Regional Studies, Regional Science ›
Volume 7, 2020 - Issue 1

Open access

1,741 Views | 2 CrossRef citations to date | 3 Altmetric

Listen

Regional Graphic

The geography of green technology licensing in China

Sebastian Losacker

Pages 387-389 | Received 09 Jul 2020, Accepted 07 Aug 2020, Published online: 02 Sep 2020

Cite this article https://doi.org/10.1080/21681376.2020.1809507 Check for updates

ABSTRACT

Heatmap techniques are used to visualize the geography of green technology license agreements in China. The map is based on unique patent and licensing data, linking regional (licensee ies. It highlight luded within the sam s from a network a, in parti ork visuali

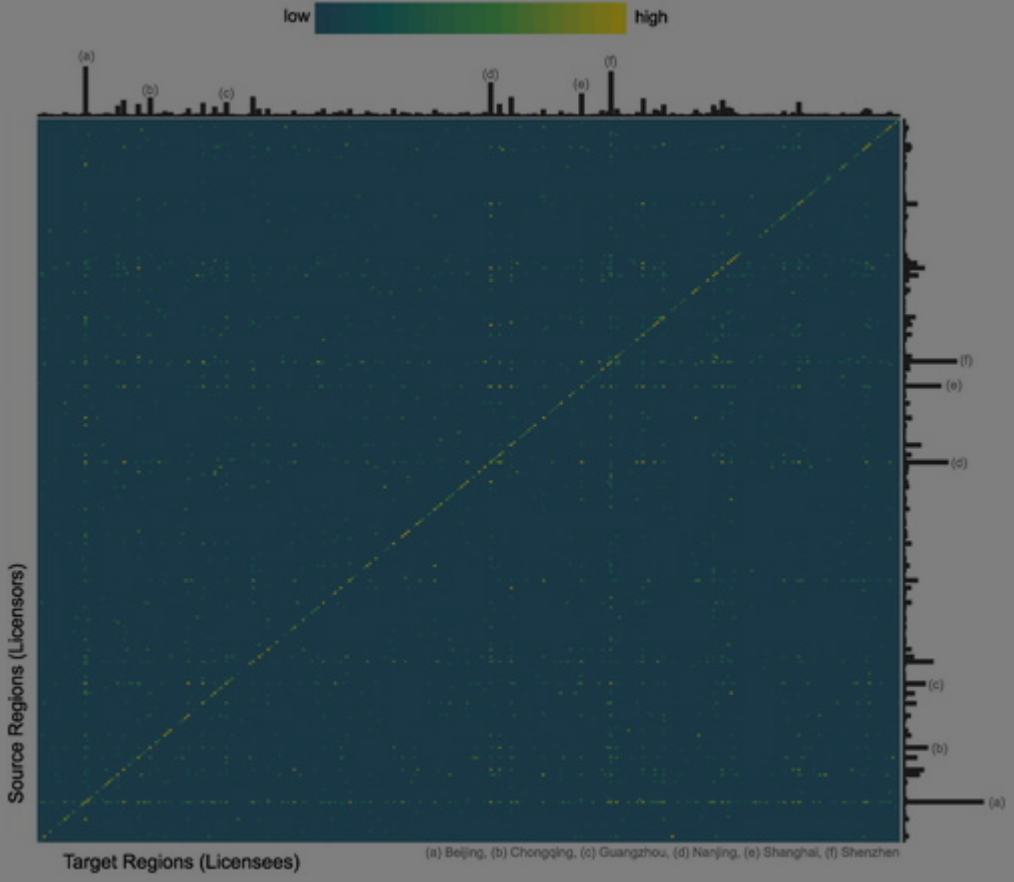
KEYWO

JEL CLA

The adoption of green technologies is crucial for tackling climate change and offering solutions to resource depletion and further environmental challenges. While there is a growing body of literature on the geography of green technology development (Barbieri et al., 2020), research on adoption and diffusion is scarce. This regional graphic provides information on the geography of license agreements for green technology patents in China, highlighting the importance of intra-regional diffusion processes.

A license agreement is a contract between a licensor (patent owner) and a licensee who is authorized to make use of the technology. Licenses thus allow the measurement of both innovation development and innovation adoption. The data underlying this graphic was retrieved from IncoPat, a Chinese patent database listing license agreements. Green technology patents were identified using the ENV-TECH classification (Haščič & Migotto, 2015). A geocoding process was then employed to regionalize the licensor and licensee addresses to the prefectural level, resulting in a data set of 9396 license agreements for 8565 patents. To be specific, licensor addresses from the patent documents were geocoded using the open-source GeoNames database, while licensee names (e.g. firms, universities) were used to obtain locations via Google Maps and Baidu Maps API queries. In a final step, licensors and licensees were aggregated to 294 prefecture-level regions. Based on the regional information for licensor–licensee linkages, a directed asymmetric adjacency matrix A with the dimensions 294 × 294 was constructed, with cells a_{ij} indicating the number of licensed patents from source region (licensors) i to target region j (licensees). This data representation allows a detailed study to be made of the diffusion of technologies, which is usually done in network visualizations (Gui et al., 2019). However, this often leads to
57% of all
license a
eading to a
relativel
however,
differs b
%; Beijing,
51%; Sh

Figu
ology patent
license a
d by a
lighter c
icensees
(top) pe
om); the
graphic
Licenses
with con
atents were
excluded.



Display full size

Heatmap visualization techniques help to analyze network loops in that respect, while (spatial) network visualizations often lead to an overestimation of the value of interregional linkages (e.g. Gui et al., 2019). This regional graphic adds to the literature by arguing that knowledge diffusion via license agreements relies on geographical proximity and established local collaborations (Bidault & Fischer, 1994; Seo & Sonn, 2019). Moreover, the findings support arguments for regional specificities of sustainability transitions, as the development and adoption of green technologies often seems t 015).

DISCL

No po

Addit

Fundin

This work was supported by the Deutsche Forschungsgemeinschaft [grant number Li981/18-1].

REFERENCES

1. Barbieri, N., Perruchas, F., & Consoli, D. (2020). Specialization, diversification, and environmental technology life cycle. Economic Geography, 96(2), 161–186. https://doi.org/10.1080/00130095.2020.1721279.
Web of Science ® | Google Scholar

2. Barter, R. L., & Yu, B. (2018). Superheat: An R package for creating beautiful and extendable heatmaps for visualizing complex data. Journal of Computational and Graphical Statistics, 27(4), 910–922. https://doi.org/10.1080/10618600.2018.1473780
PubMed | Web of Science ® | Google Scholar

3. Bidault, F., & Fischer, W. A. (1994). Technology transactions: Networks over markets. R&D Management, 24(4), 373–386. https://doi.org/10.1111/j.1467-9310.1994.tb00891.x
Web of Science ® | Google Scholar

4. Gui, Q ansfer netwo https:/

5. Ha ns: Review, sy nnovation and S 1.001

6. Haščič g patent data. Paris. https://doi.org/10.1787/19970900

Google Scholar

7. Seo, I., & Sonn, J. W. (2019). Conflicting motivations and knowledge spill-overs: Dynamics of the market across space. Geoforum, 105, 210–212. https://doi.org/10.1016/j.geoforum.2019.05.026.
Web of Science ® | Google Scholar