America since 1992, emerging "as a response to multiple forms of extractivism, energy poverty, corporate oligopoly, patriarchy, privatization, and trade agreements, wars, and crimes to secure provision of fossil fuels." On a deeper level, ES challenges the Euro-modern episteme that separates nature from culture. As Escobar [11] emphasizes, many grassroots movements in Latin America do not simply occupy spaces, as the modern way of life does, but inhabit living territories. These movements perceive territories not as inert matter or exploitable resources but as living entities with which they engage in horizontal relationships. This epistemic divergence illustrates how hegemonic energy security discourses are imbued with ontological dimensions naturalized and depoliticized through power dynamics. Bridge [12] similarly highlights that all energy security definitions and strategies (ESD&S) carry implications for world-making. According to Bridge, ESD&S construct global political and ecological relations essential for sustaining a country's socioeconomic structure.

Building on the work of scholars who have examined the socio-ecological and political implications of hegemonic and counter-hegemonic discourses on global energy security, this research seeks to contribute by answering the following research question: how do energy security discourses produce and reproduce worlds and subjectivities? The study draws on constructivist frameworks to guide this analysis, incorporating concepts from Foucault, discourse analysis, critical discourse analysis, and discursive psychology. Then, employing this conceptual framework, the study systematically maps the discourses on energy security found in the analyzed documents by addressing four questions/floating signifiers (security for whom? For which values? From what threats? By what means?). The responses to these questions, identified as nodal points, serve as the foundation for revealing the discourses' implications for world-making and subject-making. Ultimately, the research aims to explore the ontological dimensions embedded within energy security discourses. Such an analysis is of interest as it relates to how energy models discursively regulate and create possibilities for being, doing, and knowing. These possibilities, in turn, establish the frameworks for energy transitions and determine the extent to which humans and nonhumans participate in processes regarding the design of energy systems. Consequently, by focusing on Guatemala as the spatial scale, this research undertakes a comparative analysis to uncover how energy security discourses construct worlds and subjectivities concerning energy systems.

2. Theory and analytical framework

This study articulates concepts from different constructivist approaches to develop its theoretical and analytical framework. These approaches include Foucauldian (archeology and genealogy), discourse analysis, critical discourse analysis, and discursive psychology [13–17]. Constructivism holds that "representations of the world are not reflections of the reality 'out there' but rather products of categorizing the world, or, in discursive terms, products of discourse" [18]. Those representations (or world-making) are the outcomes of social processes that are contextually and historically dependent [15]. Hence, representations of the world can never be permanently fixed but are instead contingent [16]. In line with this, Hildyard et al. [4] compared how the concept of energy was constructed and operated within discursive practices during the pre-modern and modern eras. In pre-modern times, energies were various, localized, dependent on natural cycles, and incommensurable. However, in modern times, an abstract notion of energy emerged, disembedded from specific territorial socio-ecological dynamics. This abstraction stemmed from a new mechanistic worldview that, with the rise of capitalism, redefined nature as a merely exploitable resource [19].

On the other hand, in terms of identity formation, constructivist representations of the subject diverge from the cartesian-subject qua consciousness, where the subject is perceived as sovereign or autonomous [20]. Constructivism instead posits that contextual and historical mechanisms of power discursively shape the possibilities for being, acting, and knowing [21]. From a Foucauldian [14] perspective, discourses act in an ambivalent way. Negatively, they restrict, regulate, forbid, and exclude knowledge regimes. Positively, discourses are productive, i.e., they have the power to transform reality, rituals of truth, and, in doing so, the subject. The subject is, therefore, considered subjected to external discourses, internalized to form identity [22].

However, from some constructivist perspectives, the subject is more than an empty bottle filled with meaning [17]. For instance, by engaging with available energy security discourses, the subject can negotiate, accept, or resist the identities imposed upon them by energy models and systems. As Jørgensen and Phillips [18] note on discursive psychology, "the production of meaning, and hence identity construction, are constrained by the range of discursive resources available to individuals by virtue of their social and cultural position and status."

To understand how different discourses compete to define reality, identities, and social relations, it is helpful to consider Laclau and Mouffe's [16] concept of 'nodal points.' According to them, every discourse builds upon nodal points around which other signs articulate to make up a discourse. But before becoming nodal points, these signs are 'floating signifiers' that different discourses struggle to imbue with meaning. Once meanings crystallize, the floating signifiers become nodal points –in the following subsection, this study presents four floating signifiers that different discourses on energy security compete for, giving them meaning. As meanings crystallize within the field of energy security, they become nodal, leading to frameworks such as realist and liberalist energy security discourses.

According to Laclau and Mouffe [16], all the possibilities that hegemonic discourses exclude establish 'the field of discursivity.' However, that concept can generate confusion, as it may refer to unrelated discourses. For instance, it can allude to discourses on energy security within the field of nutrition related to food security, which does not contend to give meaning against discourses such as realism or liberalism. Alternatively, the term may apply to discourses like energy democracy, which compete for control of the four floating signifiers. Therefore, Jørgensen and Phillips [18] recommend using Fairclough's 'order of discourse' concept to avoid ambiguity. This term relates to discourses competing on the same meaning-making terrain [13].

Hence, this research contributes to critical thinking by revealing how subjects contest, challenge, or accept hegemonic energy security discourses. Hegemonic discourses, as understood in this study, are those naturalized, normalized, and accepted as objective reality. On a second layer, from a sustainability perspective, this study evaluates discourses' effects on the socio-ecological crises faced in Guatemala. Lastly, the study examines how different subjectivities impact the design of energy systems and vice versa, offering insights into the broader implications of energy discourses.

2.1. Floating signifiers

This study analyses the ontological implications of energy security discourses, drawing on the analytical framework articulated in the previous subsection. As the energy security order of discourse builds upon four floating signifiers derived from security studies [23,24], this research takes them as its primary object of study. The four floating signifiers are: security for whom? Security for which values? Security from what threats? Security by what means? Security for whom addresses towards whom energy security strategies lean. Possibilities could include households, energy-producing companies and energy technologies manufacturers (petroleum, renewable energy technologies, hydropower plants), specific industries or economic activities (including exporting companies) [25–27], and, more relevant for our case study, ethnic groups' ways of living. The political implications of assessing energy security focused on specific ethnic groups is a research gap that has not been addressed yet. Furthermore, in getting into the ontological implications, by politicizing the Asia Pacific Energy Research Centre (APERC) four A's, we ask according to whose worldview energy assets are accessible, available, affordable, and acceptable/sustainable. Depending on by whom, for whom, and how these dimensions are defined, energy systems determine possibilities of existence (identities) within designed socioecological systems (created worlds).

Along the same line, it has ontological implications to define which values a country or a group of people decides to protect. In normalized hegemonic energy security discourses, such values range from petroleum supply chains, water resources to build hydro-dams, minerals to produce renewable energy technology, or energy electricity networks [28–30]. Who has the power to define what a value is? How do these values give meaning to nature? to socioecological relationships? And how does this define identity formation? From which worldviews are these values created and operationalized to develop strategies?

Once security for whom and for which values are established, potential threats and the means to tackle them are analyzed. As discussed in the introduction, realist and liberalist discourse strategies have been characterized by exerting explicit and soft violence via militaristic interventions, strategic alliances, and the creation of interdependencies via global markets, respectively [1,2]. In pluricultural contexts such as Guatemala, what are the implications of such discourses over the right of existence, justice beyond the 'euro-modern matrix of power' [31], and territorial sovereignty? How do counterhegemonic energy security discourses struggle to give meaning to the floating signifiers, and in doing so, which worlds and processes of subject-making enable them? Besides, what are the implications of counterhegemonic discourses for just energy transitions in the face of the climate crisis? Are current energy justice frameworks enough to capture what is at stake?

3. Methods

This study employs a mixed methodological approach involving content and narrative analysis. Content analysis enabled the mapping of discourses on energy security, whether implicitly or explicitly present in the selected empirical material. Sarantakos [32] outlines that qualitative content analysis entails the following steps: defining and choosing categories, selecting units of analysis, identifying meanings and indicators that relate to the categories to address aspects of the research topic, and performing an interpretation. In this study, the categories were determined by the research question and the concepts derived from the literature review. Such concepts build upon four floating signifiers proposed by Baldwin [23]: Security for whom? For which values? From what threats? By what means? These concepts and categories served as a filter to define the scope of the sampling process. The units of analysis included paragraphs and phrases from documents. In the data collection process, the study answers the questions/floating signifiers descriptively to ensure transparency with the texts. However, when the answers are not explicitly apparent, the study interprets the text(s) to infer meaning. These responses form the basis for addressing the research question: How do energy security discourses produce worlds and subjectivities?

The meanings and indicators were discourses' nodal points that create representations of the world, subjectivities, ways of being, doing, knowing, and hegemony. The interpretation phase required narrative analysis since meanings and indicators are inherently tied to narratives. This approach was appropriate for the study, as narratives constitute ontologies by reflecting everyday practices and illustrating how people construct and express their identities in particular settings [33,34].

4. Case study of Guatemala and empirical data

The case of Guatemala provides insight into how energy security discourses generate ontological conflict, extending beyond the confines of the modern episteme. Guatemala is the largest energy producer in Central America and the most prominent energy exporter in the region. Over the last decade, Guatemala has supplied more than 60 % (nearly 1300 Gigawatt-hour [GWH]) of electricity to the Central American electricity market and has demanded from it less than 1 % (see Fig. 1). The objectives surrounding energy security have driven increased investments from State, private, and donor entities in power plants. Indigenous lands, home to some of the country's poorest communities, host 86 % of these projects [35]. Paradoxically, many local inhabitants residing near these power plants lack access to electricity and face significant alterations in their livelihood prospects. Environmental advocates are routinely silenced [36], and numerous deaths of activists have been linked to their involvement in conflicts over water and hydroelectric projects. In Guatemala, colonial legacies are associated not only with the historical European occupation of the country but also with the colonization enacted through environmental governance models predicated on non-Indigenous ways of relating to land and nature [37]. Guatemala's Indigenous populations have endured systematic discrimination since the Spanish colonization (1524–1821). More recently, extractivism through the promotion of large-scale plantations and mining has further alienated their territorial rights [38]. Indigenous communities defend these rights through the (re)construction of collective identities rooted in the land [39] and advancing counterhegemonic concepts that challenge State-led energy security discourses. For the Maya, such conceptualizations serve as both a means to resist extractivism and to further a transformative project of life [40]. Given Guatemala's pluricultural and multiethnic nature and its implications for energy policy and vice versa, this case study offers a unique opportunity to understand the ontological dimension of energy systems. This case's analysis can inform energy policy beyond Guatemala. Guatemala shares similarities with other Latin-American contexts, where pluricultural considerations should inform decisions on energy systems' design. The case can also guide energy governance in some global north regions where ontological conflicts linked to energy transition emerge.

Hence, this study primarily examines two key documents, which articulate two divergent energy security discourses:

- The Energy Policy 2019–2050, developed by the Mining-Energy Planning Unit of the Ministry of Mines and Energy (MEM) of Guatemala.
- The Study on the Guatemalan Energy Model and its Socio-environmental Repercussions, published by the Asociación Comisión Paz y Ecología (COPAE).

The MEM document provides a comprehensive perspective on Guatemala's current energy model and its projections for 2050. In contrast, the COPAE document presents the only alternative energy model based on the perspective of the Maya's People Board (CPO, by its initials in Spanish).

Additionally, the study analyzes the following supporting materials:

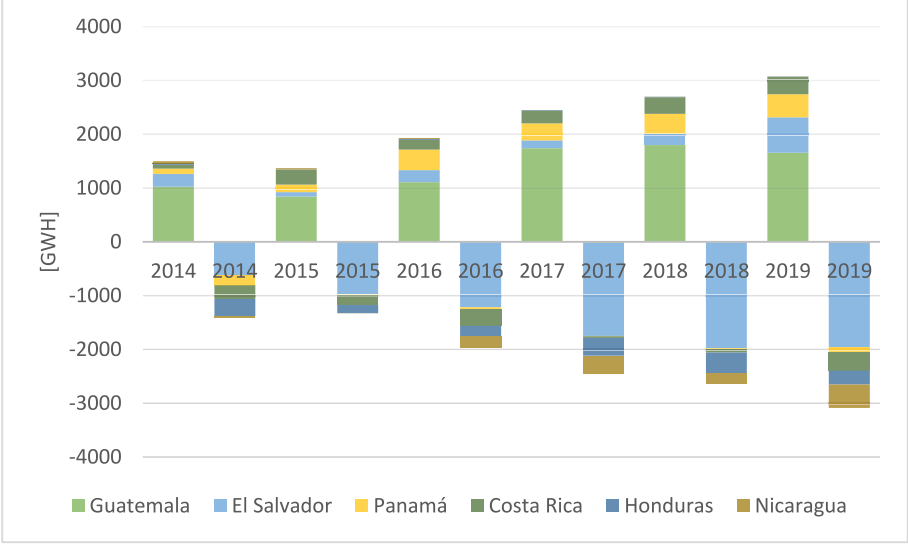

Fig. 1. Imports and exports through the Central American electricity market. Source: based on [41–44].

- CPO-led webinar - The excluding character of the current energy model in Latin America: energy for whom and for what?
- CPO-led webinar - The repercussions of the General Electricity Law over Indigenous Peoples
- MEM - National Energy Plan 2017–2034
- MEM - Expansion Plan of the Generation and Transportation System 2020–2034

The webinars aim to disseminate and discuss the implications of the CPO energy model for the MEM, whereas the Energy and Expansion Plans (policy reports) relate to how the MEM proposes operationalizing its energy model.

5. Limitations

Discourse analysis is a theory approximation to constructed realities and subjectivities (see Section 2) that, among other things, involves examining the political and ontological implications of texts' production and consumption [18]. This research primarily focuses on producing discourses through two key documents. Although the second document could be viewed as a critical response to the first, understanding its consumption would require interviews or field studies to assess its effects. Furthermore, while there may be other discourses on energy security, this study is the first approximation to analyze Guatemala's order of discourse, as represented in these two documents, which were selected for their relevance (see previous section).

6. Context and main actors

6.1. Context

According to the MEM [45], Guatemala's energy mix comprises 56 % wood, 8 % electricity, and 36 % petroleum and its derivatives. The high reliance on wood reflects the pervasive poverty levels and limited access to and unaffordability of the electricity grid and liquified petroleum gas (LPG) distribution services. Paradoxically, the region with the lowest electricity coverage in the country is also home to the largest hydropower plants [46,47]. Furthermore, the environmental impacts of hydroelectric dams, such as land degradation and aquatic ecosystem disruption, have fueled numerous social conflicts over the past two decades [48–51]. Many people, particularly those whose food security depends on fishing and agriculture, have been displaced to urban areas. In response, a growing movement of Indigenous peoples, who are disproportionately affected, have begun articulating and resisting, asserting claims for energy sovereignty in their territories. This resistance serves as the foundation for the CPO's alternative energy model, emphasizing the critical role of Indigenous resistance in shaping the country's energy sector.

Electricity in Guatemala is primarily generated through hydropower plants (Fig. 2), though the contributions of cogeneration and steam turbines have increased in the last five years. Sugarcane bagasse is the primary energy source for cogeneration, while coal, sourced from Colombia, is the primary fuel used to power steam turbines. Despite coal being one of the most polluting fuels, contributing significantly to climate change and other environmental impacts, its use is projected to grow over the next 30 years [52]. Although 8 % of the population still lacks access to the electricity grid, Guatemala is a net electricity exporter and the most significant contributor to the Central America interconnected network [52]. In 2017, Guatemala's annual electricity production totaled 13,348.12 GWh, with domestic demand reaching 10,450.81 GWh. The country exported 2416.15 GWh to Central America and Mexico [46]. Domestically, the industrial sector consumes the majority of electricity. Notably, the country's most energy-intensive industries, such as cement production, large-scale agriculture, and mining, are also the primary sources of social and environmental conflicts (See www.ejatlas.org).

The residential sector is the largest energy consumer in Guatemala, followed by the transportation sector [53]. LPG and electricity are the primary energy sources for the residential sector, whereas the transportation sector predominantly uses petroleum and its derivates (diesel

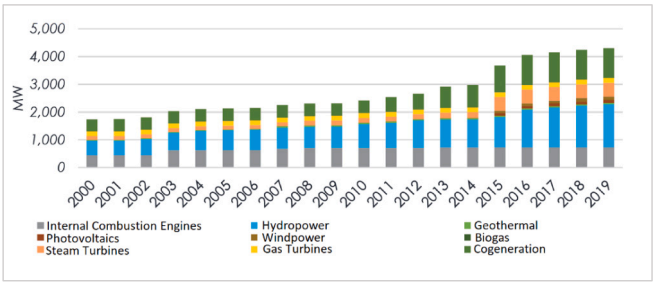

Fig. 2. Evolution of the historical install capacity in Guatemala. Source: based on [52].

and gasoline). The use of LPG and electric vehicles remains negligible, with projections over the next 30 years indicating minimal change [52]. Paradoxically, while Guatemala exports all of the petroleum derivatives it produces domestically, it imports all of the gasoline, diesel, and LPG required to meet the demands of its transportation sector [54].

6.2. Main actors

Until 1996, the State of Guatemala owned and was responsible for generating, transmitting, and distributing electricity [55]. That year, efforts to liberalize the economy and demonopolize the energy sector resulted in the National Institute of Electrification (INDE, by its initials in Spanish) not being the sole public entity in the generation segment. INDE currently operates five hydroelectric power plants with a combined capacity of 470 MW, accounting for approximately 30 % of the national electricity mix [56]. INDE's electricity sales revenues enable the national government to provide a differential social tariff, subsidizing residential consumers [57,58]. The remainder of electricity generation is handled by over 20 private companies [59]. One of the most prominent players is the Israeli company IC Power, a subsidiary of Kenon Holdings Ltd., which holds 25 % ownership in the largest coal power plant in Central America (with an installed capacity of 300 MW) and entirely owns Puerto Quetzal Power LLC, an oil plant with an installed capacity of 179 MW [60,61].

The transmission system is similarly decentralized, with eight companies responsible for its administration and control [62]. In contrast, the distribution system concentrates in the hands of two private firms: ENERGUATE and EGGSA [63]. ENERGUATE distributes electricity across 20 of Guatemala's 22 departments, with IC Power owning 95 % of ENERGUATE's shares [64].

According to the General Law of Electricity [55], other important institutions are.

- The Ministry of Energy and Mines (MEM)
- The Trade Market Administrator (AMM, by its initials in Spanish)
- The National Commission of Electric Energy (CNEE, by its initials in Spanish

MEM is responsible for formulating and coordinating policies, State plans, and indicative programs for the energy sector and enforcing the General Law of Electricity and related regulations. The CNEE sets transmission and distribution tariffs and establishes the methodology for their calculation. Furthermore, the CNEE asserts that it safeguards users' rights and prevents arbitrary conduct that may hinder free competition or foster abusive or discriminatory practices. Meanwhile, the AMM coordinates the operation of power plants, international interconnections, and transmission lines to promote economic and energy efficiency.

7. Findings

In this section, to map the discourses on energy security in the analyzed documents, this study addresses four key questions or floating signifiers proposed by Baldwin [23]: Security for whom? For which values? From what threats? By what means? The responses to these questions, referred to as nodal points, serve as the basis for unveiling the implications of these discourses for world-making and subject-making in subsequent sections.

7.1. MEM's energy security discourse

In addressing the question/floating signifier, 'Security for which values?', this section follows Cherp and Jewell's [24] approach, which focuses on the 'security of vital systems.' The vital systems identified in the MEM's Energy Policy [53] are hydrocarbons and electricity supply chains. The MEM does not distinguish between the securitization of hydrocarbon supply chains (LPG, natural gas, diesel, and gasoline). According to the MEM, the securitization of these systems is ultimately aimed at ensuring sustainable development (SD) in Guatemala, as defined in the 1992 Rio Convention:

> "Sustainable development is a process of change in which the exploitation of resources, investment direction, technological development orientation, and institutional change are all in harmony and strengthen the current and future potential to satisfy the needs and aspirations of humans."
>
> [[53], my translation]

7.1.1. Security for whom?

Security may focus on households, industries, energy companies, investors, or even ethnic groups' ways of living. Here, we first answer energy availability, accessibility, and affordability for whom? And lastly, for whom is energy acceptable/sustainable? (see Section 2.1).

Regarding hydrocarbons, the MEM prioritizes stable and low prices for households and energy companies. Security for households stems from the fact that most hydrocarbon consumption concentrates on the mobility and transportation sectors, and the residential sector urges a transition from wood to alternative fuels like LPG [53].

Regarding energy companies, the MEM expects local firms to contribute to domestic hydrocarbon demand by 2030 [53]. However, Guatemala currently exports all diesel, gasoline, and other petroleum derivates' local production to Belice and Central America, tacitly protecting energy companies' foreign market interests during the last decades [54].

On the other hand, the MEM, INDE, and CNEE securitization of the electricity supply chain prioritizes industries, energy companies, and investors. According to the Economic Commission for Latin America and the Caribbean [65], Guatemala has the highest electricity tariffs in Central America. Moreover, the wealthiest 40 % of the population benefits from more subsidies than the poorest 40 % [66]. Despite 8 % of the population still lacking access to electricity, Guatemala exports more electricity to Central America than any other country [67].

Concerning acceptability and sustainability, the MEM plans to incorporate more renewable energy into the electricity mix [52]. However, the MEM also anticipates an increase in coal-based power plants across all scenarios for 2030 (Idem). The plan also includes expanding the use of LPG and electric vehicles in the transportation and mobility sector, though these efforts are insignificant compared to gasoline and diesel-fueled vehicles [53].

7.1.2. Security from what threats?

The MEM [53] identifies three main threats: disruptions to the supply chain, price fluctuations, and external impacts. The first threat reflects traditional energy security concerns, which were prominent during the oil crisis of the 1970s. Dependency on a limited number of suppliers increases the vulnerability of vital systems if political interests disrupt supply chains –similar to price fluctuations, which are undesirable for businesses and consumers who prefer stable prices. The third threat encompasses potential vandalism, terrorism, or natural disasters, such as earthquakes and hurricanes, which are particularly likely in the region.

7.1.3. Security by what means?

The MEM [53] outlines four basic strategies for securing its vital systems: efficiency, diversification, cooperation, and resilience. The MEM reaffirms, as noted by the Energy Agency, that "besides addressing environmental and economic challenges, efficiency is the quickest and most cost-effective way to achieve energy security." To this end, MEM's initiatives include.

- replacing conventional incandescent light bulbs with LED lights at the household level,

- introducing green labels for industrial practices and
- modernizing the national grid (focusing on developing a smart grid).

Diversification entails reducing reliance on a small number of hydrocarbon or electricity suppliers. Regarding hydrocarbons, the MEM aims to achieve this by expanding international supply sources and exploring the availability and accessibility of local oil wells. The MEM seeks to diversify the energy mix by integrating various technologies and energy sources for electricity.

In terms of cooperation, the MEM acknowledges the reality of global energy market integration:

> "Only one complex and global petroleum market moves and consumes nearly 86 million barrels of petroleum daily. For consumers, energy security depends on the stability of that market; a shortage is not an option. The growing interdependency and expansion of energy transactions underscore the necessity of continuous and robust cooperation between producers and consumers. This collaboration is crucial for securing the entire energy supply chain, a task that cannot be underestimated in its importance."
>
> [[53], my translation]

To achieve this, "private and public sector leadership is essential for driving technological and political innovations that can transform the current energy system" (Idem).

According to the MEM, resilience is a key factor achieved by creating petroleum reserves capable of withstanding supply chain disruptions. In the electricity sector, resilience necessitates backup power plants to handle accidents at power stations, whether due to natural or human causes, potential vandalism, or terrorism. The same principle applies to provincial and interprovincial transmission lines (Idem).

7.2. CPO's energy security discourse

The values identified in the CPO's discourse diverge from the concept of 'vital systems,' as they extend beyond technological and material considerations to include social, cultural, and ecological dimensions. These values encompass the relocalization of renewable energy supply chains, the re-communalization of goods, and territorial defense [68]. Such priorities are deeply rooted in the social and economic life enacted by Indigenous worldviews, in opposition to anthropocentrism, land grabbing, extractivism, developmentalism, consumerism, productivism, and competition. They are based on ancestral wisdom, healthy living and diets, the care economy, environmental and social justice, the common good, and the rights of both humans and nature [68].

7.2.1. Security for whom?

CPO's energy security strategies prioritize the needs of marginalized populations, specifically the poorest people and small- to medium-sized national businesses [68]. These strategies explicitly address gender issues and recognize humans and nature's rights [68]. The focus is on communities that lack access to electricity or cannot afford it [35], with particular emphasis on meeting the needs of Indigenous peoples. The emphasis on Indigenous peoples arises from the recognition that modernization, colonization, and the Euro-modern way of life have undermined Indigenous worldviews and their diverse epistemologies. Given that more than 55 % of Guatemala's population is Indigenous, this focus is particularly relevant. Despite this emphasis, the CPO's discourse pursues pluralistic goals, advocating for including Indigenous and non-Indigenous people.

7.2.2. Security from what threats?

The threats outlined in the CPO's discourse range from the seizure of land and water (and thus energy goods) to socio-cultural displacement [68]. In addition to greenhouse gas emissions, often the focus of green and hegemonic energy security discourses, these threats include destroying biodiversity and violating peoples' and nature's rights. A more profound threat lies in the potential loss of identity, given the profound connection Indigenous peoples develop with their territories [40]. When large-scale extractive projects provoke the displacement of communities, the implications go far beyond the unequal distribution of natural resources, directly impacting these communities' very identities and ways of life [37].

The CPO's discourse also critiques the commodification of 'natural assets.' The current energy model in Guatemala is criticized for having lost its purpose by prioritizing electricity-intensive industries, many of which are socio-environmentally conflictive, and for promoting exports to the Central American interconnected network [35,68].

7.2.3. Security by what means?

The CPO's discourse proposes the re-nationalization of the energy sector—covering generation, transmission, and distribution—as a means to reorient the energy model [68]. However, this re-nationalization is viewed as a tool, not an end, and differs from realism discourses. In a plurinational State, municipalities, collectives, and associations would have the authority to participate in and shape the design of the energy system. The ultimate aim is to achieve energy sovereignty, not at the nation-State level but at the territorial level [40]. Additionally, the plurinational State would ensure the re-communalization of natural assets and their sustainable use (Table 1). Achieving this ambitious political project would require Indigenous leadership in crucial State positions currently occupied by historical elites [68].

7.3. MEM's world and subject-making

The values the MEM aims to protect are oriented towards achieving a specific social and economic life vision in tune with the United Nations' sustainable development universalized way of living. Hence, the world they reproduce aligns with the euro-modern-industrialized model, in which humans engage with steady-state economic growth, and nature is viewed solely as a resource to feed those ends. In this anthropocentric worldview, nature reduces to inert matter, explaining why the MEM's discourse avoids terms like ecosystems or biodiversity. For the MEM, sustainability reduces to climate change mitigation, basing their solutions on renewable energy potential studies in various geographic areas to introduce green technology and decarbonize the energy mix. Moreover, in the MEM's view, efficiency is a key strategy to lower greenhouse gas emissions, minimize resource usage, and reduce dependency on unpredictable external supply chains.

As noted in previous sections, energy security strategies outlined by the MEM aim to sustain heterotrophic urban cities' metabolism, perpetuating issues related to unequal energy distribution in rural areas. Beyond economic growth and efficiency, the MEM's discourse does not address any other specific social and environmental target, such as energy availability decentralization –respecting territorial ecological thresholds– for improving human well-being, missing any significant transformation in societal consumption, transportation, or mobility patterns; and, more in-depth, in socioecological systems, maintaining the existing social order or status quo. Consequently, the way humans relate with nature can only shift from conventional consumption to green consumerism –without contesting economic structures– limited to opting, as long as their budget allows them, for merely technological transitions such as incandescent bulbs to LED lights, petrol to electric and LPG vehicles, or other efficient devices. As stated in objective 1.1:

> Set long-term guidelines to sustainably guarantee the future supply of energy requirements at competitive prices, encouraging economic growth and societal comfort in Guatemala. This will be achieved through the efficient use of energy resources and the modernization of infrastructure while responsibly upholding environmental conservation and meeting environmental commitments

Table 1
Nodal points of energy security discourses.

Discourse	Values	For whom?	Threats	Means
MEM	Hydrocarbons Supply Chains	Households and Energy Companies	Instability of prices and disruptions.	Diversification of suppliers.
	Electricity Supply Chain	Energy Companies and Investors	Vandalism, terrorism, blackouts, and natural disasters.	Resilience and efficiency.
CPO	Energy sovereignty at territorial scale. Common goods Human and Nature's rights	The poorest people (indigenous and nonindigenous) and, small and medium size businesses.	Land and water grabbing (and thus energy assets grabbing). Dispossession and displacement	Re-nationalization of the energy sector. Relocalization renewable energy production-consumption.

Source: own elaboration.

[[53], my translation]

The core of this narrative resonates with the United Nations for Environmental Protection discourse on decoupling [69] —i.e., decoupling extractions from nature to energy systems and pollution from the energy systems to the environment while maintaining economic growth.

The subject-making as green consumerist within the Guatemalan political system leaves people with no agency to impact, within a democratic framework, decisions concerning the design of energy systems and how they affect subjectivities. The sole legitimate decision-makers are technocrats knowledgeable of energy technology and systems, who do not foster any socioecological transformation at political-economic, political-environmental, and, more important for this research, at the ontological level. Therefore, people end up with a passive voice, and their possibilities of being, doing, and knowing about energy matters depend on how technocrats design energy systems, without any power to intervene in how natural assets are used and valued.

Hence, any ontological opposition to energy projects –for instance, hydroelectric stations in northern Guatemala– unleashes criminalization by the State and private companies. Indigenous leaders –despite their right to prior and informed consent– are often labeled as criminals and prosecuted if they reject such projects in their territories [68]. One prominent example is Bernardo Caal Xol, a Mayan-Q'eqchi' leader who sought legal recourse for not being consulted before developing a hydropower plant in the Cahabon River [70]. Due to his opposition, he was incarcerated for four years. Many Indigenous peoples, who are critical of these social and economic systems perpetuated by energy companies in collaboration with the State, recognize that their very identities and existence are at stake [68]. The underlying implication of the Guatemalan energy system is that inclusion is only possible by accepting the modern way of life it imposes.

7.4. CPO's world and subject-making

The world enacted through the values that the CPO securitizes fundamentally diverges from the epistemological framework of the euro-modern industrial world. The CPO shifts the focus away from human-centered discourse by advocating for nature's rights. Nature is not objectified or treated as inert matter; it is regarded as a living entity with agency [68]. As a result, human development must not come at the expense of the depletion of ecosystems and biodiversity. Re-localizing energy generation, transmission, and distribution plays a central role in this worldview. Both urban and rural communities, in the CPO's vision, must become autotrophic—capable of producing their energy–holding ecosystems' balance. Energy sovereignty, therefore, is not conceived at the nation-State level but at the community-territorial level.

For the CPO, conserving territories is crucial, as these living spaces define Indigenous people's identities and ways of being, acting, and knowing. That does not mean, however, opposition to all energy or mining projects, as some activities are necessary to extract materials required for green technology. Opposition focuses on large-scale extractive projects, which have historically devastated biodiversity in favor of macroeconomic development induced by mining, monoculture, and other industrial activities. Therefore, the conception of resource availability significantly differs from that of the MEM's discourse [68]. In the CPO's view, natural assets can only be used if their utilization does not compromise the identity of territories such as tropical rainforests, mangroves, and tundra. For instance, Indigenous hydro-energy projects in Guatemala have preserved the natural flow of rivers without diversion or alteration [71]. According to the CPO, Nature cannot sustain the demands of a modern industrial lifestyle, which requires a transition towards ecological citizenship, moving beyond the belief that green technology alone can resolve the social-ecological crises of the 21st century.

The CPO rejects the consumerism model imposed and perpetuated by the MEM's discourse regarding agency. Instead of remaining passive recipients of decisions made by technocrats, the CPO's discourse empowers all people—regardless of gender, class, or race—to actively participate in designing energy models and systems. Advocacy for direct ecological democracy is central, with decision-making driven from the bottom up, involving human and nonhuman beings [68], particularly emphasizing the crucial role of women [68], highlighting the need to secure women's access to affordable energy and amplifying their voices in decision-making processes as they often bear the brunt of the negative impacts related to energy scarcity and energy pollution (Table 2).

8. Towards energy systems designed from below and with the earth

This research reveals how key floating signifiers (security for whom? For which values? From what threats? By what means?) are contested and invested with meaning to articulate energy security discourses and how these construct worlds and subjectivities. The comparative approach allowed this study to call into dialogue discourses and their implications for the world and subject-making. By doing so, this research underscored that the values securitized in discourses should not be taken as objective phenomena but as the actors' preferences and interests – emerging from historical and cultural contingencies delineated by the energy security order of discourse in Guatemala. From the side of the MEM, there is an intention to keep feeding with energy the social and economic life that has reigned –with its mutations– over the last 70 years: the development of nations [72,73]. On the other hand, the CPO's discourse reflects a tendency that has been emerging from territorial struggles of Indigenous people's movements in Latin America: a desire for the decolonization of all the aspects of life (including those concerning energy) that have been affected by the all-encompassing euro-modern way of life [7,74–76].

The order of discourse previously limited by realism and liberalism has been expanding its boundaries due to the territorial struggles seeking decolonization in Latin America. The way of life of indigenous peoples has been gaining force, contesting the meaning-making of energy security and transitions [7,76–79]. The corollary has been an ample politicization of the design of energy models and security strategies.

Table 2
The world and subject-making of energy security discourses.

Discourse	World-Making	Subject-Making	Socio-ecological crisis' solutions	Targeted socio-economic world
MEM	- Euromodern industrialized world. - Anthropocentric. - Nature as a natural resource. - Heterotrophic urban cities.	- Homo consumens - Agency exclusively for technocrats - Criminalization of territorial defenders	- Decarbonization and RENs - Debates are depoliticized - Efficiency - Green consumers	Sustainable development
CPO	- Sovereign autotrophic and democratic urban and rural communities.	- Ecological citizens. - Agency for humans and nonhumans.	- Ecological citizenship. - Ecosystems and biodiversity conservation.	Relational worlds based on indigenous worldviews

Source: own elaboration.

That has been opening new possibilities of being, acting, and knowing, which are crucial for rethinking and debating the scope that energy transitions should have given the socioecological crisis we are facing, which demands us to answer questions such as: what kind of world do we want? What kind of worlds and subjectivities do energy security discourses design? What kind of subjectivities are sustainable?

Consequently, it is crucial to ask whether the frameworks proposed for transitioning to alternative energy systems are sufficient to guide meaningful change towards the decolonization of energy systems design. One of the most prominent frameworks advocating for political, social, and ecological transformation in the literature is that of energy justice [80]. This framework focuses on three key elements: distributive justice, procedural justice, and recognition justice. In brief, distributive justice concerns eradicating unequal distribution of impacts and benefits; procedural justice advocates for the inclusion of marginalized voices in decision-making processes, acknowledging the historical power dynamics that have excluded them; while recognition justice emphasizes the importance of considering the diverse worldviews and ways of life of those affected by energy systems.

Although scholars like Tornel [78] argue that frameworks such as energy justice, without a critical decolonial perspective, tend to reproduce hegemonic power relations, my position is that certain elements still help expose systemic injustices, which can guide an energy transition, as proposed by the CPO and other Indigenous movements in Latin America. For example, Alford-Jones [35], in a case study on the impact of hydroelectric projects in Guatemala, points out that the absence of the three elements comprising energy justice leads to energy policy failure. Due to the lack of focus on human rights, excluding free, prior, and informed consent, and the overall precaritization of life in areas where these projects are developed, Alford-Jones finds out that social movements have halted 60 % of the proposed hydroelectric plants.

Beyond that, the relocation of energy generation and consumption proposed by the CPO aims to prevent the unequal distribution of socioenvironmental impacts and benefits. Both in the literature on energy justice and environmental justice, concepts such as unequal ecological exchange, the creation of sacrifice zones, and extractivism [81–85], despite being limited to justice within the modern episteme, represent theoretical-methodological tools that help reveal dynamics that must change to enable a transition towards another possible world. As noted in previous sections, the MEM model reproduces historical patterns of exclusion, manifested in its heterotrophic perspective and its inclination to securitize the interests of private energy producers. The northern region of the country, which produces the most energy, has the least access to it, with the energy concentrated on supplying the domestic demands of large urban centers and Central American countries through the interconnected electrical system [46], thereby inducing unequal ecological exchange from a multiregional perspective, creating sacrifice zones in the north and clear extractivist objectives in that region. The multiregional dimension of energy justice frameworks allows for assessing impacts beyond local boundaries, unveiling blind spots of the socioenvironmental effects along value chains [86].

In line with the unequal distribution of social benefits through energy poverty frameworks, Henry et al. [87] demonstrate how the MEM energy model, far from improving energy poverty indicators, is designed to exacerbate them –consistent with reports from the Economic Commission for Latin America and the Caribbean (ECLAC) [88,89], which show that Guatemala despite being one of the countries generating the most energy in the region, ranks worst in metrics of social-energy benefits distribution.

However, despite the usefulness of energy justice frameworks, the relocation of energy systems proposed by the CPO goes beyond the confines of justice within the modern episteme. In this regard, the CPO demands an understanding that, as Rancière [90] emphasizes, "politics is not made of power relations [within a single world], but of relations between worlds." Hence, the importance of decolonizing energy justice frameworks [91] from a political ontology perspective [78]. The implications of the relocation proposed by the CPO and other Latin American Indigenous movements affect three inherently linked dimensions of impact: ecocide, which entails epistemicide [92], and genocide. That is the core distinction between energy justice movements in the Global North and Latin America—including marginalized Northern indigenous nations. In Latin America and marginalized Northern nations, Indigenous movements are deeply concerned with the effects of land occupation for energy project development in the name of a just energy transition to mitigate the impacts of climate change [73,93]. As Gálvez-Campos [33] demonstrates in the case study of an ontological conflict in Wet'suwet'en territory in so-called British Columbia, Canada, the First Nation opposes the development of hydrofractured gas distribution networks that threaten to disrupt the Wet'suwet'en ways of being, doing, and knowing. What is at stake is the right to existence itself. Using Ingold's spider web metaphor [94], Gálvez-Campos helps to understand that in relational territories/worlds, humans and more-than-humans (including mountains, rivers, moose, salmon, etcetera) are designers of the spider web/territory/world they inhabit. In turn, that designed world shapes the formation of identity and ways of knowing—knowing involves learning to walk on the threads of the spider web. Thus, affecting or extinguishing a designer of the territory implies modifying the possibilities of identity formation and knowledge. This is why energy sovereignty, promoted by many Indigenous movements—such as the CPO—in defense of territory, is so important. From this perspective, territories are more than a tabula rasa waiting to be occupied by humans to inscribe their history [95]. It is about a stance of habitability of territories, co-existing with designers who shape and are shaped in return. In future research, scholars could explore the onto-political implications of energy projects under these ways of life by drawing on decolonial ethnographic approaches.

The ontological awareness this research raises lets us recognize what Escobar [96] points out: "that we design our world [through energy security discourses], and our world designs us back." We must continue envisioning the consequences of the worlds we construct through energy security discourses. For instance, the world enacted by MEM's discourse restricts the possibility of being –to mere consumers–unaware of multidimensional violence via occupying territories to supply energy demands. The MEM and similar hegemonic discourses force indigenous peoples to modernize and lose their identities, ontologies, and epistemologies [97]. In addition to land and water grabbing (and also energy

grabbing), that explains why many Indigenous movements oppose projects emanating from such discourses. In Guatemala solely, without counting other energy-related struggles, there are currently four cases concerning Maya-Q'eqchi' people confronting mega-hydropower plants [48–51].

Movements are not just resisting but proposing new energy models. With their differences explained earlier, there is a growing movement worldwide that understands energy transition broadly and deeply. All of them claim a civilizatory transition seeking energy sovereignty in their territories. In Latin America, there is the Movement of Living Rivers in Colombia, the Movement of People affected by Hydro dams in Brazil, and the CPO in Guatemala [98]. Similarly, in Europe, there is the energy democracy movement, transition towns, and degrowth [9,99,100]. Many scholars are working hand in hand with those movements, pushing the politicization of energy-related issues beyond liberalist and realist discourses. We must keep advancing in that direction to avoid leaving the fate of energy systems (with their ontological implications) in the hands of many technocrats who securitize anything but the status quo.

CRediT authorship contribution statement

B.A. Gálvez-Campos: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

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Appendix A

Table A.1
Abbreviations.

Abbreviation	Full Form
MEM	Ministry of Energy and Mines
CPO	Consejo del Pueblo Maya (Maya People Board)
COPAE	Comisión Paz y Ecología (Peace and Ecology Comisión)
INDE	Instituto Nacional de Electrificación (National Institute of Electrification)
CNEE	Comisión Nacional de Energía Eléctrica (National Commission of Electric Energy)
AMM	Administrador de Mercado Mayorista (Trade Market Administrator)
OPEC	Organization of the Petroleum Exporting Countries
LPG	Liquefied Petroleum Gas
SD	Sustainable Development
EU	European Union
LED	Light Emitting Diode
CCS	Carbon Capture and Storage
RENs	Renewable Energy Sources
PSECs	Post-Socialist European Countries
CE	Community Energy
ED	Energy Democracy
EEGSA	Empresa Eléctrica de Guatemala (Guatemalan Electricity Company)
IC	Israeli Company
CMI	Corporación Multi Inversiones (Multi-investment coorporation)
APERC	Asia Pacific Energy Research Centre

Data availability

No data was used for the research described in the article.

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