Different paths towards sustainable biofuels?

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SUMMARY

DIFFERENT PATHS TOWARDS SUSTAINABLE BIOFUELS?
COMPARATIVE STUDY OF THE INTERNATIONAL, EU, AND CHINESE
REGULATION OF THE SUSTAINABILITY OF BIOFUELS

Biofuels are promoted as a type of renewable energy from biomass that replaces fossil fuels in transportation, in an attempt to achieve the three-fold objectives of energy security, rural development, and GHG emission reductions. However, the increased consumption and production of biofuels have been increasingly subject to criticism for their potential negative impacts on environmental and socio-economic sustainability, such as, *inter alia*, ecological and climate change impacts as well as negative social effects on food availability and accessibility. The environmental, social, and economic facets can be interconnected, and the potential implications may range from a local scale to the global scale, thus involving regulation in multiple sectors and at different levels. The concerns over sustainability of biofuels have already given rise to increasing discussions on how biofuels are and can be regulated to avoid adverse consequences, and eventually led to regulatory measures particularly for biofuels in various legal systems. In this context, this thesis is dedicated to a study on the theme of ‘regulation of the sustainability of biofuels’ consisting of research in response to the following three questions: 1) what the regulatory approaches to sustainability of biofuel are in the selected legal frameworks, 2) whether they include sustainability concerns in all the environmental, social, and economic dimensions, and, 3) does the concept of ‘global environmental law’ offer a prospect for an inclusive approach for the regulation of the sustainability of biofuels?

For the first research question, this thesis has respectively examined the regulation of biofuels in the international, EU, and Chinese legal systems in Chapters 2, 3, and 4 and then compared their regulatory approaches in Chapter 5. Due to the ‘mix’ of instruments from various sectors, the analysis in these chapters is framed according to the effects on demand, supply, and trade of biofuels, which respectively focus on whether and how the regulatory measures constrain the demand and supply of unsustainable biofuels as well as their external influences.

In Chapter 2, in the absence of a specific international legal framework for the sustainability of biofuels, the international regime for regulating the sustainability
Summary of biofuels was mapped by looking into the different international legal regimes of climate change, biodiversity, socio-economic human rights conventions, and international trade law. In looking into the relationship between the international climate regime and biofuels, it was found that the commitment of addressing or reducing GHG emissions under the UNFCCC or the Kyoto Protocol may provide incentives for the use of biofuels, especially for Annex I Parties undertaking the GHG emission reduction obligation, if biofuels are regarded as a means to reduce GHG emissions in the transport sector. The international instruments in the fields of biodiversity and socio-economic rights are related to the supply of biofuels, such as the general commitment to conservation and sustainable/wise use of biodiversity, the decisions or resolutions on biofuels and biodiversity, and states’ obligations with respect to the right to adequate food. The investigation into the relationship between the regulation of the sustainability of biofuels and WTO law concentrates on the question: to what extent WTO law may allow or constrain unilateral regulation on the sustainability of biofuels that affects the international trade of biofuels, particularly regarding the consistency the current provisions and case law under the WTO about production and process methods and jurisdictional limitation.

Chapter 3 examines the regulatory approach to the sustainability of biofuels in the EU, particularly the sustainability criteria provided in Directive 2009/28/EC (amended by Directive (EU) 2015/1513) which play a central role in the EU’s regulatory framework on the demand, supply, and trade of biofuels. The sustainability criteria include requirements about life-cycle GHG emission saving, biodiversity, carbon stock, and agro-environment protection, and the EU also set forth the methodology for assessing GHG emission savings and the schemes for verifying compliance. On demand-side, the sustainability criteria are set out as binding conditions for biofuels to be treated favourably with regard to achieving national renewable energy consumption targets, receiving financial support, and complying with national blend obligations within the EU. In the aspect of supply, the sustainability criteria attempt to protect highly biodiverse areas or lands with high carbon stocks from biofuels’ production, and the production of agricultural crops for biofuels is subject to the ‘cross-compliance’ and ‘greening’ requirements of the EU Common Agricultural Policy. By applying to biofuels originating in third countries, the sustainability criteria thus have an influence on the trade of biofuels between the EU and non-EU countries, and the external policies, such as reducing/exempting tariff rates and the negotiation of bilateral or multilateral agreements on biofuels, may provide tools for promoting compliance with the EU’s sustainability requirements in the third countries.

Chapter 4 addresses the existing principles and requirements regarding the environmental and socio-economic concerns related to biofuels in China. The Chinese central government has set out general principles and specific requirements on certain environmental and socio-economic concerns related to biofuels, but a legal framework is not yet established for regulating the sustainability of biofuels at the national level. In the respect of demand, the central government has established general guiding principles for policy making on biofuels, including the use of non-
food grain feedstocks, using marginal land that is not used for producing food, and no environmental damages, but these principles are not yet further specified in or coherently adhered to the other regulatory measures having effect on demand of biofuels, such as the biofuels blend mandate pilot projects and consumption targets. As for supply of biofuels, the general principles restrict the production of food grain-based biofuels and use of arable land, but there is lack of clear and binding scope of ‘non-food grain feedstock’ and ‘marginal land.’ Although trade of biofuels exists between China and third countries, the general principles or specific requirements related to the consumption and production of biofuels are not explicitly set out for imports from third countries, while bilateral and multilateral cooperation might provide opportunity for China to make progress in the development of efficient and sustainable biofuels and to be involved in international processes on the sustainability of biofuels.

Chapter 5 compares the regulatory approaches at the international, EU, and Chinese levels, and analyses the differences and similarities as well as their underlying reasons. With regard to regulation of the demand for biofuels, it is observed in particular that there is a difference in whether and what sustainability requirements are established for the demand-side regulatory measures, whilst convergence lies in the common concern about the potential negative impacts of biofuels, particularly on food availability. Differences as well as convergences are also found in defining and regulating the biodiversity, carbon stocks, and socio-economic rights concerns in the production of biofuels, but convergence exists in the approach to protecting certain areas with biodiversity values from biofuel production. Regarding the regulation of the trade of biofuels, in the context of WTO law, the EU and China have different approaches in treating biofuel (feedstock) from third countries, whilst both the EU and China have taken measures to engage in bilateral or multilateral cooperation on biofuels.

For the second research question, the regulation as examined in Chapters 2-5 is further reflected on from the perspective of whether both environmental and socio-economic sustainability concerns are included. In Chapter 2, it is found that the sustainability impacts of biofuels are addressed respectively under the different international regimes in a fragmented manner and there is a limit in the ability of each regime to integrate the environmental and socio-economic concerns inclusively, primarily owing to the ‘self-contained’ objectives and functions which present a barrier for individual regimes to inclusively address both environmental and socio-economic concerns. In Chapter 3, although the European Commission claims that the sustainability scheme is comprehensive and advanced, it is found that the sustainability criteria are limited in addressing the potential adverse effects in both environmental and socio-economic dimensions, largely due to the concern about compatibility with WTO law and the difficulty in defining commonly applicable social standards. Chapter 4 reveals that China has not yet established the concept of the ‘sustainability of biofuels’ or ‘sustainable biofuels’ in law or policy, nor has it set out legal criteria for the sustainability of biofuels, and analysis points out the deficiency in the current principles and requirements in integrating inclusive sustainability concerns in China. Chapter 5 further reflects on the
differences in the prioritised sustainability concerns, the preferred regulatory approaches, and the degrees of possibilities to adopt complementary or stricter sustainability requirements in the regulation of biofuels. Despite the differences, limits in inclusively addressing the environmental and socio-economic sustainability dimensions exist at all the international, EU, and Chinese levels, which may have the consequence that ‘unsustainable’ biofuels continue to be demanded, supplied, or traded, and thus an inclusive sustainability regulation for biofuels is desirable.

The third research question is mainly discussed in Chapter 5, drawing on observations from comparative analysis in the previous sections. While inclusive sustainability regulation is desirable, challenges of providing inclusive regulation may exist at the international or domestic level due to the inherent complexities caused by the broad and vague meaning of ‘sustainability’, integrating cross-sectoral concerns, and addressing multi-scale impacts. Based on the differences and convergences observed from comparative analysis, the conceptual framework of ‘global environmental law’ as defined by Yang and Percival is used to explore the potential for a global inclusive approach for sustainability of biofuels. The major implications from ‘global environmental law’ for the potential of a global inclusive approach could be: instead of resorting to a sole ‘top-down’ or ‘bottom-up’/‘polycentric’ approach, inclusive regulation on the sustainability of biofuels could be built upon the existing harmonisation, integration, transplantation, and convergence effects at different levels according to the scale of sustainability impact of biofuels and its subjectivity to diverse environmental or socio-economic conditions. Accordingly, recommendations are made as for regulation on the major sustainability concerns of biofuels, including accounting of life-cycle GHG emissions, biodiversity, food availability, agro-environment, and socio-economic rights, at different levels to evolve towards a global inclusive ‘mix’ in a dynamic and interactive way.