

scale advocacy and communication campaigns, with a particular focus on the possibilities for cost savings available over traditional energy sources in the hotel industry and elsewhere.

Towards a qualitative approach to equipment and services.

Globally there appears to be a race for the "most competitive margin" from service providers, which negatively impacts quality. Indeed, service providers look to sell the least expensive products and undercut the competition on price rather than through quality products and services. Similarly, although equipment certification and specific licenses for solar technology installation exist in Morocco, they must be strengthened both in terms of quality and use. Also, because they are not mandatory it does not play a structural role in framing the evolution of the solar technologies industry.

Yet, thanks to the extensive work conducted by CDER to develop a quality approach for the industry in Morocco, a great opportunity exists to encourage professionals to certify both their products and services by making these certifications a requirement for incentive mechanisms (tax incentives, preferential market or information access, credits, etc.). Furthermore, CDER's certification and authorization is costly and the short term benefits for private companies are not very clear.

An evolving regulatory framework

Morocco is developing its energy strategy with MEMEE's new "Energy Plan" that promotes renewable energies and energy efficiency in Morocco. However, incentives are still weak and the direction of the government, especially in terms of photovoltaic technologies, still needs to be clarified.

For solar thermal technology, many suppliers complain of "unfair" competition exerted by the gas water heater industry thanks to government subsidies to promote this energy source. In addition, many importers believe solar energy should not be taxed as it is not a significant source of financial resources for the state.

For the photovoltaic channel, ONE is a direct stakeholder in market development through its subsidized programs. We have seen that Moroccan firms benefited only marginally from tenders under the PERG. Furthermore, Moroccan regulation does not allow ONE to buy electricity directly from the private producer of renewable energy, as is common abroad in "feed-in tariff" incentive policies.

However, there have been some significant improvements. Regarding the solar thermal channel, some departments - housing, education, tourism, industry, etc. - have signed agreements with the MEMEE, leading to draft circulars, as was the case for the housing sector. For this sector, the circular encourages public actors to include solar thermal technologies in new construction, and encourages private stakeholders to build connections to hot and cold water on rooftops. Although these are not binding, this kind of text is a first step towards better inclusion of solar thermal technologies. In this same spirit, a more compelling energy efficiency code is being prepared. This institutional and regulatory context represents an opportunity to achieve concrete improvements and better integration of solar energy in the Moroccan construction sector.

The Renewable Energy Law authorizing electrical production and export of renewable sources energy, sent to the Cabinet in April 2009, represents a major opportunity for the photovoltaics market. The *Chourouk* program is the first application of this legalization supporting private energy production via solar sources. However, since the financial structure of this kind of project is not yet defined the debate on developing legislation to permit the purchase of solar electricity by ONE remains open. The time is ripe for local public and private entities to demonstrate that this market will not develop without "feed-in-tariff" incentive policies.

Part III • Conclusion

This study has given readers an overview of the structure of solar thermal and photovoltaic energy industries in the Meknes-Tafilalet region, the constraints and opportunities faced by each stakeholder throughout the value chain and the potential markets in the region. The study also helped readers become familiar with the existing policies and tools promoting these channels abroad, and to better understand the specifics in Morocco.

Before presenting the recommendations of this study, it is worth recalling the areas this study did not address. While it identified the emergence of a local production industry in Morocco, especially in Meknes-Tafilalet, this industry could not be addressed in-depth due to the reluctance of local stakeholders to contribute to this study. Thus, a separate feasibility study is required. Moreover, while the global supply of solar technologies is much broader than the segments discussed here, this study deliberately focused on technologies sold in Morocco, supplementing the analysis with information on other technologies when relevant. Finally, the export of solar energy produced by PV panels was analyzed only briefly since this study focuses on local Moroccan markets.

This section introduces long term recommendations for each level of analysis of the value chains addressed in this document, and proposes a "prioritization" or sequencing of these recommendations in the short and medium term. The idea is to identify steps to stimulate demand for solar energy in the short term in order to make Morocco more attractive to potential investors.

I. Recommendations

Using the development constraints and opportunities for solar channels described earlier, the following section identifies long term actions to develop markets while reinforcing the value chain. The recommendations comply with the proposed structure of the value chain analysis and are divided into three categories: those related to the value chains, supporting markets for the solar value chains, and the regulatory and institutional framework.

The solar value chains

1. Strengthen the service sector in the Meknès-Tafilalet region by bringing service providers into a network built on business partnerships to improve their competitiveness and enhance their integration in the value chain.

The service sector has emerged as the weakest link on the value chain because of their lack of organization and their isolation from their counterparts. These small businesses will benefit greatly through improved collaboration.

Indeed, service providers will improve their competitiveness if they share on logistical expenses (storage space, transport) or import their products collectively. In terms of markets, the network will provide members with a framework to formalize their work methods and enhance their integration in the value chain, improving their negotiating capacity with suppliers. The network will also benefit from information, communication and training facilities enabling individuals to enhance their skills. For any local or foreign supplier/investor wishing to penetrate markets in the region, this network will become a reliable and professional interface to develop business partnerships for the benefit of strengthening the actors in the chain.

USAID's "Improving the Business Climate in Morocco" program has pursued work along these lines through the creation of the first network of renewable energy installation specialists in Morocco: "RESOVERT" (the Green Network). It includes a dozen members and extends throughout the whole Meknes-Tafilalet region. The box on the next page traces the major achievements and key objectives of this network.

RESOVERT, an introduction

RESOVERT, the first network of renewable energy installers and service providers in Morocco operating today in the Meknes-Tafilalet region seeks to foster trade partnerships between national and international technology suppliers - potential investors in the region - and between local installers and service providers. It aims to ensure quality service for the customer and to contribute to the attractiveness of the region in terms of renewable energy. This network was formed through a partnership between USAID's program and CDER.

Facilitated by a coordinator, RESOVERT focused its actions on three main areas:

1. *The pooling of resources and services available to the network:* storage space, transportation means, commercial space, technical equipment, etc.
2. *Improved professionalism:* the network has resources and tools to improve professionalism and credibility with investors. Namely:
 - A "quality charter" that sets out members' commitments to transparency, quality and professionalism;
 - Contract templates: outsourcing, product invoices, maintenance and after sales service.
 - Estimates and invoices templates;
 - Appropriate means of internal communication: business cards, letterhead.
3. *Training:* training units to improve members' technical and leadership skills are being carried out in partnership with CDER and the main training coordinators in the region.

Members' profiles are as follows:

- Average age: 41 years;
- Service providers with at least one CDER certification per member;
- Total experience for the network: 98 years;
- Average company age: 7 years;
- Number of jobs: 25 permanent, 26 temporary;
- Average size of business premises: 47 sq. m;
- Average size of storage spaces: 81 sq. m.

Several technology providers, including branches of foreign companies, have expressed their willingness to invest in training and capacity building to benefit network members while building business partnerships with RESOVERT.

Source: USAID Program.



RESOVERT members, facilitator and partners.

Source: USAID Program.

2. Promoting a development approach fostering value chain strengthening at the local level, including through public tenders.

Two new market opportunities make it important to focus on the development of the local workforce. On the one hand, private production of photovoltaic electricity for local consumption and export represents the future of the photovoltaic sector. This development cannot be achieved without strengthening the capacity of local stakeholders and links between them and other actors in the value chain. Meanwhile, the Government has shown interest in the development of this local industry through the creation of an industrial zone dedicated to renewable energy in Oujda called "Kyoto Pole". This zone was launched in early July 2008 with a compelling incentive to have a 35% rate of added value at the local level. Local expertise is growing slowly in the production of some equipment auxiliary to PV cells such as batteries and electrical equipment as well as the water tank for solar water heaters. The development of these markets will not be achieved without strengthening the capacity of local stakeholders and a better integration of actors in the value chain.

The way in which tenders are constructed may determine the importance given to foreign companies and Moroccan SMEs. Indeed, if one looks at the PERG, this program has excluded a large proportion of importing Moroccan SMEs and service providers. The tenders were not proportional to their capacity and therefore benefited foreign firms.

Thus, ONE's request for submissions could support the inclusion of more Moroccan companies by reducing the number of clients to be reached per concession. This would ensure that a minimum of materials produced in Morocco would be used by the distributors and that the existing service providers would be integrated as sub-contractors to these concessions in a more systematic manner, so they can benefit from trainings and transfer of expertise.

3. Build awareness among potential customers to communicate the return on investment of market niche offerings.

Solar technologies are expensive but some niche markets now offer a fair return for the private investor. During the interviews, we noted a lack of knowledge on investment profitability in terms of solar technologies, existing products and marketing channels. This lack of information hampers the development of solar markets. Some service providers have taken initial steps such as scheduling product demonstrations and by including marketing activities in their budget. However, these events have had a rather limited impact.

To address this constraint, while leveraging niche markets that are already providing a return for private investors, we recommend organizing communication campaigns focusing on the competitive aspect of solar technologies in relations to conventional energy sources such as electricity and fuel. These campaigns should inform people about the profitability of such investments, the existing modes of financing and the various technologies available. Tourism is the first industry targeted. To develop these markets, awareness building activities have been conducted by the IBCM program (see box below).

Awareness campaigns

On March 13th, 2009 USAID's "Improving the Business Climate in Morocco" in partnership with the Regional Investment Center (RIC) in Meknes-Tafilalet and the Center for Renewable Energy Development (CDER), organized a workshop promoting solar water heaters in the hotel sector. The objective of this event was to demonstrate the economic advantage of equipping buildings with solar water heaters, gradually meeting the region's peak tourism demand. This event targeted all types of classified hotels and related tourism institutions in the region, namely: luxury hotels (3 to 5 stars), tourist lodges, guest houses and cottages.

Presentations were made on the profitability of such investments and on the existing financial tools available - including CDER's FOGEEER, a guarantee fund. Some hotels already equipped with solar technologies shared their experiences with the audience. Five tourism establishments, including three hotels, a rural cottage home and a holiday residence located in the provinces of Meknès and Errachidia demonstrated their commitment to equipping their establishment in solar thermal technology by signing letters of intent. Two of them are scheduled to agree on a partnership agreement with the CDER under the FOGEEER guarantee fund, through which financial and technical feasibility studies will be supported.

Source: USAID's Program.

Recommendations related to supporting markets

1. Encouraging the development of financial products adapted to customers' purchasing power, in collaboration with public and private agencies responsible for energy resource management, and promoting access to finance for Moroccan SMEs committed to renewable energies.

The high cost of solar technology in Morocco remains a major obstacle to its widespread use. Meanwhile, few financial mechanisms have been put in place to ease the payment financial burden. There is a major initiative in Morocco in this area: the FOGEEER guarantee fund whose use remains limited.

Indeed, in 2007 the CDER established the FOGEEER guarantee fund, to guarantee up to 70% of the amount of investment in renewable energies made by Moroccan companies, which includes a bonus rate of one and a half points on the interest rates. This fund is used in correlation with a lease financing mechanism. However, this mechanism applies only to investments above MAD 300,000, an amount still inaccessible to small institutions (households, bed & breakfasts, etc.). To date, about twenty applications for this fund are being processed, but only one project has been completed⁽⁸²⁾. Under this mechanism the technology provider requested by the client must commit, over a three year period, to a Guarantee of Solar Results (GSR) contract developed by the CDER⁽⁸³⁾. This sets the required performance levels for the installation, which must be met by the supplier under penalty of refunding the customer. While this "GRS contract" is a factor in ensuring the quality of the installation and after-sales service, the interviews revealed that this mechanism is not always welcome by the supplier. The quality approach is not yet well structured in Morocco and communication efforts on benefits and conditions are needed to increase the use of this tool.

For smaller projects, no specific financial investment tool exists in renewable energy in Morocco, except for a few random cases. Nowadays, in most cases, a solar water heater is paid for in cash once it is installed. One option is to develop innovative ways to reimburse customers for products through a system of monthly installments based on the needs of the consumer. As the photovoltaic industry developed innovative financing schemes - under the PERG or independently from ONE⁽⁸⁴⁾, with a down payment and monthly installments, the solar thermal chain could consider this model and develop its own funding arrangements.

⁽⁸²⁾ A cannery in Agadir.

⁽⁸³⁾ The three year period starts after an "auditing" period of 365 days.

⁽⁸⁴⁾ A few former ONE concessionaires have developed financing methods providing funding flexibility solutions to customers through down payments and monthly installment solutions adapted to their income level.

However, there is an added difficulty for solar thermal technology. In terms of photovoltaic energy, ONE's concessionaires often report directly to the customer to collect the down payment and the monthly installments. In the case of the solar thermal value chain, importers sell mainly to retailers or installers and have no direct relationship with the customer. While ONE's concessionaires can afford to offer this mode of reimbursement, this is not necessarily the case for service providers, who, generally speaking, have less financial capacity. For service providers to offer this option, credit would first need to be granted more easily, or, service providers could also receive a graduated payment plan on the original equipment from the supplier, which is not currently the case.

Provision for consumer credit could also be considered, as this is a well developed area for other types of products in Morocco. Also, so as to generalize these mechanisms, innovative financial products can be developed in collaboration with public and private bodies responsible for the distribution of power resources, as is the case in Tunisia. Through its PROSOL program, Tunisia has developed a unique system including the repayments of loans in the customers' electricity bill (paid to the STEG, a public body) thereby securing the repayment of loans while obtaining favorable interest rates. This program includes, among other things, a two point bonus on the interest rates charged by credit institutions. Morocco could therefore follow that example, although this work would require a sustained coordination effort between the various bodies that manage the distribution of electricity in Morocco - the ONE and other distribution authorities. Tunisia benefits in this case from the fact that the STEG has a monopoly on electricity distribution.

2. Strengthening training in renewable energy and stimulating R&D in this field.

The study reveals a significant need to train service providers and to value CDER-issued installer licenses. According to the interviews, courses for service providers are mainly provided by the CDER through PROMASOL and Energy House programs. Other channels exist among technology providers and training organizations, such as the OFPPT and Al Akhawayn University in Ifrane.

It is therefore recommended that (i) trainings undertaken by the CDER be better publicized so that the maximum number of service providers can be reached, (ii) public-private partnerships between CDER, other training agencies and solar technology providers be developed, thus enabling all parties to stay aware of market needs through education and information on cutting edge technologies and best practices; (iii) promote the development of specialized curricula in the field of renewable energies by public and private training bodies.

One of the major problems faced by installers is the devaluation of their expertise and the lack of recognition of the CDER certification, so it is important that any training in this field carried out by private or public organizations incorporate and integrate CDER's license for solar technology installation.

The regulatory and institutional framework

1. Establishing a taxation system of traditional energies, as well as preferential tax treatment for renewable energies, in order to improve the competitiveness of solar technologies. This can be accomplished through a gradual reduction of gas subsidies (which are indexed on oil prices) so as to not penalize the poorest segment of the population.

The solar water heater's biggest competitor is the gas water heater. Butane gas is heavily subsidized by the government, and knowing that gas prices are indexed on oil prices, fluctuations of crude is mitigated by the government through a compensation fund. To make solar water heaters more competitive in the market compared to conventional energy sources, gas subsidies must be reduced. However, this reduction must be gradual so as not to penalize the poorest segment of the population, which in any event generally has lower levels of energy consumption than households with higher incomes. The gas subsidy would therefore be maintained for the poorest segment and would be gradually reduced as gas consumption increases.

Another measure to improve solar technologies' competitiveness with fossil fuel is to establish a preferential tax treatment for solar technologies. Today, these technologies already benefit from a VAT reduction on hardware sold (from 20% down to 14%), but this has been reported as insufficient by the private professionals interviewed. Meanwhile, services relating to solar energy remain taxed at up to 20% VAT. While service providers are struggling to make solar costs effective, we also recommend applying a preferential tax on service and maintenance.

2. Encouraging electricity production through renewable energy sources, including solar, by developing a "feed-in tariff" incentive policy that sets the purchase price of solar-produced electricity at a higher level than the price of "traditional" electricity over a given period of time.

Besides waiting for the price of PV panels to come down drastically in the coming years, a "feed-in-tariff" policy incentive is recommended for Morocco to develop this sector. This will encourage private electricity generation through solar energy, as well as increase involvement from private companies who will offer the most cutting-edge technologies. The regulation must send a clear and stable signal to the market stakeholders by setting the purchase price of electricity produced by a solar source at an "incentive level", that is to say more than the price charged for conventional electricity on the market.

ONE's *Chourouk* program has been able to provide a partial market signal indicating a willingness to promote the grid connection to solar energy, but without providing any financial plan providing enough profit to encourage consumers and private producers to get equipped with the new technology. By proposing a reduction of the electricity bill in exchange for electricity generated by solar energy, and not a purchase per kilowatt hour, this program offers its customers neither the possibility to calculate their own profitability, nor to own their equipment, as the solar installation remains the property of ONE. By offering a higher price than conventional electricity, Morocco would stimulate demand for solar energy which would, in turn, encourage technology providers to penetrate this market by offering the most innovative technologies.

3. Making the inclusion of solar water heaters in new buildings mandatory in the medium term and preparing the supply of solar thermal related technologies.

A major obstacle to the widespread use of solar thermal energy in Morocco is the lack of systematic inclusion of solar water heaters in new buildings. Indeed, 150,000 houses are built in Morocco each year - a huge potential. These days, private companies consider this omission as a real issue in terms of technical feasibility. In practice, eliminating this obstacle would entail incorporating a hot and cold water connection on new building's roofs in anticipation of possibly installing a solar water heater.

In some countries, like Spain or Israel, solar water heaters have become mandatory in some types of buildings. In Spain, the Technical Code of Construction requires the installation of solar panels in new buildings. In Israel, a law makes it mandatory to include solar thermal technology in public service buildings such as hospitals, schools, or retirement homes. Without going that far, we recommend making the provision of a potential inclusion of solar water heaters installations in new constructions' plans mandatory - something that would primarily imply installing connections to hot and cold water on the roofs of new buildings. The final decision to incorporate a solar water heater or not would therefore have to come from the owner for private homes and from the government for public buildings.

However, the requirement to include solar water heaters in the plans of new buildings should be supported by an increase in supply both at the technical and technological levels. Indeed, the current structure of the value chain would not allow for suppliers to absorb such an increase in demand. The distribution network, which is weak today, should be strengthened and industrial production

should then be encouraged. Indeed, importing foreign equipment does not constitute a lasting solution.

4. Improving the quality of solar value chains by making equipment certification and installers' accreditation mandatory in Morocco.

Product certification plays a key role in a market structure. It is the guarantee of quality and trust between the merchant and the customer. However, in Morocco the added value of having a certification of solar equipment is questioned by many professionals. Some find that it is not strict enough, while others question the need to re-certify equipment that has already been certified by foreign standards, namely European ones.

This study considers the reinforcement of CDER's certification as essential in order to develop the quality approach of solar value chains in Morocco. This reinforcement could be two-fold. First, to respond to those who consider it too soft - thereby allowing the dissemination of poorly made products in the market - the CDER certification could be applied at several levels so as to best reflect differences in quality. This would allow consumers to differentiate the high quality suppliers from the others, while providing them with more information on the quality of the products sold. Second, to avoid duplication of certification efforts and to discourage new players on the market to adopt it, a list of international certifications recognized in Morocco should be established. This would facilitate access to CDER certification by allowing products already certified abroad, and appearing on this list, to be recognized in the CDER certification process.

CDER certification is not mandatory in Morocco, with the negative effect of encouraging the illegal importation of equipment of any kind, since the prospect of non-certification is not a deterrent to penetrate the market. Once the certification process is strengthened, it will be highly recommended to make it mandatory.

A parallel debate should begin regarding CDER's accreditation to install solar technologies. The government or other stakeholders could develop a number of incentives to encourage use of CDER-certified installers. This could include financial incentives, such as decreasing the VAT on services carried out by any authorized installer as well as the requirement of certified products and accredited installers for public tenders.

Furthermore, CDER's certification could also be strengthened by giving more recognition to installers established in the region. It is therefore recommended

that an online installers' directory be created for the area. This list could be hosted on the Meknes Regional Investment Center's website and with other local partners. Formalizing accredited installers should stimulate non-accredited installers to seek certification in order to benefit from this positive publicity. Moreover, it should allow investors to have a precise and clear view on the location of service providers and to adapt better to the market.

II. Recommendations priorities

Before closing this study, there is one remaining task. Due to the resources required, it is unlikely that Morocco can implement all of the above mentioned recommendations in the short and medium terms. Therefore, these recommendations must be prioritized to provide clear guidance on steps needed to develop the solar sector. Morocco has not yet set in place a large scale generalized subsidy policy to develop solar channels as is the case in Europe through the development of "feed-in tariff" incentive policies for photovoltaic technology and bonuses granted for the purchase of solar thermal technologies (depending on the total area covered of solar water heaters installed). Although the use of subsidies to finance a few major projects in renewable energy, together with a portion dedicated to the project at "lost equity" is being considered under the *Fonds de Développement Énergétique Marocain*, the present study examines possible short-term actions to implement in order to develop the solar channel markets in Morocco, until technological advances allow for the reduction of costs and make it more accessible for the public.

The idea is to focus on actions to increase demand for renewable energy in order to develop markets and to make Morocco more attractive for suppliers and potential investors. In this context, this study suggests priorities for the recommendations, focusing on one recommendation for each of the three categories analyzed: the value chain, the supporting markets, and the regulatory framework. The study concludes by outlining what each of these items implies for the customer, supplier and Moroccan government.

The value chain. The most urgent recommendation is to strengthen the service sector. Indeed, in this transitional period during which solar technologies are still expensive, and where technological breakthroughs are still needed to improve price competitiveness, Morocco should take this opportunity to strengthen local

stakeholders throughout the chain. There is a particular need to strengthen the system of service providers - the weakest link and yet the most strategic one in the chain - to enhance attractiveness to investors. Any foreign company that gets a foothold in Morocco, or any local company willing to penetrate another region's market, will be looking for a reliable and professional partner. Encouraging the development of a network appears to be the most effective method to develop the competitiveness of service providers, their capacity and skills. In addition, strengthening services will, at the same time, increase the consumers' confidence in these new technologies.

Supporting markets. The first item Morocco must address is the creation of financial tools adapted to the purchasing power of consumers. One tool exists in Morocco, the FOGEEER. It helps private investors mitigate risk, but the minimum MAD 300,000 investment required does not enable use for small buildings, such as private residences, holiday homes and bed & breakfasts. If Morocco wants to support universal access to solar technologies without waiting for the prices of products to come down, credit institutions will have to develop financial products either using a consumer credit model, leasing, or through the electricity bill by collaborating with organizations responsible for public electrical distribution.

Regulatory framework. While waiting for the subsidies to stimulate demand for renewable energy, other tools requiring less financial investment from the government are possible in the short term. Among these tools, there is a "taxation" system of conventional energy. In the Moroccan context, this entails reducing subsidies for fossil fuels, especially oil and gas. This tax will make fossil fuels more expensive while increasing the competitiveness of solar technology, especially solar water heaters. Currently, Morocco does not have the necessary resources to artificially improve the price of solar technologies through subsidies. Yet, it could achieve it the same ends by reducing subsidies on fossil fuels.

Thus, by simply implementing these three recommendations, a consumer will be assured that they will benefit from after sales service and maintenance and that they will be able to afford this technology through a loan. Such a loan may be granted by a credit institution in collaboration with the supplier - allowing the customer to repay the equipment by monthly installments - or in collaboration with energy management agencies on the energy bill (energy savings made by replacing fossil

energy with solar energy allow the customer to pay the cost of investment spread over a fixed period of time). Meanwhile the cost advantages will continue to go up as fossil fuel subsidies are decreased.

As for *technology providers*, they are more likely to enter new markets in Morocco - or to expand their markets in other regions for local suppliers - if they know that they can benefit from strong partnerships with a network of professional, CDER certified installers. Furthermore, the suppliers do not fear weak reimbursement for solar technologies by their customers, since monthly installments can be subtracted directly from the clients' electricity bill (in this case, the state pays the supplier up front for the cost of the technology through credit institutions). Moreover, the tax on fossil fuels should allow the supplier to have a stable price indicator, making solar

technologies competitive, and should allow the introduction of ever more efficient technologies in the market.

And finally for the *government*, the country will be better positioned to accommodate investors while creating jobs nationwide and stimulating a small portion of the economy. It will also have stimulated credit institutions by encouraging them to diversify their offerings, and by working with energy distribution government agencies. Finally, Morocco should be able to reduce its energy bill by reducing its subsidies on fossil fuels, and more importantly, it will be using energy from renewable sources. Thus, implementing these reforms will increase demand for renewable energies and reduce Morocco's dependence on imported energy.

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Appendices

Appendix 1 - CDER's assumptions for calculating potential markets

Schools and Higher Education

University dorms: 40 liters per person.

Rural boarding schools: 30 liters per person.

General points

1 kWh is equivalent to 0.766 Kilograms of CO₂ avoided.

1kWh = 8.6 * 10⁻⁵ TOE.

1 sq. meter produces 700 kWh / year.

Cost per sq. m: MAD 5,000 all taxes incl. with VAT at 14 %.

Health

Health Centers	Solar Water Heater (SWH)
Hospitals	20 litres par lits
Urban health center (pop<30,000)	0
Urban health center (pop>30,000)	0
Urban health center with delivery room	2 sq. m per center (150 liters)
Municipal health center	0
Municipal health center with delivery room	2 sq. m per center (150 liters)
Delivery/labor center	2 sq. m per center (150 liters)
Rural clinics	0

Tourism

Category	Ratio (liter)	Capacity SWH (liter)
4*	80	272,960
3*	60	132,300
2*	40	47,840
1*	30	21,120
Hostels	50	41,000
Vacation home	50	31,500
Listed bed & breakfasts	40	10,120
Guesthouses	60	18,240

Sourc : CDER.

Appendix 2 - Principles of the renewable energy draft law passed before the government council in March 2009

Point #	Principle
1	A permit system applied to the construction, operation, capacity expansion or modification of plants producing electricity from energy sources;
2	A reporting requirement prior to the implementation, operation, capacity expansion or modification of plants producing electricity from renewable energy sources;
3	Definition of areas of the country for potential development sites of wind energy;
4	Connection of plants producing electricity from renewable energy to the national high or very high voltage grid;
5	Definition of terms and conditions for the application of this draft law concerning the connection of electric power from renewable energy sources to the national medium-voltage grid;
6	Marketing of electricity produced from renewable energy sources;
7	Meeting the needs of the domestic market;
8	Operators right to produce electricity from renewable energy sources on behalf of a consumer or a group of consumers connected to the high and very high voltage grid, under a contract which provides the commercial terms of supply of electricity;
9	Exportation of electricity produced from renewable energy sources after national needs are met, using the national network or in case of insufficient capacity available, the possibility for the operator to use the power lines as part of a concession agreement established with the national power grid operator;
10	Principle of access to the national transportation system for operators of electricity production facilities from renewable energy sources;
11	Monitoring, recording violations and criminal and administrative sanctions.

Source: Bachir THIAM, *L'Economiste*, "L'arsenal juridique pour commencer : 11 grands principes approuvés par le Conseil du Gouvernement » (3/14/09).

