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Renewable energy and resource curse on the possible consequences of solar energy in North Africa

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Chapter 9. Conclusion

This thesis has focused on the current resource curse and the future potential for solar energy to become a new curse in the five North African countries. After reviewing the 'curse' and its effects in chapter 2, it was decided that the main cause(s) of the resource curse should be determined in order to measure and project whether there is the potential for the five North African countries to suffer from a solar energy curse. The selected causes, as presented in chapter 4, are poor institutional quality and the enormous rent size from the export of fossil-fuels. However, throughout this thesis, it is found that these causes could not individually function as the ultimate cause of the resource curse alone, rather, it is through the combination of poor institutional quality and the enormous rent size that results in the resource curse. Based on this assumption, the potential for the five North African countries to suffer from a solar energy curse has been projected. In chapter 6, based on the year 2011, the five North African countries appear to have poor institutional quality. Their institutional qualities tend to be lower than the resource curse avoided/escaped boundary-countries but closer to the resource cursed boundary-countries. Under the assumption that their institutional qualities are to remain poor in future, and if solar energy rent size is to be as high as the oil and natural gas rent size, the five North African countries can be considered to have the potentials to suffer from a solar energy curse. However, as seen in chapter 7, the projected solar energy rent size, or even the combination of the CSP and wind onshore rent size, is not likely to be as high as the average oil and natural rent size during the period of 1993-2009 except for few cases regarding the natural gas rent size. In other words, solar energy alone is not likely to become a new curse, and, therefore, the five North African countries are less likely to suffer from a solar energy curse. However, though it is projected that solar energy is not likely to become a new curse in the five North African countries, this is not to say that North Africa does not have to be concerned with important issues relating to the 'curse'. As seen in chapter 8, the hypothesized case study regarding the successful establishment of solar energy in the region opens up a new perspective. If solar energy, or renewable energy, is to become the substitution energy source for the use of natural gas or other fossil-fuels in meeting the domestic electricity demand, under the assumption that the poor institutional quality will remain in the future, it may play a role in prolonging the current resource curse that the North African energy exporters are suffering from. Especially the major energy exporters such as Algeria and Libya, despite the peak oil theory presented in chapter 3, there are projections that their oil production will increase in the future. For example, according to IEA (2009, p.84), Algeria's crude oil production is projected to increase from 1.4 million barrels per day (mb/d) in 2008 to 1.6 mb/d in 2030, and Libya's crude oil production is projected to increase from 1.7 mb/d in 2008 to 2.7 mb/d in 2030. Also, as can

be seen from table 64, 66, 68, which presents the projection of oil and natural gas production in the North African energy exporters, their oil and natural gas production, except for oil production in Egypt, is also projected to increase until 2020.

Of course, above projections do not show the projected oil and natural gas production rates in the North African energy exporters in 2050. However, one can suspect that, under the assumption that the oil and natural gas production is to continue to grow or remain similar to the projected production growth rate, solar energy or renewable energies as the substitution source for oil or natural gas in producing domestic electricity may contribute in prolonging the time for these countries to rely on exporting their fossil-fuels. In other words, prolonging the time that the energy exporters to suffer from the current resource curse.

Here, as mentioned in Chapter 8, if 90-100 percent of EUMENA electricity is to be produced via renewable energy, the need for electricity production via renewable energy is to increase. In this case, as the need for fossil-fuels declines, or may no longer be available in abundance, the price of renewable energy may rise. However, one should realize that this projection is made among EUMENA countries. The projection that the electricity generated by renewable energy will be exported from North Africa or MENA to Europe does not mean the need for fossil-fuels from North Africa or MENA will diminish. In other words, though the world total renewable electricity net generation and the number of countries promoting renewable energy policies have been increasing as mentioned in Chapter 3, one can not argue that there will not be any countries that are in need for fossil-fuels from the North African energy exporters in the future. Furthermore, 90-100 percent electricity produced via renewable energy is also a projection, or proposed plan, and it is uncertain whether this will materialize or not. Perhaps, the more urgent matter that should be focused upon is the possible impact of the establishment of solar energy, or other renewable energies, in the energy exporting countries that are already suffering from the resource curse.

Despite the above possibility, as mentioned earlier, the results from chapter 6 and 7 suggest that the five North African countries are not likely to suffer from a solar energy curse due to the small projected solar energy rent size. However, it is still not certain that the five North African countries will definitely avoid a solar energy curse.

When the combination of the poor institutional quality and the enormous rent size is established as the main cause that determines the resource curse, one may view the resource curse and the solar energy curse as the results of rent-seeking behavior. Furthermore, as the result of this thesis is that the five North African countries are not likely to suffer from a solar energy curse due to the small projected rent size from solar electricity exports, the enormous rent size may appear as more of the core cause of the resource curse. Here, it is misleading for one to regard rent-seeking behavior

and enormous resource rents size as the entire explanation for the resource curse and the cause of the resource curse because resource curse is a very broad term. As seen in chapter 2, the resource curse has various negative effects. In other words, one should not identify the resource curse as a single unit, but it should be regarded as a term that describes, and possesses, all the negative effects that are presented in chapter 2.

It is important to have a clear understanding of the term resource curse. When looking at the resource curse effects presented in chapter 2 or even the aid curse effects, though regarded as one of the causes of the resource curse in this thesis, the enormous rent size is not always the cause for the resource curse effects. For example, conflicts can occur due to other reasons such as religion. Also, debt problems in many African countries, or any other countries, are not always caused by the enormous rent from exporting resources, the combination of volatility and Dutch disease, because there are many countries suffering from debt when they do not have enormous amount of natural resources to export.

In fact, what are considered as the resource curse effects are often already existing problems that many countries have been suffering from. Here, one can say that the resource rent is an element that can be perceived as extra fuel which exacerbates existing problems. The enormous size of the resource rent highlights the problems that are related to the resources. This creates a rather deceptive perspective because one will see the problems as the resource curse effects, when they are often the existing problems that they have been suffering from regardless of the resource and its rent. In other words, the reason why existing problems, especially in energy exporting countries, are perceived as the effect of the resource curse is because the 'flame' created by enormous extent of resource rents has been concealing the core and existing issues. This is not to say that the resource curse does not exist, and the enormous resource rent size, or the combination of the rent size and the poor institutional quality, is not the cause of the resource curse and its effects. For example, the enormous oil rent caused problems in Norway as mentioned in chapter 2. However, in a logical way of thinking, it is difficult to think that the enormous rent from resource exports would harm an economy rather than contribute in economy's development. As presented in chapter 2, there are countries, such as Botswana and Norway, which avoided/escaped the resource curse. Their experiences suggest that knowing how to control, planning a long-term plan, fair distribution and good spending of the rent for development, and of course materializing them, are the key factors in avoiding/escaping such curses. Whether these are entirely all related to the institutional quality or not, one can not deny the fact that the good institutional quality should be the backbone in materializing the above mentioned factors. Especially when looking at the result of chapter 6, the importance of the institutional quality is already seen as the institutional quality of the resource

curse avoided/escaped boundary-countries often have much better institutional quality than the resource cursed boundary-countries. Furthermore, as mentioned throughout this thesis, institutional quality is related to accountability, transparency, democracy and other factors which are crucial elements in eradicating the resource curse, and/or the already existing problems, which many African countries suffer from.

This thesis analyzed the possibility for the five North African countries to suffer from a solar energy curse under the assumption that this form of the solar energy curse and its effects will be similar to the current resource curse. However, it is inconclusive whether solar energy will become a new curse or, what form it will take, and how different it will be from the current resource curse. In an extreme case, one can not ignore the possibility that a solar energy curse may be completely different from the current resource curse, and the projection of the possibility of solar energy to become a new curse based on the current resource curse may not even be the correct method. In fact, it is hard to say whether a solar energy will become a new curse, or will it have similar appearance and outcome as the resource curse. Nevertheless, good institutional quality, or its improvement, appears as a necessary factor that can help in avoiding/escaping the resource curse, and, importantly, the North African countries, or any other countries, need it to solve the 'already existing problems' which can become more serious due to the resource and its rent, or what are deceptively perceived as the resource curse effects.

If the five North African countries' institutional qualities are to remain poor, they have less chance of solving the existing problems which may turn into a new curse. Of course, the five North African countries are not likely to suffer from a solar energy curse as the projected solar energy rent is low. However, if they are to find a new source, which does not have to be natural resources or energy, that is to provide enormous rent, under the assumption that their institutional qualities are to be remained poor, it is possible that they may be facing a new type of curse. In other words, if their current poor institutional qualities remain in the future, they may be in an unfortunate position to suffer from a new type of curse.

Of course, one does not know how much their institutional qualities are to improve in the future especially when the region is experiencing chaotic events and complexities such as assassination of Gaddafi in Libya and Islamic militant's invasion of an Algerian gas field and the killing of hostages, and more importantly, the Arab Spring. As mentioned earlier, there are different ways of viewing the impacts of the Arab Spring in the region. For example, Tunisia's regime change is considered as a positive outcome by Hlepas (2013), whereas, Weill (2012) still finds that the impacts of the current consequences of the Arab Spring is still to reveal itself and is unpredictable. In fact, the current chaotic events and uncertainties in the region make it difficult for one to project future institutional

quality⁹⁸, and, more importantly, the possibility for them to suffer from a new curse or a prolonged resource curse. Nevertheless, many of these countries are entering, or have already entered, a crucial turning point which can determine their path to the future. The five North African countries should take this turning point as an opportunity to improve their institutional quality which will help them to avoid possible 'curses' and, more importantly, lead them to sustainable development.

⁹⁸ Hence the reason why the most recent institutional quality is used to identify the solar energy curse.