

# TRAJECTORIES

Migration flows, competences, and the energy transition:  
trends and best practices in training and work inclusion  
in the Fondazione MAIRE – ETS research project

## What the literature tells us about the theme: text mining e topic modeling

*Dr. Cecilia Fortunato*

### Notes

<sup>1</sup> For publication purposes, the following pages provide a brief summary of the results obtained with the different approaches. The study's data, methods, and results are available upon request.

<sup>2</sup> Web of Science Core Collection, All Editions, search by 'Topic'.. Last accessed: July 3, 2025.

<sup>3</sup> Pisarevskaya et al., 2020; Aria & Cuccurullo, 2018; Farren, 2019; Snyder, 2019; Belter, 2020; Denyer & Tranfield, 2009.

<sup>4</sup> R packages: tidytext, dplyr, ggrepel, ldatuning, topicmodels, bibliometrix.

<sup>5</sup> Term Frequency–Inverse Document Frequency (TF-IDF) (Aria & Cuccurullo, 2018).

<sup>6</sup> Latent Dirichlet Allocation model (LDA) (Pisarevskaya et al., 2021; Farren, 2019).

<sup>7</sup> Kuckartz (2019); Schreier (2013).

<sup>8</sup> World Meteorological Organization, 2025

<sup>9</sup> From the 1997 Kyoto Protocol to the 2012 Doha Amendments, from the 2014 2030 Climate and Energy Framework to the 2015 Paris Agreement, up to the European Green Deal launched in 2019.

<sup>10</sup> Istat data.

<sup>11</sup> Istat (2023). Report on Non EU Citizens in Italy. Available at: [www.istat.it/wp-content/uploads/2024/10/REPORT-CITTADINI-NON-COMUNITARI\\_Anno-2023.pdf](http://www.istat.it/wp-content/uploads/2024/10/REPORT-CITTADINI-NON-COMUNITARI_Anno-2023.pdf)

<sup>12</sup> Directive 2009/50/EC and Directive (EU) 2021/1883

<sup>13</sup> Query on WoS: TS = (workforce OR labor OR employment OR jobs OR skills OR training OR “human capital” OR “human resources” OR “green jobs” OR “green skills”) AND (“green transition” OR “green economy” OR “green deal” OR “energy transition” OR “climate transition” OR decarbonization). Last access: July 2025.

<sup>14</sup> Query on WoS: TS = (migrant OR refugee) AND (“labor market integration” OR “labor market inclusion” OR “economic integration” OR employment OR entrepreneurship).\*\* Last access: July 2025.

<sup>15</sup> Query on WoS: TS = (migrant OR refugee OR “irregular migrant” OR “asylum seekers”) AND (“green deal” OR “green energy” OR “green sector” OR “energy transition”).\*\*Last access: July 2025.

<sup>16</sup> Obtained from the country of affiliation of the first author.

<sup>17</sup> The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, sets out 17 Sustainable Development Goals (SDGs) to be achieved by 2023. /[sdgs.un.org/goals](https://sdgs.un.org/goals).

<sup>18</sup> Carley, S., & Konisky, D. M. (2020). The justice and equity implications of the clean energy transition. Nature Energy (760 citations). Rizos, V., Behrens, A., van der Gaast, W., Hofman, E., Ioannou, A., Kafyeke, T., Flamos, A., Rinaldi, R., Papadelis, S., Hirschnitz-Garbers, M., & Topi, C. (2016). Implementation of Circular Economy Business Models by Small and Medium-Sized Enterprises (SMEs): Barriers and Enablers. Sustainability (647 citations). Zhang, D. Y., Mohsin, M., Rasheed, A. K., Chang, Y., & Taghizadeh-Hesary, F. (2021). Public spending and green economic growth in the BRI region: Mediating role of green finance. Energy Policy (540 citations) region: Mediating role of green finance. Energy Policy (540 cit.).

<sup>19</sup> The number of citations is commonly used in bibliometric analyses as an indicator of research impact. Although it is not exempt from criticism (see the DORA Agreement, ratified in San Francisco in 2012), it remains a widely adopted measure reflecting the interest and recognition of the scientific community toward a published study.

<sup>20</sup> Obtained from the Research Categories assigned to the journal by Web of Science.

