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30. September, 2015

China Research Activities Prof. Dr. Paul JJ Welfens/EIIW)

Prof. Dr. Paul JJ Welfens, University of Wuppertal and EIIW

(Europäisches Institut für Internationale Wirtschaftsbeziehungen, EIIW) –

in DFG funded China Project:

Coordinator is Prof. Dr. Reinhard Meckl, University of Bayreuth; other partners from Fraunhofer ISI Institute, Karlsruhe, ZEW, Mannheim, Chinese Academy of Sciences: 2015-2017; first workshop Beijing 2015

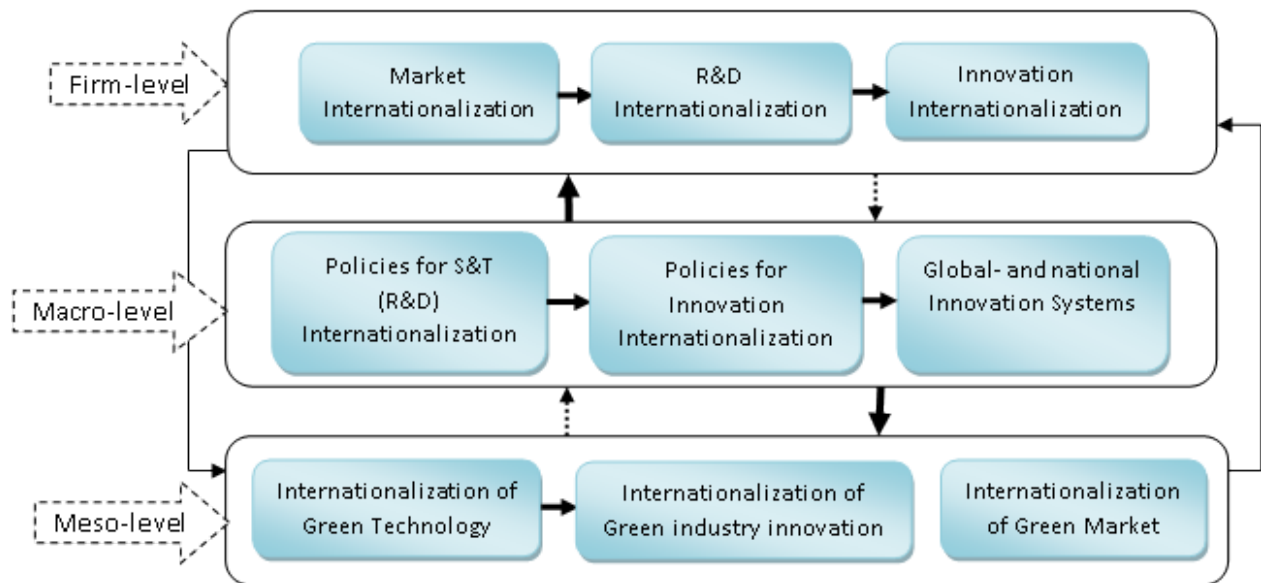
China I Project: Sino-German Cooperation Group

This project is a follow-up on earlier DFG-funded China project in which

Prof. Welfens has participated (see also publications)

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This project will study the internationalization of science, technology and innovation (hereafter abbreviated as STI) from the perspective of strategy, policy and management by employing an interdisciplinary approach theoretically and empirically. Three subgroups will be included in the project, and in each subgroup general theoretical studies on the key issues will be conducted, which will then be followed by the empirical analysis of those issues in China and Germany. The general framework is as below:



In the process of this cooperation project, we plan to hold a series of internal research meetings within the specific subgroups, as well as some regular cross-subgroup workshops to promote the communication between different subgroups. Based on such seminar meetings, we will definitely make progress not only in relation to specific subgroup research but also in terms of cross-subgroup research. In addition, we will strengthen the personnel exchanges and academic visits. Through this, the cooperation project will cultivate a group of young scientists capable of better understanding the STI internationalization between China and Germany from the perspective of academic research, and will also suggest a series of policies to improve the efficiency of STI internationalization at multiple levels (i.e., macro-, meso- and micro level).

Prof. Welfens/EIWI with key focus on internationalization of innovation dynamics and macro effects of foreign direct investment and product innovations

China II Project: SINCERE (for the German part funded by DFG), 2015-2017, first workshops in London and Shanghai in 2015

Prof. Dr. Paul JJ Welfens, University of Wuppertal and European Institute for International Economic Relations (EIIW)

The **Sino-European Circular Economy and Resource Efficiency (SINCERE)** project will develop new economic modelling tools to understand the resource use patterns of China and the EU. The project will address indicators and metrics, institutions and policies, and will also examine historical patterns between resource indicators, trade and macro-economic performance. An overall aim is to strengthen collaboration between European and Chinese researchers.

The project is part of a collaborative funding initiative by the Agence Nationale de la Recherche (ANR France), Deutsche Forschungsgemeinschaft (DFG Germany), the Economic and Social Research Council (ESRC UK), the National Natural Science Foundation of China (NSFC China) and the Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO Netherlands) on the green economy. The partners in the project are: Shanghai Jiao Tong University (SJTU), UCL Institute for Sustainable Resources (UCL ISR), the Fraunhofer Institute for Systems and Innovation Research (ISI), MINES ParisTech – Centre for industrial economics (CERNA), the United Nations University – Maastricht Economic and social Research institute on Innovation and Technology (UNU-MERIT) and the University of Wuppertal - The European Institute for International Economic Relations (EIIW) with the research leader Prof. Dr. Welfens and his research team. The project is funded by the Economic & Social Research Council (ESRC), is supported by an advisory board and collaborates with stakeholders and other researchers.

The project contains the following five Working Packages:

WP1	Analytical frames of a circular economy, resources and sustainable growth in China, Europe, and internationally. This WP 1 will produce a discussion paper in year one and serves as a forum for reflections throughout the duration of SINCERE.
WP2	Analysing Historical Dynamics. WP 2 will analyse drivers for resource efficiency and competitiveness, international trade patterns, dynamics of material use and related patenting activity.
WP3	Indicators and Metrics. WP 3 will analyse the Chinese indicators on a circular economy and compare it with the EU indicators on resource efficiency as well as with new research findings. It will also carry out a survey in China and a case study on metals.
WP4	Institutions and Policies. WP 4 will analyse innovation systems in both China and Europe. The analysis will develop detailed chronologies of policy change, identifying the role of interests and ideas in the innovation system responses to the policy changes, and in shaping policy change itself.
WP5	Resource Efficiency (RE), Circular Economy (CE) and Macroeconomic Dynamics. WP 5 will develop quantified model-based scenarios and storylines to explore possible futures for both regions up to 2050. Analysing expected resource inputs, price developments and trade patterns it will establish new modelling tools, one based on a

dynamic bottom-up model (DyMAS), another one as Computable Equilibrium Model (CGE). It will also discuss other modelling tools (e.g. ASTRA and modules from TRANSFORM, IMPULSE, UCL TIAM, city modelling).
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EIIW mainly focuses on WP3: Indicators and Metrics. EIIW's research targets will be:

1) Analysing the current circular economy (CE) evaluation indicator system (at macro level) in China and modifying the current EIIW-vita Global Sustainability Indicator (GSI) with more sub-indicators such as a CO₂ emission indicator and a recycling indicator to cover the present shortages in China.

2) The feasibility and effectiveness of environmental protection measures and policy programs such as China's low carbon policy depends on the consumers' valuation of environmental quality. That is why it is necessary to measure the level of environmental concern. In order to explain, why a person is concerned about the environment, Stern and Dietz (1994) and Stern et al. (1995) identify three sets of values associated with environmental attitudes, which they label as egoistic, altruistic, and biospheric. Environmental concern can imply either action or intention related to climate change mitigation. Using the World Value Survey, we can find out that there is a significant divergence between pro-environmental intention and action both on the global and on the Chinese level. Whereas almost 70 percent of Chinese respondents prefer environmental protection to economic growth, only 7 percent of respondents act pro-environmentally. There are also significant variations among respondents from different Chinese provinces. While egoistic, altruistic and biospheric attitudes are the most important drivers for the pro-environmental intention in China, our model does not deliver good results for the pro-environmental action. For this reason, we would like either to create a new or to use an existing questionnaire survey in order to analyse the corresponding drivers of pro-environmental action in China and to explain the big gap between pro-environmental intention and action.

3) Conducting a pioneering research program on the analysis of Chinese renewable energy patent data analysis. The expected findings regarding the Chinese renewable energy patents are: a) Chinese (and EU, if possible) sustainable technology patent database analysis, within a given time period (e.g. 2008-2013), find out the top 5 or 10 innovative regions (provinces) and see if there are some special policies from the local governments which stimulate the innovation activities and what are the lifestyle differences between more innovative regions and less innovative regions; b) Take the Chinese renewable energy patent dynamics into a wide time zone and see if there is an innovation boom or recession during this period and if fluctuations exist, what are the causes for this; c) How green technologies are transferred among different regions / provinces in China and between China and European countries; d) Making some policy-oriented conclusions for the less innovative regions (provinces) in China.

4) Using the patent statistic as an innovation indicator to measure the innovative dynamics of the CE and resource efficiency. Evaluating the performance of China's innovation system through patent applications which represented by firms, universities, and research institutes.

5) Analysing the EU-China trade policy to help the Chinese partner to use the data for the analysis of embodied carbon in China-EU trade.

Prof. Welfens and Wuppertal team with key focus on Global Sustainability Indicator, innovation dynamics in renewables sector, Economics of recycling, Green ICT and selected trade-related aspects of sustainability and circular economy

Guest researchers in both projects will stay at European Institute for International Economic Relations (EIIW)/University of Wuppertal, Rainer Gruenter Str. 21, D 42119 Wuppertal; office hours of Mrs. Nancy Yu also at EIIW.