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Postcolonial theories meet energy studies: “Institutional orientalism” as a barrier for renewable electricity trade in the Mediterranean region



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ABSTRACT

This article interweaves energy studies and postcolonial theories. We argue that the concepts and theories developed by postcolonialist scholars to criticize the cultural and epistemological relations of power between Europe and its former colonies can be expanded to analyse the failure of international energy cooperation projects such as the Mediterranean Solar Plan (MSP) and Desertec. Based on model studies conducted by the German Aerospace Centre (DLR), we present socioeconomic and environmental criteria to question whether such projects are mutually beneficial or constitute an asymmetrical exploitation of solar resources. Furthermore, we analyse the risks discussed in the literature about the MSP and Desertec, and identify that they are actually European misrepresentations of Middle East and North African (MENA) countries with negative implications for Concentrating Solar Power investments in the region. Finally, we present a conceptual definition of “institutional orientalism”, arguing that such distorted perceptions of risks are rooted in historical imbalances of power. These asymmetries reproduce mechanisms of wealth transfer and pressure MENA countries to adopt European patterns of energy regulation and governance.

1. Introduction

In light of the risks associated with global climate change, the Trans-Mediterranean Renewable Energy Cooperation (TREC) developed the “Desertec concept”, which initially consisted of a cooperation programme for energy, water and climate security in Europe, North Africa and the Middle East. The idea was to take advantage of the high Direct Normal Irradiance (DNI) levels in the Sahara Desert and other arid regions in Southern Mediterranean countries in order to build thermal solar power plants. The latter would provide dispatchable power to sustain local demand and also to export part of this green electricity to the European Union in order to supplement power plants [1].

The discussions around the project were largely based on a series of model studies conducted by the German Aerospace Centre (DLR) in cooperation with energy research institutions from Algeria, Egypt,

Jordan and Morocco [2]. According to the results of these investigations, the total technical potential for Concentrating Solar Power (CSP) plants in seven selected MENA countries – Morocco, Tunisia, Algeria, Libya, Egypt, Jordan and Saudi Arabia – was calculated to about 538,000 TWh/y, which means that less than 0.2% of the local desert lands suitable for CSP plants would be enough to supply 15% of the electricity demand expected in Europe by 2050 [3]. The electricity generated by CSP stations could be transmitted from MENA to Europe by High Voltage Direct Current (HVDC) overhead lines, underground and sea cables, implying acceptable losses of about 3% every 1000 km [4].

On the other hand, it is assumed that MENA countries would considerably benefit from CSP investments in their territories. Besides accumulating revenue from electricity exports, MENA countries might assign a strategic role to the construction of CSP plants in view of their

Abbreviations: CO₂, carbon dioxide; CSP, concentrating solar power; DII, desertec industrial initiative; DLR, German Aerospace Centre; DNI, direct normal irradiation; EU, European Union; GDP, gross domestic product; GHG, greenhouse gases; HVDC, high voltage direct current; IPCC, intergovernmental panel on climate change; kWh, kilowatt hour; MASEN, Moroccan agency for solar energy; MENA, Middle Eastern and North African; MENAREC, Middle East North Africa renewable energy conference; MSP, Mediterranean Solar Plan; NA, North Africa; PPP, power purchasing parity; SWH, solar water heater; TREC, trans-mediterranean renewable energy cooperation; TWh/y, terawatt hour per year

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growing power demand. This growth is linked to the increase in local populations and the prognosis of economic development which are expected to push total electricity consumption to levels equivalent to the EU by the middle of this century [5]. In addition, the deployment of CSP stations offers an alternative solution for the harsh water stress in the region, considering that such electricity could be used to power seawater desalination plants in a sustainable way [6,7].

This idea gained force when the Union for the Mediterranean (UfM) – a political cooperation framework between the EU and Southern Mediterranean countries that succeeded the *Barcelona Process* – launched in 2008 the Mediterranean Solar Plan (MSP) as one of its six flagships [8]. The MSP aimed at developing 20 GW of new RE capacities and achieve significant energy savings around the Mediterranean by 2020. The highlights of this initiative would be the construction of large scale thermal solar power plants and the improvement of North-South interconnections in order to make possible the export of green electricity from MENA to Europe [9].

In the period after its announcement, the MSP received great attention from the international press and some European governments praised the initiative as a relevant cooperation project in the area of climate and energy [10]. The Desertec Foundation was created with the purpose of advocating massive investments of up to 400 billion euros (Time Value of Money/2006) for CSP deployment in the Mediterranean region and the Desertec Industrial Initiative (DII) emerged as a consortium of energy suppliers, service providers, solar companies and financial institutions which assumed the commitment of bringing the “Desertec concept” to life [11].

However, sceptical voices were heard on both shores of the Mediterranean about the possibility – or even the desirability – of implementing the MSP. From the European side, it was argued that importing electricity from MENA countries would reinforce energy dependency and make the EU susceptible to political pressures in the sense that Desertec electricity could be managed as an “energy weapon” in international negotiations [12]. Critics were also formulated in relation to the risks of terrorism, the appropriateness of the local energy regulations and the political instability of the region [13–15].

From the perspective of Southern countries, it was raised that the MSP would not configure a mutually beneficial project, but an asymmetrical enterprise in which the exportation of CSP electricity could be more properly characterized as “solar colonialism” [16,17]. According to the representative from the African Network for Solar Energy, “many Africans are sceptical. [Europeans] make promises, but at the end of the day, they bring their engineers, they bring their equipment, and they go. It is a new form of resource exploitation, just like in the past” [18]. The arguments that the positive impacts will be negligible and that the European business will appear as the main winner are particularly sensitive to colonial dominance that constituted the past relations between Europeans and many Southern Mediterranean countries [19].

This article presents an interpretative argument for the question of whether – and under which circumstances – the MSP might indeed be considered a “win-win situation” for its stakeholders. We approach this problem through a discussion on the model studies published by the German Aerospace Centre and the data collected in a semi-structured interview with the coordinator of this research centre [20], while the bases of our analysis are normative socioeconomic and environmental criteria to be presented in section four. Therefore, this article contributes to a research programme that investigates the (a) symmetrical conditions for transnational RE cooperation projects involving developed and developing nations [21].

In connection with this investigation problem, we will examine the reasons why the MSP has presented only meagre results up to the present. This question has been widely discussed in the literature about CSP cooperation projects in the Mediterranean region, but we consider that most analyses are either insufficiently comprehensive or even misinterpretations, which conceal those lines of force responsible for bringing the MSP to a stalemate. Hence, we offer an original view on

the barriers to the trans-Mediterranean trade of CSP electricity by discussing the European narratives about the MSP within the theoretical framework of postcolonial studies [22–25].

As stated by Gurminder Bhambra [23], postcolonial approaches aim at challenging dominant Northern narratives and reconfigure them to provide more adequate and inclusive categories of analysis. In the next section, we will clarify our theoretical framework with a brief introduction to postcolonialist critique, focusing on some specific sociological concepts that we regard as particularly consistent with the attempt of formulating a renewed and non-eurocentric interpretation of the MSP and the “Desertec concept”.

Postcolonial studies have predominantly emphasized the historical, cultural and epistemic aspects responsible for maintaining the hierarchies and power imbalances between the European matrix and its former colonies. Postcolonial scholars have mostly worked on critical analysis of social mentalities and subjectivities, ideologies and symbolic practices that reproduce historical asymmetries even after the official closure of the colonial domination. However, the materiality of the social and political relations that make possible the reproduction of colonial discourses have remained insufficiently theorized [26]. For this reason, the present research must also be seen as an empirical contribution to the highlighting of distortions provoked by Eurocentric representations of North-South cooperation projects in the area of energy infrastructure.

We will demonstrate in section five that European misperceptions of the risks involving the MSP are based on subjective representations of the MENA region which are widely disavowed by empirical data [27]. Finally, we will argue that misrepresentations on the threat of terrorism and political instability constitute decisive obstacles for the accomplishment of the MSP, not only because they undermine the necessary governmental support, but they also increase the capital costs of the whole project [28]. We present, therefore, a conceptual definition for “institutional orientalism” that discloses a normative role that pressures for modifications in the energy legislation of MENA countries so that the strengthening of a regional Mediterranean energy market might be achieved in accordance with European regulatory patterns. We assert that institutional orientalism effaces and diverts attention from substantial conflicts of interest within the EU which obstruct the path for a sustainable energy transition.

2. Theoretical framework: the postcolonial critique of self-referred European narratives

There is an old African myth in which the relationship between the colonizer and the colonized is metaphorically represented by two different masks: The European mask has a big mouth and small ears. The African mask, on the contrary, has a small mouth and big ears [29]. Notwithstanding the diversity of interpretations among postcolonial theorists, their common ground lies in the basic assumption that colonialism is a decisive and constitutive – although disguised – element of self-referred European narratives on modernization.

In the field of sociological theory, postcolonial scholarship challenges the universals of modernity and modernization as they are commonly represented within this discipline [22,30–32]. It questions the canons of classical sociology in which basic categories – such as “nation-state”, “market”, “industrial society” and “bureaucratic rationality” – were not only seen as impersonal, specialized and formal categories, but also as the main indices along which non-European countries were measured and classified in accordance with abstract patterns of “modernization” [23].

In other words, postcolonial critique discloses the fundamental relations between *loci of enunciation* and epistemic power. According to Gayatri Spivak [33], this task consists in revealing the concealed subject of European jurisprudence, political economy and cultural discourses that pretend to have no geopolitical determinations. In spite of its pretence of universality, Western epistemology has structured

multiple narratives which reaffirm the “specialness” of Europe parallel to the “incompleteness” of other regions of the world. This social image has subsisted even after the official decline of colonialism in the form of a global classification system which elevates the European civilization to the status of a universal standard and continues to reinforce political and economic asymmetries between centres and peripheries [22,34,35].

Hence, European epistemology disguises its colonialist significance in that it presents itself as unconstrained by any geocultural and geopolitical orientations, while promoting a system of research that is to a great extent the result of the previous imperialist gnoseological procedure of geographically labelling non-European cultures. Although, the “other” is recognised, it is generally perceived as irreconcilably and incommensurably “other” [23]. In the area of cultural studies, Edward Said [25] developed the concept of “*orientalism*” that became a seminal idea for the critique of cultural essentialisms and for the constitution of postcolonial theories as an important research field within social sciences. In general lines, Said defined “orientalism” as a discourse of power in which “Orient” and “Occident” are ontologically and epistemologically distinct from each other.

After analysing a vast set of influential works produced by Western scholars on non-European cultures, Said verified that the “Orient” was nothing but a precarious intellectual construct based on essentialist and distorted representations that obliterated the existing diversity of peoples. Consequently, the “Orient” was an invention of literati from North-Atlantic countries that reduced the empirical multiplicity of non-Europeans by describing them as exotic, sensualistic, religiously fanatic and dangerous. In short, “orientalism” was also an implicit value judgement in which the “other” was basically seen as opposed to rational procedures of thinking and inasmuch inferior to the European civilization [25].

It would not be reasonable to suppose that the institutional framework of a nation might be completely independent and separated from its cultural features. Therefore, we intend to discuss in more detail how the concept of “orientalism” assumes heuristic importance for the deconstruction of the European misrepresentations about the MSP. We will argue in section five that misconceptions and distorted views of the risks involved in the trans-Mediterranean commerce of CSP electricity also play the role of implicitly pressuring MENA countries to adopt measures and regulations more in consonance with the rules and prerogatives of the European energy market. In short, we will point to an “*institutional orientalism*” that is highly prescriptive in the sense that the evolution advocated for the energy sector in Southern Mediterranean countries is actually a set of reforms towards European ways of energy governance.

3. Methodological approach

We rely on the notion of “provincialising Europe”, such as developed by Dipesh Chakrabarty [24], as a procedure to reveal the geopolitical determinations of European narratives about the failures of trans-Mediterranean cooperation on CSP infrastructure. This idea has an important methodological value in that it distinguishes the critique of historical asymmetries from any manichean interpretation that might sound as “postcolonial revenge”. Indeed, Chakrabarty affirms that “provincialising Europe” is not a project which consists of neglecting or discarding European thought, which he considers as indispensable and inadequate at the same time for the comprehension of non-European realities. On the contrary, he regards European thought nowadays as a common heritage which also affects former colonies and for this reason must be renewed from the peripheries.

This research must therefore be understood as a critical effort to discuss the MSP from its margins, which means that we will not approach MENA countries by regretting their insufficiencies and concluding that their energy regulation framework is still “immature” for transnational investments in CSP electricity. Instead, we translate the

“Desertec concept” in accordance with the realities of Southern Mediterranean countries and reassert their agency towards a decarbonisation path.

As a methodological reference, “provincialising Europe” contributes to the reinterpretation of Western knowledge from the borders of developed countries and enables a clearer view of those effective contradictions that separate Europe from its own ideals of rationality. Such procedure will prepare the conditions for a more balanced understanding of the MSP, identifying the pragmatic reasons why many Southern Mediterranean countries have formulated RE programs and pronounced themselves in favour of CSP investments in their territories. It also provides the critical framework to highlight the “orientalist” arguments implicit in the European literature about the MSP and Desertec, which recurrently echoes the pressure for reforms in MENA countries, without clearly pointing out the energy interests within Europe that have concretely hindered the accomplishment of the MSP.

Nevertheless, it would not be analytically coherent to present all the controversies around the MSP as synonyms of what we call “institutional orientalism”. There were also questions with the purpose of verifying the premises of rationality underlying this project in the light of more comprehensive socioeconomic and environmental criteria: 1) What are the relevant environmental aspects of the trans-Mediterranean commerce of CSP electricity? 2) Would it be preferable for Europe to continue investing in RE programs within its own territory and thus avoid all the difficulties associated with MSP? 3) What would be the benefits – or the disadvantages – for each shore of the Mediterranean in case the MSP turns into reality? The DLR has developed several model studies in order to clarify these points, and since it is important for the argument presented in this article to differentiate legitimate scepticism about the feasibility of CSP cooperation projects from those objections embedded in “institutional orientalism”, we dedicate the next section to discussing under which concrete circumstances the MSP might be a mutually beneficial enterprise.

4. Trans-mediterranean CSP electricity trade: asymmetrical exploitation of solar resources or new energy cooperation paradigm?

There is a growing consensus among scientists that climate change is already in process and that the MENA region is very likely to become one of the most affected territories worldwide [37]. It is expected that a combination of higher temperatures and decreasing and more erratic precipitation will intensify the already acute water stress and accelerate the desertification process [6,38]. By now, climate change impacts are leading to displacement and migration in countries like Morocco. This means that, in the absence of a comprehensive mitigation programme, migration pressures tend to increase with severe consequences not only for MENA, but also for European countries [39].

Even though average energy consumption per capita in MENA is five times lower than in France, it has steadily increased since 1980 and population growth associated with economic development will push their energy demand further until the middle of this century [40]. Despite the region’s vulnerability to climate change, investments in RE have been considerably low, accounting for only 4% of global investments in alternative energy technologies [41]. Hence, the MSP favours Southern Mediterranean countries presenting a sustainable alternative for their growing demand and thus preventing a twofold increase in energy emissions in the business as usual scenario [42].

The assertion that CSP investments constitute a sustainable option for MENA countries is based on the fact that it produces only 16 g of CO₂/kWh, while the figures for steam coal and combined cycle natural gas plants amount to 900 g and 450 g of CO₂/kWh respectively [3,5]. Considering that water demand is expected to drastically rise and that the use of fossil fuels for this purpose is not viable in the long run, the ecological benefits for the region are also connected with the possibility of feeding seawater desalination plants with CSP electricity [6,38,43].

From the European perspective, CSP imports would play a decisive role for the accomplishment of its purpose to reduce GHG emission between 80% and 95% by 2050 [44]. Its function in the European energy mix would be highly strategic because CSP provides dispatchable power, which makes it suitable for compensating oscillations in the energy grid. Hydropower, geothermal and biomass are also RE technologies with analogous regulation functions, but the European potential for exploiting these sources is rather limited and, in the case of biomass, also dependent on import from third countries [20,45].

Nevertheless, the discussion around whether the MSP configures a mutually beneficial project must address two fundamental objections: 1) Importing CSP electricity from MENA is undesirable because it would reinforce European energy dependence; 2) The MSP is an enterprise based on resource exploitation destined to maintain Southern Mediterranean countries in a subaltern position in relation to their former metropolises. The first restriction is based on the assumption that investing in domestic RE sources constitutes a more rational strategy because it makes European “energy security” less vulnerable to external disturbances [46]. The second restriction lies on those concrete historical experiences in which North-Atlantic countries benefited from MENA fossil fuel resources without really contributing to local prosperity [47].

Approximately 50% of the EU's total energy requirements are met by non EU-members and this proportion is expected to rise to roughly 70% in the next two decades [19]. The EU is relatively poor in fossil fuel resources and – taking into account the current status of technological development – it is not capable of covering its electricity needs with indigenous RE sources over a certain threshold with about 18,000 TWh/year technical potential, while the renewable energy potential of North Africa is about five times higher compared to Europe [48]. CSP is based on thermodynamic principles that make it more economically suitable for storing energy. Therefore, it is capable of providing dispatchable power to compensate the highly oscillatory character of PV and wind turbines, which depend on long, medium or short term storage processes that would also represent financial and resource costs. Besides, the option for building a European supergrid to compensate such oscillations would demand a huge expansion of transmission lines [20].

Apart from the technical reasons that point to the necessity of external cooperation for implementing an ambitious energy transition roadmap, the arguments that associate European insulation with “energy security” are inaccurate, given that the MSP actually diversifies EU energy sources. “Let's consider a scenario (I) in which Europe depends only on Russian gas and a scenario (II) in which Europe would depend on Russian gas and Moroccan solar energy. What happens then with the risks? Considering that we have no reason at all to consider Morocco less reliable than Russia, the risks would fall 50%. Instead of having one supplier, now we have two” [20]. CSP electricity import cannot be regarded as one-side dependency, but rather as a mutual dependency project, contributing to stabilizing and strengthening the relations between partner countries inasmuch as electricity export revenues would become an important component of MENA's GDP [12].

On the other hand, it is also improper to characterize in advance the MSP as solar colonialism by associating it with the history of fossil fuel exploitation [49]. Contrary to fossil fuels, solar energy is theoretically inexhaustible and European imports would therefore not diminish to any extent the opportunities for the local utilization of such resource. Actually, it is precisely the contrary, European investments would scale-up the manufacture of CSP components: the reduction of costs associated with the payment of electricity revenues to MENA exporting countries would facilitate the economic conditions for the execution of CSP projects to cover local demand.

However, we also consider erroneous to peremptorily affirm that the MSP constitutes a “win-win situation” on the basis of abstract representation of opportunities, while erasing the existing social realities and the specificity of regional interests. Even though transnational

cooperation on solar energy projects indeed appears as a comprehensive response for the mitigation of climate change, it requires social legitimization from the citizens of the countries supposed to take part. If it is correct to affirm that the risks associated with climate change need scientific measurement in order to become visible [50], then it is also true that the benefits of avoiding them are invisible as well, and might consequently be insufficient to mobilize the necessary social effort for pushing forward the transition towards RE. Therefore, we assume that trans-Mediterranean commerce of CSP electricity has not taken its definite shape yet and its asymmetrical or mutually beneficial character is still an open question dependent on the negotiation process between Europe and MENA over the concrete circumstances for its implementation.

In this sense, we will briefly analyse three issues that we regard as fundamental for the realisation of the MSP in relatively symmetric conditions: 1) the local participation in the CSP value-chain, 2) the environmental impacts of such enterprise 3) the dimensions of knowledge and technology transfer. This discussion is also important for reasons linked to the narratives around the “inadequacy” of energy market regulation in MENA countries. These do not take into consideration that any concession to minimize the European perception of the “risks” would be more likely in a scenario in which EU institutions make concrete proposals which increase the commitment of Southern governments in the negotiation process.

4.1. The local participation in the CSP value-chain

The majority of energy suppliers, service providers, solar companies, finance and insurance corporations that participated in the foundation of the DII were European, predominantly German firms. A first step towards a larger involvement of industry partners from MENA was the admission of Nareva (Morocco) and Cevital (Algeria), while others such as Sonatrach (Algeria), ACWA Power (Saudi Arabia) and Taqa Arabia (Egypt) took part in some of the existing CSP projects in the region [51,52].

The local manufacture of CSP components and the creation of qualified jobs are decisive conditions for the social legitimization of solar projects in the exporting countries. It has been shown that national States tend to pragmatically formulate their energy policies in view of the potential benefits of the RE industry for GDP growth [53], which in the case of the MSP means that the support given by local governments is highly dependent on the participation of their respective national industries in the CSP value-chain.

Depending on the scale of solar projects in MENA, it is also likely that European companies might have interest in building manufacturing capacities in the region. According to Ragwitz [54], it is estimated that in a scenario with more than 5 GW of CSP deployed in the Sahara Desert, North African participation could reach almost 60% of the value-chain by 2020, creating between 64,000 and 79,000 permanent local jobs. Nonetheless, the labour conditions and remuneration of MENA workers are important criteria to define if such enterprises contribute to the reproduction of historical asymmetries. If it were considerably inferior to European standards (PPP), then it would characterize a “race to the bottom” model based on the low costs of labour, which would also be disadvantageous from the perspective of European workers [55].

4.2. Environmental impacts of CSP electricity trade and mitigation strategies

The core of the discourse that legitimates the “Desertec concept” and the MSP is the urgency of energy transition in view of the disruptive effects of climate change on ecosystems and, consequently, on human societies [1,41,56]. According to the IPCC [37], the burdens of the climate crisis are to be carried mainly by Southern countries, which are precisely those societies devoid of financial resources for

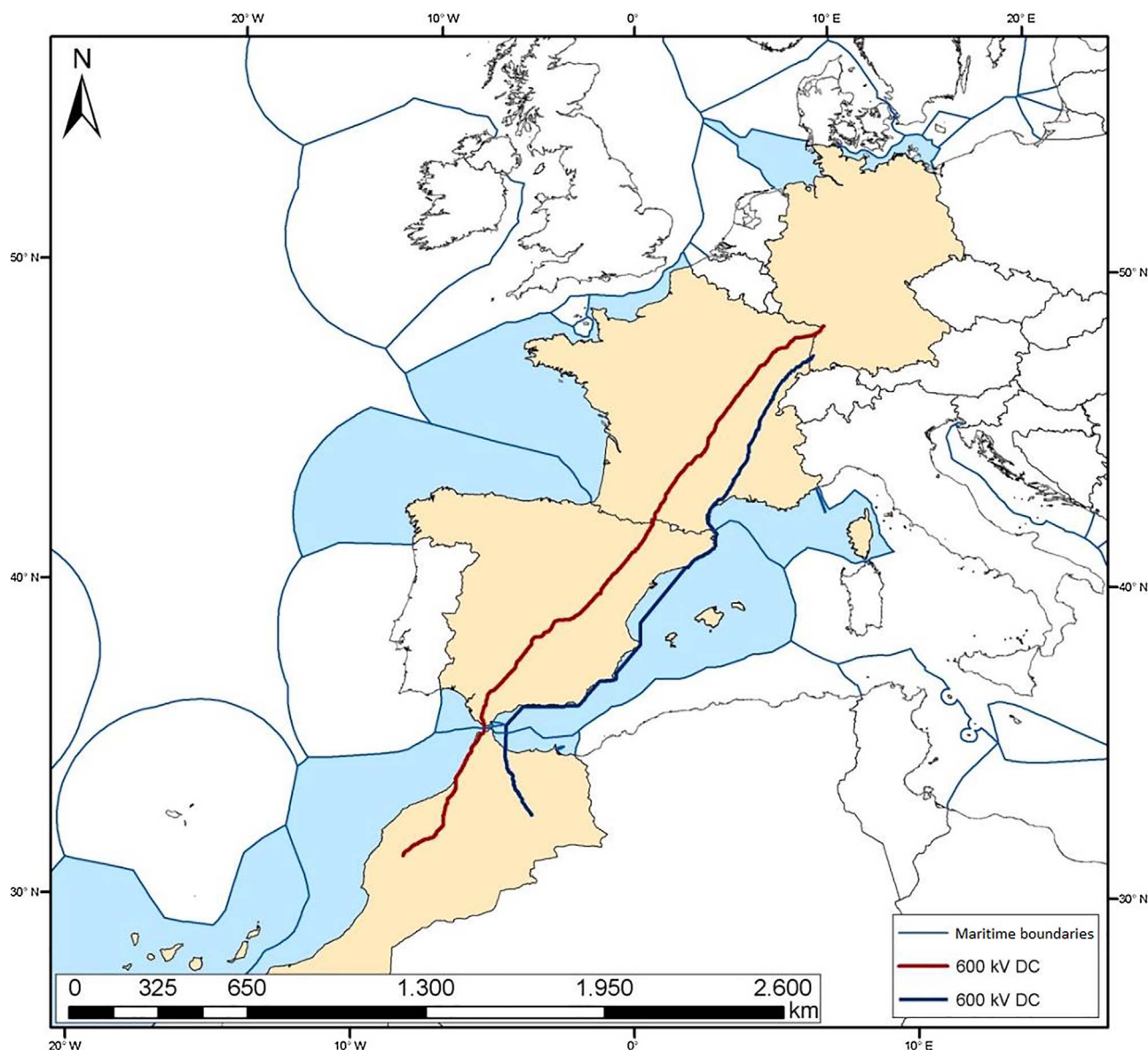


Fig. 1. Model of HVDC point-to-point lines between potential CSP plants in Marrakesh and Missour (Morocco) and potential off-takers in Daxlanden and Eichstetten (Germany). Source: [57]

implementing mitigation and adaptation strategies. Even though the climate prognoses are not so harsh for North-Atlantic countries, they are certainly to be affected in such crisis, inasmuch as the environmental refugees tend to increase migration pressures along their borders.

Thus, CSP deployment is regarded as a cardinal action to prevent climate disruptions. In the model developed by Hess [57], it has been considered that using this technology to generate 9.32 TWh/y could save up to 8.4 Million tons of CO₂ emissions (Fig. 1). However, the author has also identified some risks and possible environmental damages involved in the construction and operation of thermal solar power plants, emphasizing the importance of conducting an impact assessment evaluation in order to verify the optimal routes for the HVDC cables so that environmental damages are minimized in the exporting, importing and transit countries [2,4].

The issue of water requirements for cooling the system and cleaning the mirrors is particularly sensitive. Even if efficiency techniques are applied, i.e. dry cooling mechanisms, it is assumed that circa 4.1 million cubic meters of water would be necessary for generating 13.7 Twh/y [57]. This water demand could supply about 160.000 people in

Morocco with water during a year (70 litter per day and person) [58]. Hence, it is imperative to develop seawater desalination plants powered by RE technologies from the very initial stages of the MSP by using this water for building new living areas with agricultural and forestry transformation of arid territories [38]. If these issues are taken into account, environmental benefits of CSP electricity could compensate its impacts due to less carbon emissions in the power sector and land use of otherwise desert regions.

4.3. The dimensions of knowledge and technology transfer

Even if the negotiation process is successful in guaranteeing favourable economic conditions and environmental benefits for MENA, the trans-Mediterranean energy cooperation will remain an asymmetrical enterprise, unless concrete measures for knowledge share and technology transfer are taken. In this sense, the EU has identified technology transfer as a major priority for the MSP and stated that RE projects in Southern Mediterranean countries should lead to the emergence of local industry activity, job creation, as well as research and innovation capacities [8].

Scientists from universities and research centres in MENA have collaborated with the DLR by providing the necessary data for the CSP studies published between 2005 and 2007 [2,4,6,45]. This research collaboration has continued further and taken place at six MENAREC editions, where German and MENA scientists have discussed a wide range of issues related to CSP deployment, including innovative and smart technologies. In such occasions, scientists have gathered with representatives from the industry, policy-makers and government officials to discuss the existing barriers for cooperation in solar projects and possible solutions for them [59].

Nevertheless, concrete actions for technology transfer have not been implemented yet and it is very unclear how this issue is expected to progress. The CSP market is highly oligopolistic and it is doubtful whether companies such as Siemens and Schott Solar will have the intention of sharing their know-how with MENA industries and consequently renounce their competitive market advantages [13]. For this reason, EU actions have been limited to expertise cooperation, which does not meet MENA expectations of technology transfer and might merely represent a modality of soft power [60]. In case no compromise is achieved, CSP programs would either rely on massive R&D investments from local governments or imply that MENA countries would remain in a position of dependency *vis-à-vis* European companies.

5. Elements of “Institutional Orientalism”: energy market and policy, regulation/stability, and security

In the previous section we highlighted some important conditions for the MSP to be characterized as a mutually beneficial energy alliance. We also identified possible distortions that could aggravate the existing asymmetries between Europe and MENA and thus corroborate those pessimistic voices that identify transnational CSP electricity trade as a new version of resource and knowledge-based colonialism.

Based on the postcolonial critical references discussed in section two, we now deconstruct European misperceptions on the obstacles to CSP cooperation with MENA countries. We argue that subjective representations of the risks involved in such projects express mainly orientalist views regarding the conflicts and institutions in MENA that are widely disseminated in academic articles, in the press, as well as in the approach to European financial organizations. Eventually, it will be clear that – even though empirical references contradict orientalist narratives – such misrepresentations are in the very core of the hindrances to the accomplishment of the MSP.

Furthermore, by following the methodological path developed by Dipesh Chakrabarty [24], we “provincialise” the European energy discourse and argue that the usual emphasis on the risk dimension of CSP investments is implicitly associated with the pressures for MENA countries to adopt the European energy regulation framework and thus favour the interests of European private companies. Also based on empirical references, we suggest that the current policy cohesion within the EU for an ambitious project like the MSP is insufficient and that business interests have blocked the steps for an energy agreement more in consonance with ecological premises. At the same time, a brief presentation of the targets formulated by NA countries for RE deployment and the policies developed by them in the field of solar energy will contribute for disavowing the European statement concerning the “institutional maturity” of MENA countries. As we mentioned above, our intention is to instigate neither a “colonial revenge” nor an anti-EU discourse, but to deconstruct misrepresentations on the issue and thus contribute to the negotiation process between EUMENA countries on a more rational basis.

5.1. The negative impacts of “institutional orientalism” for CSP investments in MENA countries

Nadejda Komendantova and her research team have developed relevant qualitative studies on risk perception among stakeholders in the

business of RE development in NA. They have interviewed European participants of workshops focused on the MSP and DII who are involved with CSP projects in Southern Mediterranean countries, asking them to identify the major barriers and risks connected with investments in RE capacity for local use and electricity export. Experts from industries, financial sector, scientific community and political actors were interviewed and questioned about their level of concern in relation to a pre-ordained list of risks. The results have shown that three issues were rated as highly concerning: regulatory risks (complexity and instability of national regulations); political risks (low level of political stability and lack of support from national governments) and *force majeure* risks (natural and human-made disasters, including terrorism) [61].

It is important to have in mind that the concerns expressed by the stakeholders reflect their subjective judgments, which might not exactly correspond to the empirical reality of NA countries. This gap is particularly clear when one considers terrorist attack threats to the energy infrastructure. Scholvin [13], for instance, contested the Desertec project due to the “unstable security situation in many MENA countries – particularly the menace of terrorist attacks – that could hinder the realisation of the project”. Contrary to such view, Lacher and Kumetat [15] have conducted a systematic investigation of EU-NA energy relations and verified that local conflicts have had no impacts on the energy supply to Europe. Algeria, Egypt and Libya are major suppliers of crude oil and natural gas to Europe and – except for minor incidents which were not responsible for any significant disruption – sabotage acts have not compromised the stability of energy trade between EU and NA.

Karen Stengen [62] has developed a methodology for assessing the risks posed by terrorist groups to CSP infrastructure in NA. The conclusion pointed out that the vulnerability is low and could be further mitigated by improving security in major energy facilities and contingency planning (2012). According to Lilliestam [63], even though electricity imports are more vulnerable than gas imports, neither Desertec electricity nor fossil fuel imports represent a serious menace to Europe. The risks are inexpressive due to the high systemic resilience and also because attacks to energy infrastructure have low symbolic appeal to extremist groups.

The antecedents of energy commerce in the region also disavow the assertions that local political disputes might exert a deterrent influence on trans-Mediterranean CSP electricity. Concerns regarding political stability do not take into consideration that NA countries established RE targets and solar programs that have been progressively implemented in spite of the protests and constitutional changes that followed the “Arab Spring” [27,64,65]. Even though NA presents different energy scenarios, local governments have mostly developed new institutions and finance mechanisms in order to support the advance of alternative energy technologies. In Algeria, the government established the New Energy Agency (NEAL) with the purpose of encouraging domestic production, use and export of renewable energy, while Morocco has created a national agency for solar energy (MASEN), that is currently responsible for building the largest CSP complex worldwide at Ouarzazate with a combined capacity of 500 MW [66,67].

Based on some premises of postcolonial theories – particularly E. Said’s critical appraisal of Western misrepresentations on non-European cultures [25] –, we define “institutional orientalism” as a complex set of distorted perceptions that interpose barriers to symmetrical cooperation initiatives between Northern and Southern Mediterranean countries. Therefore, institutional orientalism might be concretely identified in those narratives that have Northern countries as their epistemological *loci* of enunciation, blaming Southern partners’ “insufficiencies” for the failures in transnational enterprises. Such narratives are incapable of discerning relevant specificities between non-Western peoples – while the distances perceived in relation to self-referred European criteria of rationality constitute the basis for assigning to Southern countries the responsibility for the non-fulfilment of the (potentially) mutual beneficial aspects of infrastructure projects.

A typically orientalist suspicion on the political reliability of energy suppliers in an eventual “Desertec scenario” was expressed by Fred Pearce [68], whose purpose was to discredit the idea of trans-Mediterranean CSP electricity by affirming that Europe would then be hostage to MENA countries. He creates a false parallel between solar electricity and oil dependency so as to affirm that Southern Mediterranean countries would take advantage of their position as energy exporters for political blackmail. This argument disconsiders that fossil fuels are finite resources that can be stored for large periods of time, differently from RE export revenues that would cease, if electricity is not transferred in a relatively short time after its generation.

Lilliestam and Ellenbeck [69] accurately criticized the idea that MENA countries might use CSP electricity as an energy weapon by demonstrating that Europe would be able to cope with transmission disruptions through capacity buffers and demand-response mechanisms. These authors simulated different scenarios and concluded that Europe would be susceptible to extortion and political pressure only in the extreme arrangement that all NA countries unite in using the “energy weapon”. Furthermore, they argue that in the scenario in which Northern and Southern Mediterranean partners are successful in creating a negotiation framework that provides mutual benefits and shared prosperity, electricity export revenues would become an important component of local GDP. In this case, importing and exporting countries would develop interdependence ties that would minimize not only the risks of energy conflicts, but even broader geopolitical risks.

In other words, European narratives and risk perception of CSP investments in the MENA countries are determined by subjective factors with pronounced orientalist content. The instrumental dimension of European narratives is to pressure Southern Mediterranean countries to adopt EU rules as parameters for the modification of their own energy institutions and regulation framework. Indeed, the EU's strategy of external governance consists to a high degree in shaping international agreements and negotiations so that target countries are induced to embrace its normative directives in their domestic legislation [14]. Thus, the appeal for “closing the regulatory gap” among MSP partners consists actually in demanding that MENA countries follow the European path, implicitly taken as more rational than their Southern counterparts’.

As well as in other institutional fields, EU demands in the energy sector mainly tend to induce privatization and market liberalization. Even though a more detailed analysis disavows a positive evaluation of such policies in those countries where they were applied [40], the adoption of European rules appears as a necessary condition for the flow of investments and bank loans. Schinko and Kommendantova have demonstrated [28,61,70] that the costs of capital for CSP investments are highly dependent on the *risk premium* factor, which basically defines the interest taxes for financial loans. The costs of capital vary significantly according to the perceived risks that investors associate with specific projects, even though these subjective judgments do not necessarily find empirical validation. “If a CSP investor in NA could acquire project financing at a cost equivalent to that in Europe, the LCOE could be reduced from USD 0.21/kWh to USD 0.15/kWh or by 32%” [28].

The deconstruction of European narratives around the risks associated to the MSP has consequently pointed to three major implications of institutional orientalism. In the politico-normative sphere, institutional orientalism constitutes a power discourse that arbitrarily defines the meaning of “rationality”, based on self-referred parameters. In transnational infrastructure projects involving both developed and developing nations, it allows Northern countries to present their own regulatory framework as the most suitable for the common enterprise and eventually also compels Southern countries to modify their domestic rules. In the economic sphere, institutional orientalism reproduces *mutatis mutandis* the colonial mechanisms of wealth transfer from Southern to Northern countries because it legitimizes subjective risk narratives that make Southern countries’ access to international

finance significantly more difficult and expensive. Finally, in the politico-cultural sphere, the concept enables us to identify the essentialization of identities in which MENA countries are all similarly associated with violence, terrorism and turmoil. The orientalist literature ignores the negative role played by European governments – during as well as in the aftermath of the colonial period – in sowing regional conflicts. It also represents as a permanent condition those cyclical unrests rooted in economic circumstances that could rather be mitigated by investments in strategic sectors such as the RE industry.

5.2. Provincialising European energy discourses

Our discussion on institutional orientalism has taken the post-colonial critique of historicism as the theoretical insight for the deconstruction of pretence universalisms embedded in European discourses for external energy governance. Nevertheless, if European standards for energy regulation cannot be automatically prescribed for other regions, what criteria might then serve as a reference for transnational energy cooperation between developed and developing countries? What sort of reason might favour cosmopolitan perspectives, without disregarding the heterogeneity of sociohistorical contexts in which energy policies are concretely formulated?

We define rational energy planning as the development of the energy infrastructure which makes use of technological innovations to improve energy gains and explore renewable sources in order to achieve energy security in accordance with sustainability criteria [71]. In this sense, we argue that environmental criteria present a more comprehensive basis for international energy governance and transnational energy infrastructure projects because the reality of climate change has made sustainability a cosmopolitan parameter [50]. Therefore, the configuration of a “win-win scenario” regarding international energy cooperation projects such as MSP and Desertec, must be evaluated taking the environmental space-time scale as the rational ground for the risk/benefit ratio, subordinating economic and geopolitical criteria to substantive mitigation goals [72]. In other words, “institutional orientalism” also expresses its sectary tendencies when corporate and political action refuse to redefine their risk/benefit assessment criteria in accordance with the entangled space-time conditions of the environment.

Notwithstanding European narratives that blame MENA institutions for the deficiencies of the MSP, the stagnation of trans-Mediterranean CSP electricity trade is to a great extent related to the low integration of EU energy policies [*klein Staaterei*]. National concerns on energy sovereignty and disputes between different fields of the energy industry have impaired the development of a unified energy approach within the EU, as well as the advancement of a coordinated policy with Southern Mediterranean countries [11].

The existing energy policy framework in many EU countries is still one tailored to conventional energy systems [5] and vulnerable to intense lobby disputes behind the curtains, both between conventional and RE industry, as well as within different sectors of the RE industry. These arguments are illustrated not only by the volume of indirect subsidies that annually benefit the conventional energy industry, but also by the fact that European FDI in Libya, Egypt and Algeria flow primarily to the hydrocarbon sector [61]. Furthermore, Germany is the second largest financer of coal power plants abroad and even its PV industry has worked against CSP investments in the Mediterranean region [73], while France has basically disregarded the MSP in favour of bilateral cooperation in nuclear energy programs fostered by some MENA countries [17].

On the other hand, it is true that the anachronistic idea that fossil fuel subsidies contribute to poverty alleviation is still an energy directive for several MENA countries. Nowhere else mechanisms for keeping oil and gas prices artificially low are so widespread, and five of the top ten subsidizers in the world are located in this region: Iran with USD 84 billion and Saudi Arabia with USD 62 billion account for over a quarter

of global pre-tax subsidies [74]. In spite of that, many local governments have developed new institutional arrangements for the promotion of renewables and established RE incentive programs so that in most cases updated RE deployment goals are similar to EU targets for 2020 [65]. Therefore, since national energy scenarios vary considerably, MENA cannot be regarded as a homogeneous region, as it is frequently the case in European literature embedded in institutional orientalism. Further studies are necessary in order to provide a detailed panorama of the specific approaches to energy security and thus to avoid false generalizations [54,67,75,76].

Due to the high levels of solar irradiance in MENA, the growing support for RE policies has been translated in a set of specific programs for a bigger share of solar technologies in various countries. The Egyptian government, for instance, aims at 20% of renewables by 2020 and intends to deploy at least 6 GW of PV cells within this timeframe. Palestine is very representative in Solar Water Heater (SWH) appliances, with an installed capacity that exceeded 1.5 million m² and accounted for almost 50% of SWH deployment in the Arab world at the beginning of the present decade [27,65].

In 2009, the Tunisian government announced the “Tunisian Solar Plan” with the purpose of achieving 4.7 GW of combined PV, SWH and CSP plants before 2030. This goal includes the “TuNur Concentrated Solar Power Project” that intends to reach 2250 MW of CSP utilities, including the possibility of commercialising part of this electricity with Italy via HVDC submarine cables [77]. As we mentioned above, Morocco has also established a national solar programme and is currently building the 500 MW Noor Ouarzazate Solar Complex, which will soon represent the largest concentration of CSP plants worldwide [39].

However, in view of the European hesitation with regards to trans-Mediterranean CSP electricity trade, MENA investments in thermal solar energy are either associated with energy security concerns restricted to the national level or related to strategies destined to maximize the revenues from fossil fuels. Both Tunisia and Morocco are energy dependent countries and their respective solar programs are intended to reduce expenses related to energy import. On the contrary, Algeria and Saudi Arabia possess large reserves of conventional fuels and in such cases the construction of CSP plants is intended to minimize the domestic consumption of oil and gas so that these resources can be sold abroad opportunely [78]. This later strategy constitutes a paradox from the angle of environmental rationality because, even though it contributes to scaling up CSP utilities, it maintains the energy entanglement with developed countries on the basis of fossil fuel resources.

6. Conclusion

This article presented CSP electricity trade as a rational approach to climate, energy and water governance in the Mediterranean region. We discussed the question of whether CSP projects, such as Desertec and MSP, represent mutually beneficial or asymmetrical enterprises in the energy field, arguing that there is no *a priori* answer for this problem, and that an accurate characterization depends on the terms of a transnational agreement, which were not defined yet. In this sense, we presented concrete socioeconomic and environmental criteria as parameters for the negotiation process: the participation of MENA countries in the CSP value-chain, the implementation of mitigation strategies for the ecological impacts related to the construction and operation of CSP plants and a more explicit definition of the conditions for North-South knowledge and technology transfer. Denis Hess [57] has also thoroughly discussed these issues and added that the success of CSP electricity trade depends on the development of common political goals between the countries involved. Additionally, community administration of thermal solar power plants would be an important measure for avoiding the restriction of benefits in the Southern shore of the Mediterranean to MENA elites and increasing acceptance in hosting countries. Future researches could supplement the debate on “institutional

orientalism” by analysing to which extent the “acceptance factor” contributes for lowering the perception of risks in RE projects.

Furthermore, our specific contribution was to point out the relevance of postcolonial theories for the analysis of concrete projects of energy infrastructure between developed and developing nations. Based on the critiques developed by Said, Mignolo, Bhambra and Chackrabarty, we presented a conceptual definition of “institutional orientalism” that enabled us to identify those European misrepresentations on the MSP which blame MENA countries for the insufficiencies and failures of trans-Mediterranean commerce of CSP electricity. European stakeholders repeat *ad nauseam* that MENA regimes are unstable, as if the whole region were still in the same turmoil as Libya and Syria. They affirm that the Arab Spring “put the last nail in the Desertec coffin”, but do not explain why negotiations did not resume in the subsequent period, when demonstrations and clashes had ceased or significantly moderated. Meanwhile, the erratic policies towards RE incentives in Spain and Italy are completely absent from the MSP debate.

We presented “institutional orientalism” as a complex set of culturally based distortions that highlights the risks for CSP investments in MENA and consequently results in a series of demands for reforms in local energy regulations based on self-referred European patterns of energy governance. We also called attention to existing research which demonstrates how the mainstream European perception of risks make the access of MENA countries to the financial resources more restricted and expensive, which contributes to raising the capital costs of the projects and, consequently, the electricity prices paid by the final consumers [28,65].

However, such studies show an important limitation because they focus on strategies for mitigating the risks of CSP investments in MENA, rather than criticising the very basis of “institutional orientalism” which gives place to misrepresented risks. Besides, the notion of “risks” assumed by these authors coincides with the narrow conception of risks which used by financial institutions, without any regard to the incorporation of the social and environmental risks posed by climate change scenarios. In this sense, they remain in the epistemological framework of “institutional orientalism”, rather than pointing to the deconstruction of imbalanced and asymmetrical energy discourses.

We also provincialized both European and MENA attitudes towards CSP investments with reference to the criteria of environmental reason. Due to the fact that environmental reason is rather a cosmopolitan parameter than an eurocentric analytical category, it discloses a more objective view on the respective barriers interposed by each shore of the Mediterranean for the accomplishment of the MSP. Differently from colonial narratives based on the assumptions of historicism, environmental reason has no teleological bias. The latter does not point to any energy transition as a historical necessity, but as entangled rational projects which might also fail to overcome those energy interests which have been hegemonic in the Mediterranean region. While “institutional orientalism” inflates the risks of CSP investments in MENA, our critical analysis inverts this question by stressing the risks of postponing such investments.

Finally, this article proposes a broader research agenda focused on the importance of subjective representations for RE cooperation initiatives between developed and developing countries. This set of investigations could identify other RE projects worldwide that also represent a potentially “win-win situation” and develop strategies to verify if and to what extent misrepresentations of political and cultural patterns might hinder rational efforts devoted to climate change mitigation and energy security.

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