Today the European PV (solar photovoltaics) manufacturing industry potentially is at the edge of a renaissance. The EU Commission has recently launched a programme to quickly reduce the fossil import dependency of Russia, the REPower EU programme. About 75% of gas import reduction from Russia till 2030 is expected to come from solar and wind deployment along with heat pump installations. As a consequence, the EU Commission launched the EU Solar Strategy in May this year, which addresses both deployment of PV and manufacturing of PV hardware. This strategy aims to bring online over 320 GW of PV by 2025 (more than a doubling compared to 2020) and almost 600 GW by 2030. This implies a need to install some 50 GW per year.

The ambition of the EU commission is that deployment goals in the REPower EU proposal should be equally reflected by support of the PV manufacturing industry in Europe. However, while the EU accounted for 15% of global PV installations in 2020, the shares of upstream production processes were much smaller: 2–3% for modules, 0.4% for cells, 1% for wafers and 11% for polysilicon. This led to a trade deficit for modules and cells of about 8 billion euros. The EU strategic dependencies assessment points out that public policy measures can support industry’s efforts to address the import dependency. The EU Solar Strategy proposes three major initiatives:

1. With the European Solar Rooftops Initiative, the EU will lift the barriers that are still preventing a momentous shift to solar powered homes, offices, shops and factories.  
2. The large-scale skills partnership for onshore renewables, including solar energy, will turn the growing bottleneck in the skilled workforce needed to manufacture, deploy and maintain solar energy into an opportunity for new green jobs.  
3. On the supply side the proposed EU Solar PV Industry Alliance should help diversify the supply chains, retain more value in the EU and deliver efficient and sustainable products based on next-generation technologies.

Ambitious aims are, however, not enough. Effective policies require in depth knowledge of the target industry. Unfortunately, the status of the European PV manufacturing industry is not well understood. The EU commission and industry organisations such SolarPower Europe and the European Solar Manufacturing Council have launched mapping activities to gain an overview, but the complexity of the industry landscape demand a more in-depth understanding of a variety of the value chains and market segments. Building and vehicle integrated PV (BIPV and VIPV) are two market segments that warrant some extra attention since these may require new actor competences, value chain configurations and institutional settings and hence open a space for European companies, despite fierce competition on the global market for generic PV modules.

This master’s thesis aims at contributing to the overall examination of the European PV manufacturing industry by analysing actors, relations and policies in BIPV and VIPV value chains. Theoretically, the technological innovation systems framework is taken as starting point. The work will mostly be conducted through desktop research and interviews with European companies and research institutes. The thesis workers will have access to the European Solar Manufacturing Council’s broad European PV manufacturing industry network.
The thesis will be supervised by Johan Lindahl, Secretary General of the European Solar Manufacturing Council, Björn Sandén, professor of Innovation and Sustainability at the Division of Environmental Systems Analysis and the Department of Technology Management and Economics at Chalmers, and Johnn Andersson, researcher at the Department of Social Sciences, Technology and Arts at Luleå University of Technology.

The proposal places high demands on the thesis workers’ analytical abilities and communication skills. We expect applicants to have some familiarity with PV technology and be able to adopt systems perspectives on industries, innovation and policymaking. We also expect a high level of commitment to the project. In return, the thesis proposal offers a unique opportunity to develop knowledge about PV in Europe together with leading stakeholders, and thereby contribute to a climate neutral, renewable and resilient European energy system, and through the interviews with stakeholders get in contact with major European PV companies.

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