

Green growth and its global-local meanings

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Insights from Morocco

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LINKS has examined the economic feasibility of simultaneously pursuing climate-mitigation, energy autarky and regional development with investments in renewable energy in Austria's model regions. It has explored the social and political commitment, and the drivers of this commitment (e.g., participatory governance), to Austria's goals of climate-change mitigation, energy autarky and regional development and assesses together with Moroccan stakeholders the relevance and transferability of the experiences made with Austria's Climate and energy model regions for RES development in Morocco.



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1. Introduction

Energy transition towards renewable energy sources (RES) has been a high priority for many industrial as well as developing countries. Besides its positive effects on the ambitions to mitigate climate change, energy transition has been also seen as a mean to increase energy independence and energy security. While some countries have been particularly successful in developing and deploying energy transition solutions (including technologies and governance models) others are at the beginnings. Particularly in developing countries there is growing interest in the transfer of RES solutions as they are often considered to be drivers for modernization and socio-economic development (Romer 1990; Gruber et al. 2017).

The transfer of RES technologies, which includes not only turnkey power stations but also the transfer of the governance models, needed for successful implementation of technology in the hosting society and its long-term usage with as little impacts as possible on local communities and benefits for hosting countries at the same time, is considered a key in facilitating climate change mitigation efforts around the globe (Karakosta et al. 2010; Metz et al. 2000).

In 2009, Morocco initiated an ambitious energy transition program. The goal is to cover 42 percent of its power generating capacity with RES by 2020 and to increase this to 52 percent by 2030 (RES Med). Morocco's ambitious plans are often highlighted by various organizations in the international context as a model for deployment of RES in developing countries (Gruber et al. 2017). The country's energy transition strategy mainly focuses on the construction of large and middle-size centralized solar energy plants. The largest project are the so called "Noor" (light) plants, a number of large and medium scale solar plants to be constructed across the country until 2020. The Noor plants are hoped to increase Morocco's energy production, decrease the country's dependence on fossil imports and even enable the export of energy to European and African neighbors. In turn, effects on electricity prices in Morocco are expected to remain low.

Despite a clear preference for rather centralized energy solutions, mainly the result of state planning in the capital Rabat, the Moroccan state's ambition of inducing "Green Growth" has also had effects on the regional, provincial and local levels. Many associations and initiatives defending, promoting and lobbying for climate change mitigation and renewable energy solutions have emerged at the local level. Green Growth and Morocco's aims at de-centralizing the state's administrative structure have opened new spaces for participation.

Similar to Morocco, Austria has also developed ambitious plans for transition to climate friendly energy productions. The long-term vision is to reach 100 percent independence from fossil energy. In 2009, the so called Climate and Energy Model Regions (CEM) were established. The governance concept of Climate and Energy Model Regions (CEM) aims at promoting energy transition at the regional and local levels. Each CEM pursues the goal of becoming independent from fossil fuels by 2050 and thereby contributes to the overall national climate goals. The decentralization of climate goals, linking energy transition with regional development has reflected the country's federal administrative and political structure. In that regard, this governance model represents a best practice for a decentralized policy approach to climate mitigation goals.

As much as this often entails strong involvement and ownership on societal level, as much its success is dependent on a complex set of diverse political entrepreneurs on different political and administrative levels (national-federal-district and local). Most of the energy relevant issues are regulated by federal law, but the federal states are highly involved in the specification and implementation of these laws. The country's energy strategy and measures for the reduction of emissions (including investments in renewables) are elaborated in collaboration between the federal government and the federal states. The measures taken are brought in line with the climate and energy package issued by the EU in 2008 which sets besides the promotion of renewables and the increase in energy efficiency the goal to reduce emissions until 2020 by 20 % (compared to 1990).

This working paper builds on the insights gained from the LINKS project. LINKS¹ (Linking climate change mitigation, energy security and regional development in climate and energy model regions in Austria) identified structural differences among the Austrian Climate Model Regions (urban, semi-urban and rural), human factors such as the willingness to use RES and to pay for them, as well as differing public acceptance and participatory governance measures. As a result, the two Austrian CEM regions of Güssing and Freistadt were determined as potential models to be transferred to Tata. These two CEMs illustrate the two opposite poles of different governance rationales. While the establishment of a CEM in Güssing was mainly initiated by the former mayor in a top-down process and enjoyed strong political support on the national and regional levels, Freistadt represents a bottom-up approach which has been located at the grassroots level and is informed by more participatory and flat governance structures. The overall objective of our work package was to assess the transferability of these insights to different socio-political environments, such as Morocco's Tata region. To do so, the working paper explores the visions and different notions of "green growth". Moreover, it is concerned with the forms of participation of different stakeholders (including official authorities) in the making of renewable energy in a remote area of Morocco. Situated in the coun-

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try's southeast, Tata has been designated as the location of one of the Noor solar plants. It analyzes the meanings produced in general discourses on energy policy in Tata and puts them into context with the political, territorial and economic orders that shape opportunity structures. Based on interviews, talks, a stakeholder forum and a focus group discussion, the paper identifies three threads of discourses and three perspectives on the Moroccan orders.

2. Context and approach: Green growth and renewable energy in Morocco

2.1. The Moroccan Solar Plan

Morocco is one of the few states in the Maghreb region with only few fossil fuel resources and reserves. More than 90 percent of the country's demands are covered by imports. In 2007 and 2008 a significant rise in the price of fossil fuels put the Morocco's economy under pressure. This was considered to be one of the major triggers for elaboration of the energy strategy in 2009 which envisages a more balanced mix of the country's energy supplies (Steinbacher 2015, p. 11). The strategy's goal is to meet 42 percent of Morocco's share in renewables from the installed power capacity by 2020 (the 42 percent are hoped to assure 25 percent of the annual power generation by 2020), and to increase this share to 52 percent by 2030. Investments into renewable energy production are seen as an engine for the country's general development.

King Mohamed VI is considered to be one of the major drivers if not to say the patron of the so called "Green Growth" development strategy (Gruber et al. 2017). The king has significant executive and legislative powers. The personality of the king stands in the very center of the system. The monarch can rule directly and indirectly through the state institutions. He can be seen as the highest executive authority, standing above the government, the bureaucracy and the military leadership. The king's strong commitment to energy transition has facilitated the adoption of energy transition plans at all levels of the state administration (including the regional, provincial and local levels).

Civil society is also active in energy transition area. The civil society organizations at all levels have emerged and been vocal. The COP22 (United Nations Framework Convention on Climate Change, 22nd Conference of the Parties), held in Marrakesh in 2016, has functioned as a further driver for the Morocco's ambitious energy transition plan and helped to build the country's new image. However, particularly implementation of single projects depends on the support of single social and political entrepreneurs. Therefore, the will and inclusion of elites, decision makers on different levels as well as of civil society is essential for the success of Morocco's energy transition.

In highly centralized political systems such as Morocco, strategic decisions are almost exclusively taken at the higher levels of the state. Green Growth has been defined as a national strategy, which is implemented at the different levels of the state. The aim of Green Growth is to decrease the country's dependency on foreign suppliers, to create direct, indirect and induced jobs, to make impulses for prosperity and to maintain stability in the country. Energy transition through RES is central to this strategy. Hence, investment in renewable energy technology is expected to bring economic development (industrialization, job creation), stability and security (reduction of energy dependency and guaranteeing supplies).

The focus on renewable energy also bestows upon the monarchy a modern image. Morocco also aims to transform its energy transition into a soft power and function as a model for others in North Africa and Africa (Steinbacher 2015, p. 8).

The Moroccan Solar Plan is part of the Green Growth strategy. This plan includes the construction of a number of large and middle-size centralized solar plants named "Noor" (light) across the country until 2020. Most of the plants, including the world's largest concentrated solar power complex (Noor 1), are situated in Ouarzazate. Further plants are currently under planning in Ouarzazae and Tata.

2.2. Green growth as sociotechnical imaginary

One can hold that Green Growth and the imaginaries connected therewith feed into a common national project oriented towards the future, stimulating optimism and balancing social, regional and other differences and interests. In other words, Morocco's energy transition strategy reflects the collectively shared and institutionally performed vision of national development – or the "socio-technical imaginaries" (cf. Jasanoff 2015). Socio-technical imaginaries can be defined as "collectively held, institutionally stabilized, and publicly performed visions of desirable futures attainable through science and technology" (Jasanoff 2015: 15). As such, sociotechnical imaginaries shape mind-sets and reference frames, which do not only guide policies and strategies, but also provide insights into the expectations connected with technological developments.

Socio-technical imaginaries, thus present institutionally stabilized visions of socio-technical development that may be articulated by a key authoritative agency – such as the monarch in the case of Morocco – yet, in order to gather momentum, need to be performed and enacted by diverse actors and institutions in multiple sites and on various levels. As an analytical concept, socio-technical imaginaries hence attune our empirical investigation to the multitude of attempts to articulate and realize these broadly shared visions of a desirable future – in our case, condensed in the vision of "Green Growth". Thereby it is vital to examine divergent meanings and competing notions of this imaginary future, as well as contending ideas of how to realize it in practice.

Meanings refer to the discursive constructions that articulate diverse elements into (at least gradually and temporally) stable ensembles. It is important to compare and contrast different meanings produced in the general discourses on energy policy in Tata, because meanings articulate ideas and practices, help attribute agency and authority to particular actors, institutions and events, and endow upon certain interests legitimacy and credibility while at the same time delegitimizing others.

3. Case study: The province of Tata

Situated in the southeast of the country, Tata is home to different natural resources. The population of Tata province is divided between 39060 inhabitants in urban areas and 82556 inhabitants in the rural areas. In 2014, 30.4 percent of the total population in Tata were younger than 15 years old.

In consequence of the administrative reform of 2015, Tata was integrated into the Souss-Massa region. The province has dedicated social infrastructures for youth population such as youth houses, where they could practice sports and joined sportive clubs. There is a network of primary and secondary schools in Tata, but the province lacks high education institutions such as universities or centers for vocational training. In view of the solar plants to be constructed in Tata, the provincial council and the commune of Tata together with the national "Office de la Formation Professionnelle et de la Promotion du Travail" have planned to set up a vocational training center with a focus on electricity, renewable energy and energy efficiency.

The main sources of employment in Tata remain agriculture, public administration, the education sector, mining and commerce. There is little private investment in the region and compared to other regions in Morocco tourism has hardly developed. There are only few touristic facilities in Tata. Almost one third of this arable land is irrigated, using traditional irrigation systems. Irrigated agriculture is practiced at the level of oases systems. In these areas mainly fruit trees and vegetables are cultivated. Animal husbandry, mainly goat, is also extensively practiced in the province. Pastoral activities remain also an important source of income for the rural population.

The mining sector remains the most important industry in the province, however with only few job opportunities for locals. The province is rich in valuable minerals such as Copper, Gold, Lead, and Baryte. By the end of 2015, the province of Tata accounted 32 permissions for mines exploitation and 381 permissions for mines exploration. The AKKA gold mine for instance is exploited by a private company. It employs 1200m persons. The site has an annual capacity of 22,500 oz in Gold, and 9.5 million TTV in Copper. Additionally, there is also a copper mine in Agoujgal. However, the province does hardly benefit from the profits of the mining companies.

Due to poor economic development and few job opportunities, Tata witnesses a high rate of youth emigration. Many young people leave the province for larger cities such as Marrakesh, Casablanca and Rabat to pursue higher education and/or to find jobs. While emigration mainly concerns young males, women often stay in the province. Artisanal industry is also an established subsector in the province. It is considered as one of the main economic activities at the province of Tata. There are almost 1500 persons working in this field, of whom 700 are women. Pottery, basketry, jewelry and tapestry are the main artisanal products produced.

In view of Tata's rather poor economic options, many locals have high expectations of the solar power plant constructions. While some hope that the mere fact that the state will be investing in the province will have positive spillover effects on infrastructure, education facilities and the job situation, others hope that the state's focus on RES will open new spaces of participation and enable local initiatives with direct effects on the environment and local societies.

4. Analysis: Negotiating meanings of “green growth”

4.1. A shared “global” vision of solar power

Stakeholders in Tata agree that the sun is the major, if not to say, the only natural resource in the region. The governor held during the stakeholder forum that: *“Tata is endowed with abundant solar resources that constitute a true wealth”*. An elected representative of a commune: *“Renewable energy is the future”*. Representative of a local NGO: *“The province should exploit the abundant solar resources and achieve sustainable development”*.

Among different stakeholders, there is general consensus about the potential of solar energy. Similarly, expectations about the positive effects largely overlap. Solar energy production, as the only large investment in the province, is considered as a driver for economic development. Most of the stakeholders' expectations connected with investments in solar energy production are: jobs, trainings, education and energy efficiency and technology transfer. The meanings attributed to and the expectations connected with solar energy production do also highlight the economic and social needs in the province.

The notion of *“sustainable development”* functions as an umbrella for different expectations and hopes. This points to the fact that the assumptions and imaginations of the future of different stakeholders in Tata correspond with the idea of *“Green Growth”*, Morocco's development strategy. Green Growth suggests that climate change should be transformed into an opportunity and that a focus on environmentally friend-

ly energies will also induce economic growth and welfare. Hence, one can say that this is a part of the socio-technical imaginaries associated with renewable energy production. Accordingly, among broad parts of society, including decision makers, representatives of the state administration as well as civil society, investment in renewable energy technology is expected to bring about economic development (industrialization, job creation), stability and security (reduction of energy dependency and guaranteeing supplies). One can hold that Green Growth and the imaginaries connected therewith feed into a common national project oriented towards the future, stimulating optimism and balancing social, regional and other differences and interests.

4.2. Divergent meanings and global/local visions

While all stakeholders in Tata agree on the potentials of solar energy production for the region, we have detected three layers of this discourse, differing on the question how this should be done, and who or what should be in the focus. We identify these as a) global-environmentalist b) national-developmental, and c) local- socio-economic transformative discourses.

▪ The global-environmentalist discourse

The global environmentalist discourse was mainly promoted by representatives of international cooperation organizations. The representatives were foreigners based in Tata and were working there in the field of technical aid. The contributions made during the stakeholder forum mainly focused on: energy efficiency, awareness regarding consumption, environmental friendly production, and constructions, which should be adapted to climatic requirements.

This discourse links the achievement of climate change mitigation on a global level with practices at the local level such as consumer behavior and awareness. This is an individualistic approach, which sees change as the sum of individual practices. In this discourse, the individual is responsible for his/her actions and its consequences in the big picture. Hence, this assumption also builds on the idea of civil engagement and empowerment.

Confronted with different practices, the representative of the foreign aid institution in Tata complains that; *“there is a culture of waiting for outside support. People are passive and do not come with suggestions”*.

Representing the German development agency, which closely cooperates with the Moroccan state and its institutions, the participant at the stakeholder forum has a rather positive stance towards the state’s plans

to build large-scale solar energy plants in the province of Tata. Regarding the medium-scale solar production site in Taghmoute, he held: *“It will be an exercise for the big projects. We will be able to learn from these experiences”*.

On the one hand, this corresponds with the Moroccan state’s “Green Growth” strategy, which is strongly based on large-scale solar production plants. At the same time, his statement: *“We should think what is imported and what could be produced locally,”* points to the fact that he sees a potential for the development of climate friendly practices in course of the construction of these sites. Here again, this seems to point to a moral obligation and responsibility of individual citizens at the local level. It includes the idea that practices on the local level can have an impact and induce the state to adapt the implementation of projects to local climatic requirements. The global-environmentalist discourse suggests activism and agency, however in limited areas such as everyday practices. The discourse does not question the primacy and overall authority of the central state planning.

- **The national-developmental discourse**

Mainly promoted by state institutions and functionaries, the overarching aspiration of the national-developmental notion of renewable energy is the advancement of the Moroccan nation. Hence, the major addressees are. The local population and its representatives are important partners. Their consent is important for a smooth implementation of large-scale projects, but it is not necessarily a condition. Accordingly, different from the globalist-environmentalist approach, individual practices and behaviors are less important for the achievement of energy independence. Thus, the focus is less on the individuals and their practices, but locals are rather perceived as a community. Instead of an individualistic perception, this discourse builds on a communitarian one. The local community is a smaller unit of the larger national community. The state represents the Moroccan nation in an international competition. Hence, in the national-developmental approach, the state has an overview and knows what is best for the nation.

From the perspective of representative of the central state bureaucracy, centralized large-scale energy production seems to be more effective and faster, while decentralized small-scale projects, based on local initiatives are difficult to implement and to control.

The national-developmental approach is strongly driven by modernization theory and its assumption of a universal linear line of development. Thus, according to this view, developing countries as Morocco, situated at the periphery, can develop in the same manner as more developed countries did. In most of the cases, the state and its representatives assume a central role in this transformational process. Migdal (1988, p.

5) highlights that developing states might have been successful in penetrating society with structures and institutions, but they have been less successful in establishing the abilities to regulate social relations and the use of resources in determined ways.

National advancement is to be achieved through central (national) planning and its implementation. The focus lies on the future of the whole nation and less on Tata. The governor, the highest representative of the central state bureaucracy held in his opening speech; *“We cannot only look at Tata, we need to have a national perspective.”*

Most representatives of the central state are graduates of the “Ecole nationale d’administration”. This reflects the idea of a de-territorialized central bureaucracy, which is detached from local societal and economic influences. Hence, the representatives of the state in the provinces are part of the national bureaucratic elite. They are educated and trained at the center and sent to different provinces in rotation. Whereas Tata seems to be quite at the periphery not only geographically, but also politically from the centers of the country, Tata has nevertheless much to offer: the province is one of the richest provinces in terms of natural resources, land availability, culture and tradition. The road quality in Tata is much better compared to provinces located 50 KM or less from Rabat.

- **The local socio-economic transformative discourse**

The proponents of the local socio-economic transformative discourse are mainly representatives of local NGOs, environmentalist student activists from Tata, but also elected representatives at the provincial level and the level of communes. The latter have a strong focus on the needs and expectations of the community. Similar to the global-environmentalist discourse the proponents of the local socio-economic transformative discourse give action and behavior a high priority. However, different from that approach their focus lies less on the question of how awareness and conscious practices could contribute on a broader level to climate change mitigation, but rather how this could be transformed into the socio-economic benefit of the local community. In this context, it is important to emphasize that most of the NGOs evolved from ethnic (tribal) community structures, which explains a more communitarian and less individualistic understanding.

Most of the representatives of this approach stated the lack of education, awareness and technical skills on the ground as the major problems of Tata. Not surprisingly, they have stated their support for local, decentralized solutions. One NGO representative held that local solutions would also support efficient water consumption. NGO representatives are particularly aware of the effects of climate change on their communities. *“For the time being there is no energy transition in Tata”*. They blame the lack of education and train-

ing for an increase in energy consumption or practices such as cutting woods in winter for heating. *“Deforestation supports desertification. More involvement of the local population is needed. More involvement will lead to more incentives”*.

Solar energy is not only considered to be a solution to problems, but it also might cause problems. Particularly, large-scale production sites need huge amounts of water for cleaning. A local NGO representative holds: *“We do not benefit from large-scale projects, we benefit only from small-scale projects”*. This led him to the conclusion that *“Tata needs decentralization”*.

As representatives of NGOs and of communes stated during the focus group discussion: *“Decentralization means also the decentralization of decision making”*. Accordingly, decentralization is considered to offer more responses to local needs. Interestingly, political decentralization has been linked to decentralized energy production solutions. This aspect highlights the high importance attributed to solar energy among locals, but also the expectations from technology.

Particularly, two elected representatives of a commune highlighted the importance of the decentralization of the Morocco’s decision-making structures. *“Large-scale projects are part of the state’s image promotion”*. An elected representative of a commune held: *“For large projects, there are no constraints or opposition, communities adhere”*.

Small-scale projects are mainly based on grassroots initiatives or on the initiatives of foreign NGOs. They do hardly get any support from the state. Many of these small-scale projects fail because they are often not coordinated single, one-time projects and because there are no skilled people to install and maintain them. There is an absence of a market for the maintenance services.

The representatives of the communes and of civil society, both hope that the investments into large-scale solar energy plants will contribute to economic development. The vice-mayor of Akka Ighen, the commune where Noor Solar Complex is planned, holds that there is hope that the power station will also help develop tourism and agriculture. Particularly, men in Taghmoute hope that the Noor photovoltaic station will boost development. There is little infrastructure. They hope to open a restaurant, hotels and so on. There is also the plan to build a guest house in Taghmoute, financed by the Agence du Sud. However, investments will be only able as a “side-effect” of the construction of the energy production site, there are hardly long-term revenues which can be expected on side of the local communities. In comparison to local elected representatives, NGO representatives more often highlighted that they would hope for improvements in the area of trainings and education.

Although, the large number of local associations is perceived as an important element for the maintenance of social coherence and order, local associations are hardly included into decision-making processes. Rather than as politically relevant stakeholders, they are perceived by the authorities as important links to society as such. Associations are usually included into social projects, which accompany larger investments such as the Noor project. Authorities visit them when they do not have solutions as one representative of civil society stated (Interview with authors in April 2017).

All three discourses cling in to (at least particular variants of) modernization theory. They all assume that there is a linear line of development to be pursued. Even the local-socio-economic transformative discourse assumes that education (in Western practices) of the local population will bring about change. In contrast, the globalist-environmentalist discourse builds on the assumption that local, traditional knowledge and practices simply need to be re-activated. It suggests that people should skip some of the benefits of a consumption society and go back to authentic lifestyles and practices. However, in a strict sense, all three discourses omit local knowhow and practices and project expectations upon society. Despite of differences in the approaches, all three assume that the state and its institutions have the capability to transform and shape society on its way into modernity.

However, one can certainly observe a rapprochement between local civil society, elected representatives on the local and provincial level and the central authorities. This is enabled by the shared belief that solar energy bears a huge potential. All stakeholders, elected locals, NGO representatives and the representatives of the central bureaucracy believe that investment in solar energy production in the province of Tata will entail new opportunities as investments in infrastructure, education, jobs, and tourism.

4.3. Imagining and defining orders

The political, territorial and economic orders of a state shape mind-sets, the way of doing things, perceptions, expectations, capabilities, and define opportunity structures. The focus on orders helps provide an understanding of the essential material and institutional structures, which shape agency and make it possible. Orders, in this context, primarily refer to the political system, the socio-economic circumstances (including property rights, class relations and economic geography), as well as to the socio-technical orders co-produced with political and economic orders (e.g. the large-scale socio-technical infrastructure of the NOOR power plant). However, we understand orders not as structures that are completely independent from forms of agency and meaning-making. As highlighted in the analysis below, the political, economic and socio-technical “structures”, as we shall see, are problematized and (re-) articulated in the various dis-

courses by different stakeholders in the participatory events.

Depending on the perspective, views of Tata and the opportunity structures vary. The key codes appearing several times within this discourse are that Tata is at the margins of the state; that Tata is underdeveloped; that the state is the only agent of change; that the state “brings” modernity; and that the state supports initiatives at the local level.

In the following we have categorized three diverging perspectives on the political, territorial, economic and societal orders, which have been shaping approaches, attitudes, expectations and solutions.

- **Orders from the perspective of the center**

Representatives of the central bureaucratic elite in Tata (this does not only include higher appointed officials working for the governorate, but also representatives of state agencies) have often emphasized the remoteness of Tata. In terms of infrastructure, economy, but also its integration into the national energy grid, Tata is considered to be at the “*margins of the state*”. The statement of the representative of ONEE: “*Tata est au bout de ligne*” (*Tata is at the end of the power network*) seems to epitomize this perception.

From the perspective of the economic center, there is nothing but the sun to exploit in Tata. The region is economically underdeveloped. Accordingly, the central state is the only agent of modernity and development in the region. A code which could be singled out is: “*the state brings*”. The term “bringing” used by the representative of ONEE, instead of “*providing*” or “*delivering*” points to a rather patrimonial understanding of the state (the father state), which does not confront empowered citizens, who claim investments and better connection to the energy grid but rather weak unorganized communities which feel dependent on the central state.

Representatives of the central authority highlighted the investments made, such as Noor in Taghmoute², from a rather technical perspective. The ONEE representative emphasized that Noor PV in Taghmoute will improve the frequency and quality in the province and broader region, but he did not refer to any kind of financial or other benefits for local communities or individuals living in Tata. This “engineering perspective” has been further emphasized by the governor’s statement: “*We cannot only look at Tata, we need to have a national perspective*”.

² The Taghmout project is being developed to address the power quality at the end of power networks (which is a real issue for Tata; businesses, households, etc.). There are almost 10 to 12 similar projects being developed in provinces that are situated at the end of power networks to solve frequencies drops etc., these projects are for the benefits solely for those provinces.

The solar energy plant to be built by ONEE in Taghmoute is an example for decentralization (from the perspective of a state representative). A representative of ONEE highlights that the power station in Taghmoute: *“will guarantee energy autonomy for the province”*.

Within the national-developmental discourse decentralized energy solutions signify smaller projects, which address regional / provincial needs. This mid-size power station aim to raise the quality of electricity supply in the region. This program consists of developing a 400 MW (Noor Atlas, Noor Argana, and Noor Tafillat combined) solar power complex.

- **Orders from the perspective of the province**

From the perspective of political, hierarchic and geographic ordering, elected representatives on the provincial level function as intermediates between the powerful central authority around the governor, representing the interests of the central state and the king on the one hand, and the locals on the other hand. As intermediates, they seem to be positioned as *“interpreters”* of local needs, demands and expectations. Accordingly, they seek proximity to the representatives of the state, such as the governor and his advisers. Hence, elected representatives on the provincial level, such as the president of the provincial council have become very important for local NGOs and the representatives of the communes. One can hold that, the representatives of the provincial council function on the one hand as the voice of locals and on the other hand as the gatekeepers for the higher authority, represented by the governor. The local elected representatives are prone to build a *“pouvoir peripherique”*. Such peripheral power would entail two dimensions; an internal one based on the relationship with the representative of local NGOs and an external one, based on their links to the central bureaucracy and its peripheral ramifications (see; Mèdard 1981: 126).

This highlights the structure of power. While recent reforms have certainly improved the level of participation at the regional, provincial and local levels, real power (security and finances) still lies in the hands of the governor. *“If you do not have the support of the governor, nothing works”* highlighted an elected representative of a commune, adding; *“there is a confusion, we do not know, is the governor the representative of the government or of the king”*.

From a national development strategy perspective, centralized large-scale solar energy production is considered to be more effective than small-scale productions. Confirming their positioning as intermediates elected members of the provincial council highlighted during the stakeholder forum that: *“small scale projects are complementary to large scale ones, there is no either-or”*. In line with the discourses of the central authority, they do not see decentralized small-scale solar energy production as an alternative to the cen-

tralized large-scale projects as Noor. Chiming in with the national development strategy, they seem to favor big solutions, while small-scale solutions do rather have a symbolic impact on the level of communities.

“There are some individual small-scale decentralized projects, two slaughterhouses, based on photovoltaic. 186 roof top solar panels in Tata (individual), dispersed. In the beginning, there was skepticism, but now there is high acceptance of solar energy”.

- **Orders from the perspective of the communes**

Mayors of communes are often people with a high social or economic reputation. In most of the cases they are renowned persons from the commune who do however live and work in larger cities. In the case of Akka Ighen, the mayor is a renowned lawyer originating from the commune, who lives and works in Rabat. He is considered to be the representative, so to say the ambassador of the interests of Akka Ighen in the capital, while the vice-mayor is engaged with operational activities and contact with the electorate and the authorities at the provincial level. The fact that a person is elected mayor who is not physically present in the constituency, but is deemed to lobby for the community in the capital, points at the high degree of administrative centralization and to where important decisions are really taken.

Communes in Morocco are rather weakly established entities. They represent the lowest administrative and political unit within the Moroccan system. Their financial means and opportunities are limited. Regions and the communes have their own budgets, but their financial capacities vary according to the tax revenues. As Tata is an economically rather poor province, local communes have very little financial means. Hence, there is rather limited room for initiatives on the regional or local level. The communes cannot afford investments. They have little budgets. Moreover, Tata is also a rather small market for investments. Only few companies or private businesspersons are invested in the province. As the vice-mayor of Taghmoute explained, few examples of private initiatives have been a disappointment for locals. A couple of years ago, a private company planned to invest into the agricultural sector in Taghmoute, but: *“we had bad experiences with this businessman. He did not keep his word. Locals are critical. People resist. They do not want to give away their land. It is the only resource they have, they are afraid of losing it”* held the vice mayor of Taghmoute, adding that: *“ONEE is different. It is not a private company. It is a public company which is official and is guided by the law”* (Interview with authors in April 2017). This statement highlights the level of trust and respect in state agencies.

Energy is a policy field, which is not decentralized but controlled by the Ministry in Rabat. The communes function as important links to the local communities. The elected representatives personally know the representatives of local civil society and strongly cooperate with them. In many cases, the elected representa-

tives of the communes themselves have been part of the local civil society. The many associations existing at the local level are reflecting traditional social structures and are often hardly institutionalized. There are approximately 60 associations in the commune of Akka Ighen and as many in Taghmout. Each oasis has its own association, but not all of them are active. Their fields of activities mainly range between social and cultural activities. The commitment for environmental issues and for women is relatively new. As political parties are weakly established and do hardly play a crucial role on the local level, civil society organizations are considered as an access to the grassroots of local society. While the elected representatives at the level of the province control access to the central authorities, the elected representatives of the communes control access to the grassroots. In that sense, both elected bodies function as relays between the distant authoritarian state and the grassroots.

The fact that Tata has been chosen for the construction of large-scale solar energy production sites, has increased the importance of these two elected levels. As a local elected representative held during the focus group discussion: *“the state needs civil society”*. It mainly needs civil society to avoid any social unrest. Although, the grassroots and local authorities have become more aware and more self-confident, they have little impact on the decision-making process, the definition of the construction sites of large-scale energy production plants or the technology applied. A CSO representative: *“For large projects, there is no constraint or opposition, communities adhere”*.

Instead, local authorities are rather involved in informing the community, and promoting and defending the decisions made in the capital. As a representative of the commune of Akka Ighen held: *“large-scale projects are only participative on the national level, locals are left out”*. He thereby referred to the integration of different national and international stakeholders (mainly companies) into the decision-making process, while the population of the commune where the project is planned, is simply informed. This statement also highlights how the economic order is perceived by locals. They feel economically impotent, and dependent on other actors. They seem to favor state agencies over national and international private companies.

Until October 2017, there have been only two meetings between MASEN (Moroccan Agency for Sustainable Energy), a public limited company, which is developing Noor in Akka Ighen and the representatives of the commune. The commune is not informed about the time schedule. Representatives of the commune of Akka Ighen, expressed that expectations in the community regarding the benefits from the project are very high. *“People are very happy and proud that their commune has been chosen as a site for the construction of Noor”* (Interview with authors in April 2017). People hope that it will have a positive impact on the economic and social development of the commune and create jobs. Local representatives hold that one of the major problems in the commune is the lack of infrastructure for the many workers who will be employed in

the construction of Noor. It is estimated that around 3000 job-years will be there for the time of 5 years. Workers are expected to be hired from the commune. Local authorities hope that the project will also entail investment in local youth (just as in Ouarzazate), such as education, infrastructure, hotels, ecological tourism and so on. People have already expressed their hopes and expectations.

One of the common statements of elected representatives of communes was that: *“centralization is particularly a problem at the margins of the state”*. Situated at the periphery, they feel to have little access to the ministries in Rabat.

The elected representatives of the communes and civil society are strongly committed to bring about change through education, trainings and initiatives such as small-scale or individual solar energy production, but their political and financial opportunities are very limited. *“The needs of the region are often defined top-down”* held a representative of civil society. This is also why some of them have stated that: *“Morocco needs a federal system”*.

Decentralization means also the decentralization of decision-making. *“Decentralization guarantees more inclusiveness and participation”* interest in decentralized small-scale solar energy production is high, because it symbolizes a local approach, which takes the needs and expectations of the grassroots into account, such as: *“We do not benefit from large-scale projects”* and *“Large-scale projects are part of the state’s image promotion”*.

However, the risks local communities will carry are high and compensation might not be sufficient. The vice-mayor of Akka Ighen: *“The land where the solar energy production site will be build is collectively owned land. Payments will not be made to individuals, but to a fund. The commune together with the ethnic community will present projects on how they will use the money for the land. The price the state has imposed is; 1 dirham per 1 square meter, in the commune the current price is rather 20 dirham per 1 square meter”*. With all larger infrastructure projects in Morocco, the same procedure is applied. A commission defines the price for land. The landowners do possibly have the right to challenge the commission’s proposal at the commerce tribunal; or enter in direct negotiation with the buyer. However, this seems rather seldom to be the case.

An interview in Ouarzazate revealed that there is already a water problem in the region. Interviewee: *“In Zagora they have cut water supply. Water has been only provided for one –two hours per day”*. There is justified fear that large-scale solar energy production sites will exacerbate water scarcity in the province of

Tata. As a representative of civil society highlighted: *“In regard to water usage, local solutions increase efficiency in consumption”*.

4.4. Rehearsing and practicing participation

In contemporary political discourse, and particularly in debates on an emerging “innovation society”, participation has been seen as crucial. Similarly, in the stakeholder discussions in Tata: *“One of the recurrent demands and expectations from decision makers and civil society representatives was to increase the level of participation at various steps and stages in renewable energy production policy”*. Yet, there was divergence in ideas over what exactly should be done, and what participation actually means (or should mean) for different stakeholders.

Disagreement has occurred concerning the perception of whether and to which extent Morocco has a participatory culture. A representative from a foreign aid organization has lamented that in Morocco one can observe a pervasive *“culture of waiting for outside support”* – be it international aid or assistance from the central national authorities. This culture would result in the fact that *“people are passive and do not come with suggestions”*.

This evaluation of the Moroccan participatory culture (or rather lack thereof) has not gone unchallenged. A high representative of the Province uttered immediate disagreement. In his counterview, many things have changed in recent years; especially a “change in the mindset” has taken shape. This gradual cultural transformation materializes also in legal and institutional practices. For instance, in projects developed and carried out in remote parts of Morocco, the financial participation of NGOs has become mandatory. Local NGOs have to raise at least 30% of the costs of a project; in turn the rest of the project costs are covered by state authorities. Through this mechanism, local civil society assumes a more active role and shares responsibility for the projects management and overall success. Many farmers have opted for this solution.

While discussed controversially, we can discern two rather different meanings of participation here: Whereas the statements of the foreign aid representative seem to reflect a particular meaning of participation, namely, a Western liberal notion self-determined agency, working proactively to find solutions from the bottom-up. By contrast, the representative of the state seems to be animated by a more structural notion of participation, where participation, first and foremost, means legal possibility to partake (also financially) in joined projects. Participation, here, is not so much focused on individual agency, but on the relationships between state authorities and civil society organizations. These two divergent meanings of participations have, somewhat unresolved, pervaded the overall discussion on participation.

Another central topic in this regard was the tension between different (micro, meso, macro) levels of policy and possibilities for participation respectively. There is broad consensus within the group of local and provincial representatives, as well as the students' union, on the fact that *"large scale projects can only work with involvement of the local population"* – that is to say, civil society organizations. So far, as one member of the rural community lamented, there is *"no sufficient involvement"*, which further leads to the complication that emerging problems and obstacles are *"identified only at a too late stage"* in the process.

Here, again, the issue of local development of education and training was regarded significant for participation – on a technical-practical level (regarding e.g. maintenance of technical infrastructure), but also to create mid- and long-term possibilities for participatory governance of energy transition and regional development. But beyond these practical dimensions, university education assumes a high symbolic role in society: for many young people it is essentially important to migrate to the northern and coastal cities of Morocco to receive university education – even if they often immediately return to their remote and essentially rural regions of origin, such as Tata. Stressing the need for trainings to participate in the overall success of large infrastructure projects provides a possibility of demanding from the central authorities the foundation of a university.

On a more political level of decision-making, participation of local population and CSOs appears rather limited. A significant difference between large-scale projects and small-scale projects was articulated. Large-scale projects are only participative on the national level, at the expense of inclusion of local communities. As one discussant stressed, *"for large projects, there is no constraint or opposition; communities adhere"*. The lack of an overall approach is not to be due to political orders, for the *"legal framework is no obstacle, [and would] enable a participatory approach"*, as a CSO representative observed. Yet, in reality, there is little involvement.

Whereas state authorities tend to support a notion of participation through formally elected representatives, the local representatives and CSOs seem to understand participation as a rather direct involvement of civil society.

5. Conclusions

Discourses on the local level reflect different interests and expectations in regard to energy transition and its effects. Aside from economic and political structures and capacities, the solutions to pressing societal challenges – such as climate change – highly depend on the meanings attributed to the phenomena at

stake. Hence, any transfer of technology and governance models needs to consider the broader sociotechnical and political environments from which they emerged and where they travel. This WP has identified the main discursive threads on energy transition and has illustrated conditions and developments for their implementation on the example of Tata in Morocco. Furthermore, it is important to keep in mind that the notion of transfer includes a broad spectrum of transfers, ranging from ideational transfer (an idea is taken up in another policy context) to the full adoption of policy/technology (Rose 1993, 2005, Dolowitz/Marsh 2000). Hence, sociotechnical systems cannot be simply detached from one context in which they seem to “function”, and transferred to another. Therefore, understanding debates and discourses on the local level is an important precondition for assessing the transferability and implementation not only of technology, but even more so of the necessary governance structures.

General findings

- Transferability depends on a variety of different factors such as financial means, expectations, political, social, and economic orders, the stakeholders involved, and the context from which the model to be transferred emerged.
- Therefore, any assessment of transferability requires profound research on the political and economic structures and social developments.
- The early inclusion of embedded social science research is key to any assessment of a policy travel and thus enhances the overall success of such a project. Qualitative research methods used for this research such as semi-structured interviews, stakeholder forum, focus group discussion are particularly useful to explore diverging expectations and contending discourses. Such insights cannot be appropriately captured by merely quantitative indicators and surveys that predominately inform innovation policy assessments. This highlights the importance of field research and cooperation with local partners.

Generally, it is important to highlight that there is no “one size fits all” approach to the question of transferability of technical solutions and the governance models involved. The question of transferability strongly depends on different variables and factors, which might change from case to case.

Insights from the Moroccan case study

- For people in Tata, climate change is not an abstract notion, but rather an immediate and embodied experience. Heat waves and sudden floods, desertification and water scarcity shape meanings of climate change and renewable energy policy.
- As a consequence, climate mitigation policies are not merely the aspirations of policy entrepreneurs, but have rather become a broad-based mission that involve many different stakeholders. Renewable energy is not an abstract policy goal, but rather understood as a vital necessity. This mission is successfully communicated by the state and its institutions as a future-oriented development model. This strongly corresponds with the hopes and expectations of the people on the ground.
- Morocco's goal to reduce energy dependency has been a driver, which has opened many rooms on different political, economic and societal levels.
- Yet, critical voices can hardly make themselves heard and be visible on a larger-scale. This means that critical approaches cannot be addressed or included into any political strategy. Hence, there is no room for adaptation. Inclusion is only possible at a higher national level. At lower levels such as the regions, provinces or communes participation is welcome on a discursive level, but real participatory democratic practices and inclusion into decision-making processes are not possible.
- In the context of a centralized political setting as Morocco, there is little room for bottom-up projects which go beyond small communities. There are neither the financial or political capacities, nor does the state tolerate bottom-up initiatives on a larger-scale (such as provincial or regional level), as they would threaten to undermine the mission and the authority of those in charge.
- In Morocco, educated youth representatives on the local level are highly committed to and engaged with environmental issues. Their high degree of activism not only points to their sensitivity to issues connected to the immediate effects of climate change, but also the potential for political mobilization and organization.

7. References

- Abegg, B. (2011). Energy Self-sufficient Regions in the European Alps. *Mountain Research and Development*, 31:4, 367-371.
- Akrich, M., Callon, M., Latour, B., & Monaghan, A. (2002). The key to success in innovation part I: the art of intersement. *International Journal of Innovation Management*, 6:2, 187-206.
- Akrich, M. (2006). Die De-skription technischer Objekte. *ANThology—Ein einführendes Handbuch zur Akteur-Netzwerk-Theorie*. Bielefeld, 407-428.
- AMEE (Moroccan Agency for Energy Efficiency). Energy Efficiency <http://www.amee.ma/index.php/en/expertise/efficacite-energetique-en> [Accessed 9/8/2017]
- Bahgat, G. (2013). Morocco energy outlook: opportunities and challenges, *The Journal of North African Studies*, 18:2, 291-304.
- Bank, A., Richter, T. & Sunik, A (2014). Durable, Yet Different: Monarchies in the Arab Spring, *Journal of Arabian Studies*, 4:2, 163-179.
- BMLFUW (Bunderministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft). https://www.bmlfuw.gv.at/umwelt/energie/wende/energieautarkie_gem.html [Accessed 28/4/2017]
- BMVIT (n.d.): Maßnahmenbeschreibung – Weiterführungsphase. Available from: http://www.klimaundenergiemodellregionen.at/assets/Uploads/bilder/doku/A974918_weiterantrag.pdf [Accessed 28/4/2017]
- Bogaert, K. (2015). The revolt of small towns: the meaning of Morocco's history and the geography of social protests, *Review of African Political Economy*, 42:143, 124-140,
- Cavatorta, F. & Dalmaso, E. (2012) "The emerging power of civil society. The human rights doctrine", in: B. Maddy-Weitzman & D. Zisenwine (Eds) *Contemporary Morocco: State, Politics and Society under Mohammed VI* (London: Routledge)
- Ciuta, F. (2010). Conceptual Notes on Energy Security: Total or Banal Security? *Security Dialogue*, 41:2, 124-145.
- Death, C. (2015). Four discourses of the green economy in the global South, *Third World Quarterly*, 36:12, 2207-2224.
- Dolowitz, D. and Marsh, D. (2000). Learning from Abroad: The Role of Policy Transfer in Contemporary Policy Making. *Governance* 13(1): 5-24.
- (EZEE) Europäisches Zentrum für erneuerbare Energien Güssing GmbH (2016). Regionales Energiekonzept, ökoEnergieLand. Available from:

http://www.klimaundenergiemodellregionen.at/assets/Uploads/bilder/doku/A974941_konzeptweiter.pdf
[Accessed 28/4/2017]

Felt, U. (2015). Keeping Technologies Out: Sociotechnical imaginaries and the formation of Austrian national technopolitical identity. In Jasanoff, S. & K. Sang-Hyung (ed.), *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*. Chicago: Chicago University Press, 103-125.

Frisari, G. & Stadelmann M. (2015). De-risking concentrated solar power in emerging markets: The role of policies and international finance institutions. *Energy Policy* 82, 12-22.

Fritz, V., Levy, B. & Ort R. (2014). *Problem-Driven Political Economy Analysis: The World Bank's Experience*. Washington, DC: The World Bank.

Hanger, S., Komendantova, N., Schinke, B., Zejli, D., Ihlaf, A. & A. Patt (2016). Community acceptance of large-scale solar energy installations in developing countries: Evidence from Morocco. *Energy Research & Social Science*, 14, 80-89.

Hart, C. (1998). *Doing a literature review: Releasing the social science research imagination*. London: Sage Publications.

Hellsmark, H. & Jacobsson, S. (2009). Opportunities for and limits to Academics as System builders – The case of realizing the potential of gasified biomass in Austria. *Energy Policy*, 37, 5597-5611.

Hird, M. D., & S. M. Pfotenhauer. How complex international partnerships shape domestic research clusters: Difference-in-difference network formation and research re-orientation in the MIT Portugal Program. *Research Policy* (2016).

IEA (International Energy Agency). Morocco Net-Metering legislation (Law n°58-15). <http://www.iea.org/policiesandmeasures/pams/morocco/name-154531-en.php> [Accessed 9/8/2017]

Jäger, J. (2011). Potentialstudie für photovoltaische Solarenergie für die Regionen Mekn'es-Tafilalet, Oriental und Souss-Massa-Draa: für die Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

Jamea, El M. & Khallat, R. (2017): Research project 'Links: Linking climate change mitigation, energy security and regional development: the performance of Austria's Climate and Energy Model Regions'. Baseline study: Province of Tata.

Jasanoff, S. (2002). New Modernities: Reimagining Science, Technology and Development. *Environmental Values*, 11, 253-276.

Jasanoff, S. & Kim, S. H. (2013). Sociotechnical Imaginaries and National Energy Policies. *Science as Culture*, 22:2, 189-196.

Jasanoff, S., & Kim, S. H. (Eds.). (2015). *Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power*. University of Chicago Press.

- Ksouksou, T., Allouhi, A., Belattar, M., Jamil, A., El Rhafiki, T., Arid, A. & Y. Zeraouli (2015). Renewable energy potential and national policy directions for sustainable development in Morocco. *Renewable and Sustainable Energy Reviews*, 47, 46-57.
- Latour, B. (1990). Technology is society made durable. *The Sociological Review*, 38(S1), 103-131.
- Levy, Y. & Ellis, T.J. (2006). A Systems Approach to Conduct an Effective Literature Review in Support of Information Systems Research. *Informing Science Journal*, 9, 182-211.
- Maghraoui, A. (2008). Morocco's Reforms after the Casablanca Bombings. Carnegie Endowment for International Peace [online]. Available from: <http://carnegieendowment.org/sada/21592> [Accessed 28/4/2017]
- Mahia R., De Arce, R. & Medina, E. (2014). Assessing the future of a CSP industry in Morocco. *Energy Policy*, 49, 586-597.
- Malgas, I. & Eberhard A. (2011). Hybrid power markets in Africa: Generation planning, procurement and constricting challenges. *Energy Policy*, 39, 3191-3198.
- Médard, Jean-Francois (1981). Political Clientelism in France: The Centre-Periphery Nexus Reexamined, in: Eisenstadt and Lemarchand (eds.) *Political Clientelism, Patronage and Development*, London: Sage Publications
- MEM (Ministry of Energy Mines and Sustainable Development). Major Projects, Electricity and Renewable Energy Law 58-15. <http://www.mem.gov.ma/SitePages/GrandChantiersEn/DEREELaw58-15.aspx> [Accessed 9/8/2017]
- Miesenberger, N.& Klepatsch, A. (2011): Umsetzungskonzept für die Klima und Energie-Modellregion Freistadt. Available from: http://www.klimaundenergiemodellregionen.at/assets/Uploads/bilder/doku/A974918_konzept.pdf [Accessed 28/4/2017]
- Mulvaney D. (2013). Opening the Black Box of Solar Energy Technologies: Exploring Tensions Between Innovation and Environmental Justice, *Science as Culture*, 22:2, 230-237.
- Nachmany, M., Fankhause, S., Davidová, J., Kingsmill, N., Landesman, T., Roppongi, H., Schleifer, P., Setzer, J., Sharman, A., Singleton, C., Sundaresan, J. & T. Townshend (2016). Climate Change Legislation in Morocco. An Excerpt from the 20150 Global Climate Legislation Study, a Review of Climate Change Legislation in 99 Countries. London School of Economics, Grantham Research Institute on Climate Change and Environment, Globe, Inter-Parliamentary Union. www.lse.ac.uk/GranthamInstitute/legislation/ [Accessed 7/6/2017]

Pfotenhauer, S., Wood, D., Roos, D. & D. Newman (2015). Architecting complex international science, technology and innovation partnerships (CISTIPs): A study of four global MIT collaborations. *Technological Forecasting and Social Change* 104 (2016): 38-56.

RESMed, Available online: http://www.res4med.org/wp-content/uploads/2017/05/RES4MED-Day-Morocco-2016_Press-release.pdf [Accessed 05.04.2017]

Riegler, M., Vogler C., Neumüller, S. & N. Komendantova (2017). Engaging inhabitants into energy transition in climate and energy model (CEM) regions: case studies of Freistadt, Ebreichsdorf and Baden. IIASA Working Paper WP-17-003, Laxenburg: IIASA.

Rignall, K. (2016). Solar power, state power, and the politics of energy transition in pre-Saharan Morocco, *Environment and Planning A*, 43:3, 540-557.

Rose, R. (1993). *Lesson-Drawing in Public Policy: A Guide to Learning Across Time and Space*. Chatham: Chatham House.

Rose, R. (2005). *Learning From Comparative Public Policy: A Practical Guide*. London: Routledge.

MEMEE (2009). *Stratégie Énergétique Nationale Horizon 2030*. Rabat: Royaume du Maroc, Ministère de l'Énergie, des Mines de l'Eau et de l'Environnement.

Schinke, B. & Klawitter, J. (2016). Country Fact Sheet Morocco. Energy and Development at a glance 2016. Germanwatch, Background Paper.

Steinbacher K. (2015). Drawing Lessons When Objectives Differ? Assessing Renewable Energy Policy Transfer from Germany to Morocco. *Politics and Governance*, 3:2, 34-50.

Terrapon-Pfaff, J., Borbonus, S., Schinke, B., Viebahn, P., Fink, T. & B. Brand (2015). Social CSP. Energy and development: exploring the local livelihood dimension of the Noor I CSP project in Southern Morocco. Final Report to the German Federal Ministry for Economic Cooperation and Development (BMZ). Wuppertal Institute for Climate, Environment and Energy Wuppertal, Germanwatch, Bonn.

Truger, B. et al. (2016). *Scoping study on the history and current context of Climate and Energy Model Regions*. LINKS Working Paper 2.1. IIASA Report. Available from: http://pure.iiasa.ac.at/14118/1/Komen_Working%20Paper_scoping_study_final.pdf [Accessed: 28/4/2017]

Vidican G. (2015) The emergence of a solar energy innovation system in Morocco: a governance perspective, *Innovation and Development*, 5:2, 225-240.

Werenfels, I. & Westphal K. (2010). *Solarstrom aus Nordafrika. Rahmenbedingungen und Perspektiven*. Stiftung Wissenschaft und Politik, Deutsches Institut für Internationale Politik und Sicherheit.

Wyrzten, J. (2011). Colonial State-Building and the Negotiation of Arab and Berber Identity in Protectorate Morocco, *International Journal of Middle East Studies*, 43, 227-249.

Yanow, D. (2009). Interpretive Ways of Knowing in the Study of Politics. In Pickel S., Pickel, G., Lauth, H. & D. Jahn (ed.) *Methoden der vergleichenden Politik- und Sozialwissenschaften. Neue Entwicklungen und Anwendungen*. Wiesbaden: VS Verlag für Sozialwissenschaften.

Newspapers

CNN, 12/12/2016. <http://edition.cnn.com/2016/11/17/africa/morocco-green-energy/>[Accessed 28/4/2017]

The Guardian, 17-11-2016. <https://www.theguardian.com/environment/cop-22-un-climate-change-conference-marrakech> [Accessed 28/4/2017]

7. Annexes

7.1. Partners for interviews and background talks

Stakeholder organization
GIZ Maroc
Région Souss Massa
Région Souss Massa
Sustainable energy committee: Province, Provincial Council, ONEE, GIZ Program, Cooperative des jeunes électriciens
Province
Provincial council
Commune Ikka
Association des jeunes électriciens
Association de la Jeunesse de Tamdout pour la Culture et le Développement»"
Commune Inta

7.2. Participants of the Stakeholder Forum in Tata (18. October 2017)

Stakeholder organizations
Governor of Tata
DPA Tata
DPA Tata
DPA Tata
ORMVAO
TAMANART
TAMANART
Rihantolabi
Rihantolabi
Amis des edus
Amis des edus
As. Talhzou, l'eau de l'environnement
Ass AFRA pour D.D.
Techno solaire cooperative

Riham Talabi Association
Riham Talabi Association
Technolsolaire cooperative
Federation du....
Association... Electriciens
Students' Association
Association of farmers
afpp HENCG
EDM
Association..
Association a Douar
Commune de Tata
Commune de Tagmoute
KAD Consulting
Commune de Tata
Commune de Tata
Commune de Tata
Province de Tata
Province de Tata, Del.

7.3. Participants of the Focus Group Discussion in Tata (19.October 2017)

Stakeholder name
Water and Environmental Association of Tata
Agha de lena – association de development durable
Association des étudiants a Tata
African Center for Space Sciences in Rabat, Tata Young Students Association
Association des étudiants a Tata
African Center for Space Sciences in Rabat, Tata Young Students Association
Association des étudiants a Tata
Association with its headquarters in Casablanca, responsible for the association's branch in Tata

