

Bibliometric Network Densification Patterns for Three Renewable Energy Technologies

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with thanks to G. Joanny, O. Eulaerts, N. Taylor

European Commission, Joint Research Centre

The European Commission's science and knowledge service

*supporting European Union policies with
independent evidence
throughout the whole policy cycle*

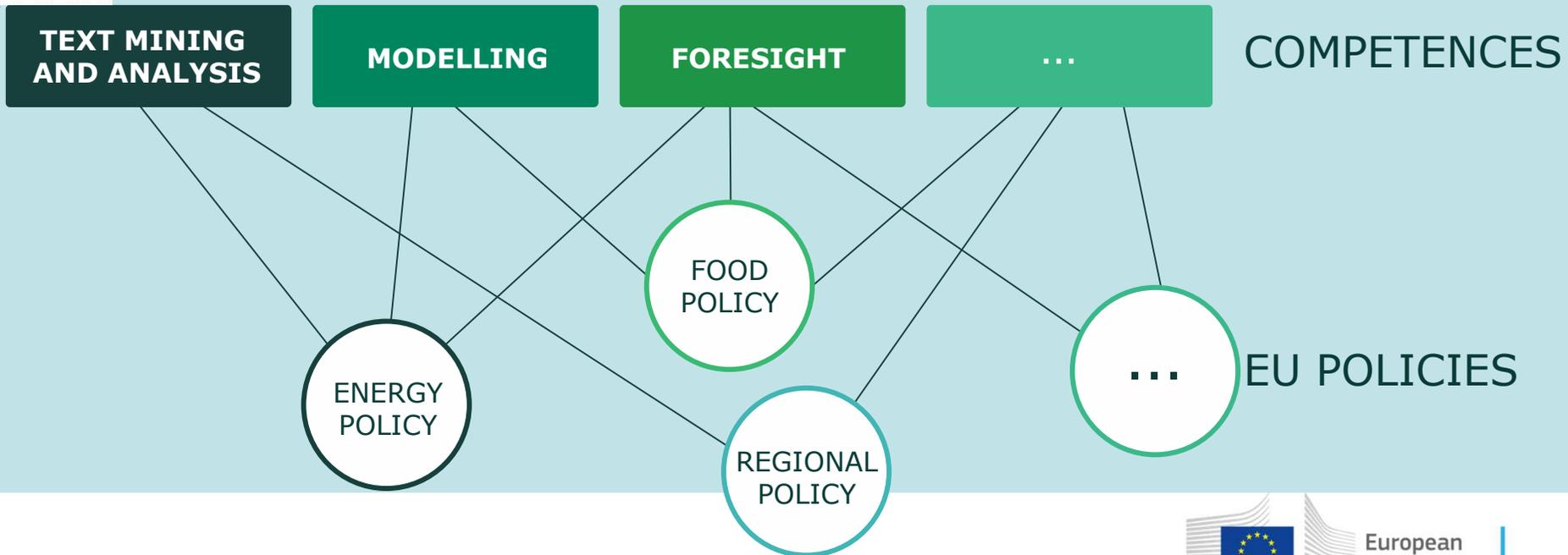
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JRC Competence Centres

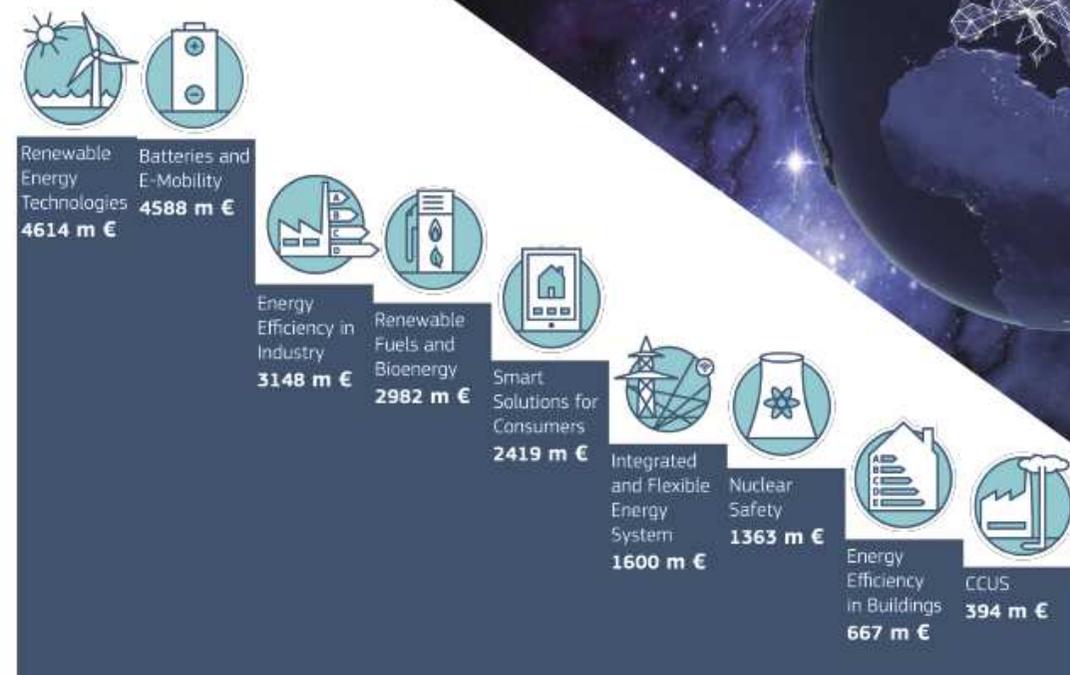


<http://timanalytics.eu/>



Knowledge management for the EU Energy Union

Energy Union



JRC coordinates 'SETIS', an Information System

for strategic planning and priority setting
in Strategic Energy Technologies:

- Implementation progress
- Global technology and market developments
- Dissemination portal

<https://setis.ec.europa.eu>

Aim and approach of this work

Aim

- explore/illustrate use of densification (network theory metric) to shed light into technology evolution

Approach

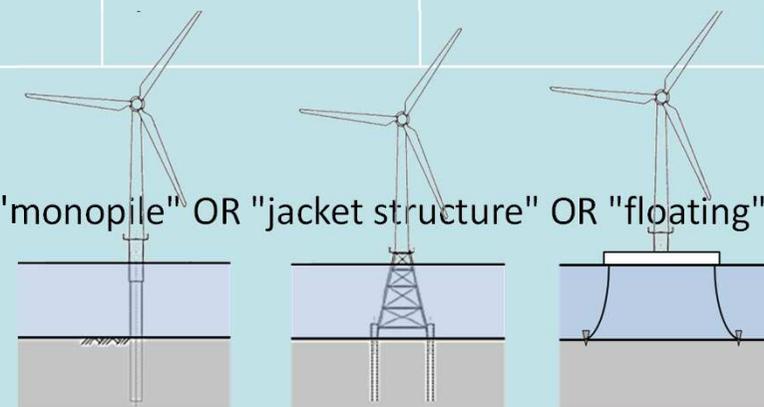
- use JRC Tools for Innovation monitoring (TIM) software
- bibliometric & network analysis on Scopus publications

Scope: three renewable energy technologies

Technology	Search field	Period (publications retrieved)	Authorship counts	Entity counts
Wind energy	Offshore support structures	2002-2015	1730	620
Wind energy	Blades	1996-2015	8510	2430
Solar PV cells	Perovskites	1999-2015	3380	1350
Solar PV cells	Dye sensitised (DSSC)	2001-2015	10850	2770
Geothermal energy	Enhanced Geothermal Systems	1996-2015	1090	540



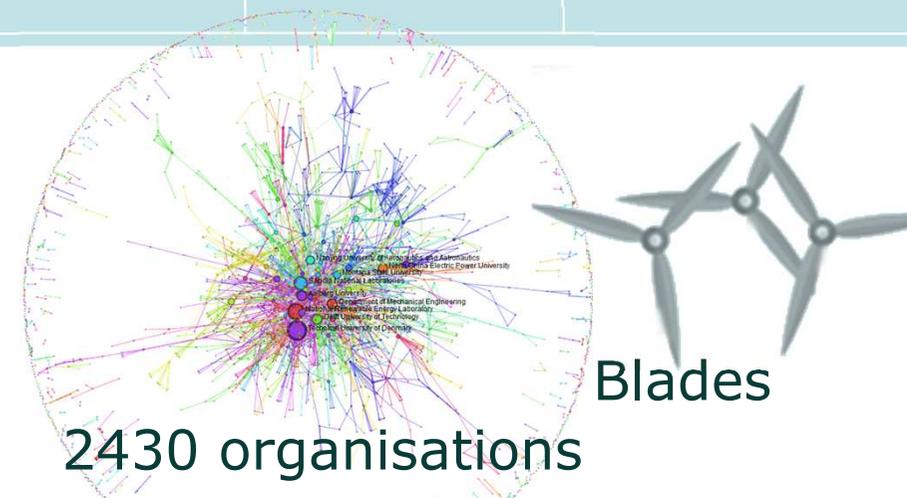
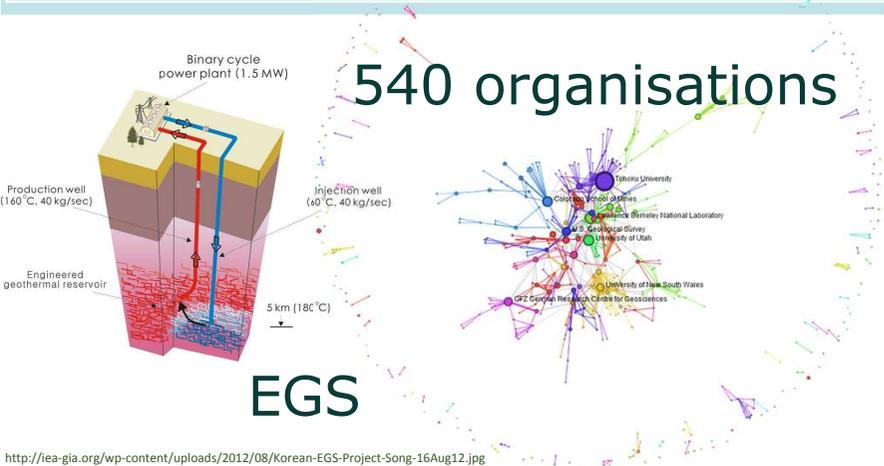
Search string example: ti_abs_key: (("support structure" OR "monopile" OR "jacket structure" OR "floating" OR ... OR ...) AND "offshore wind")

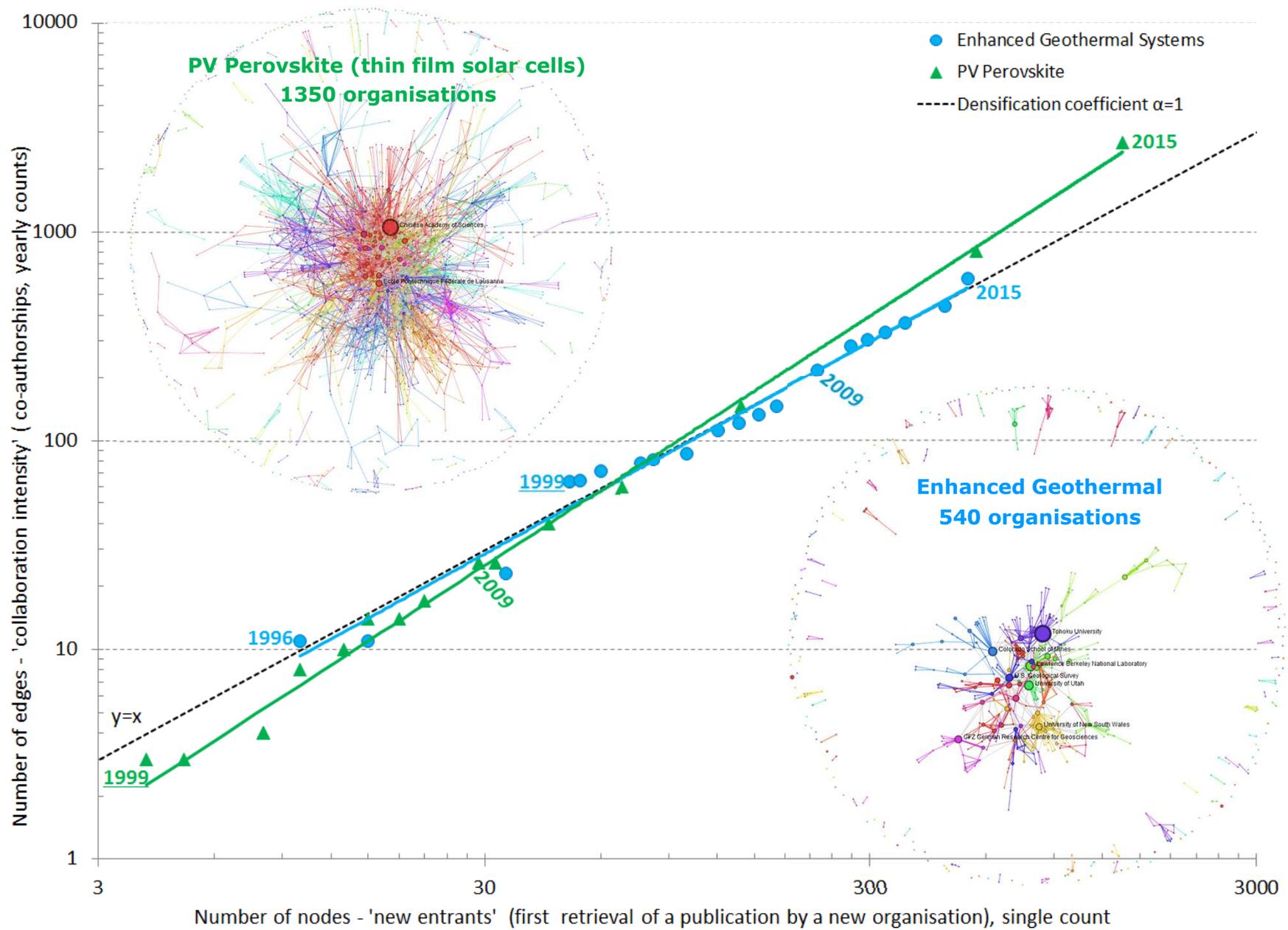


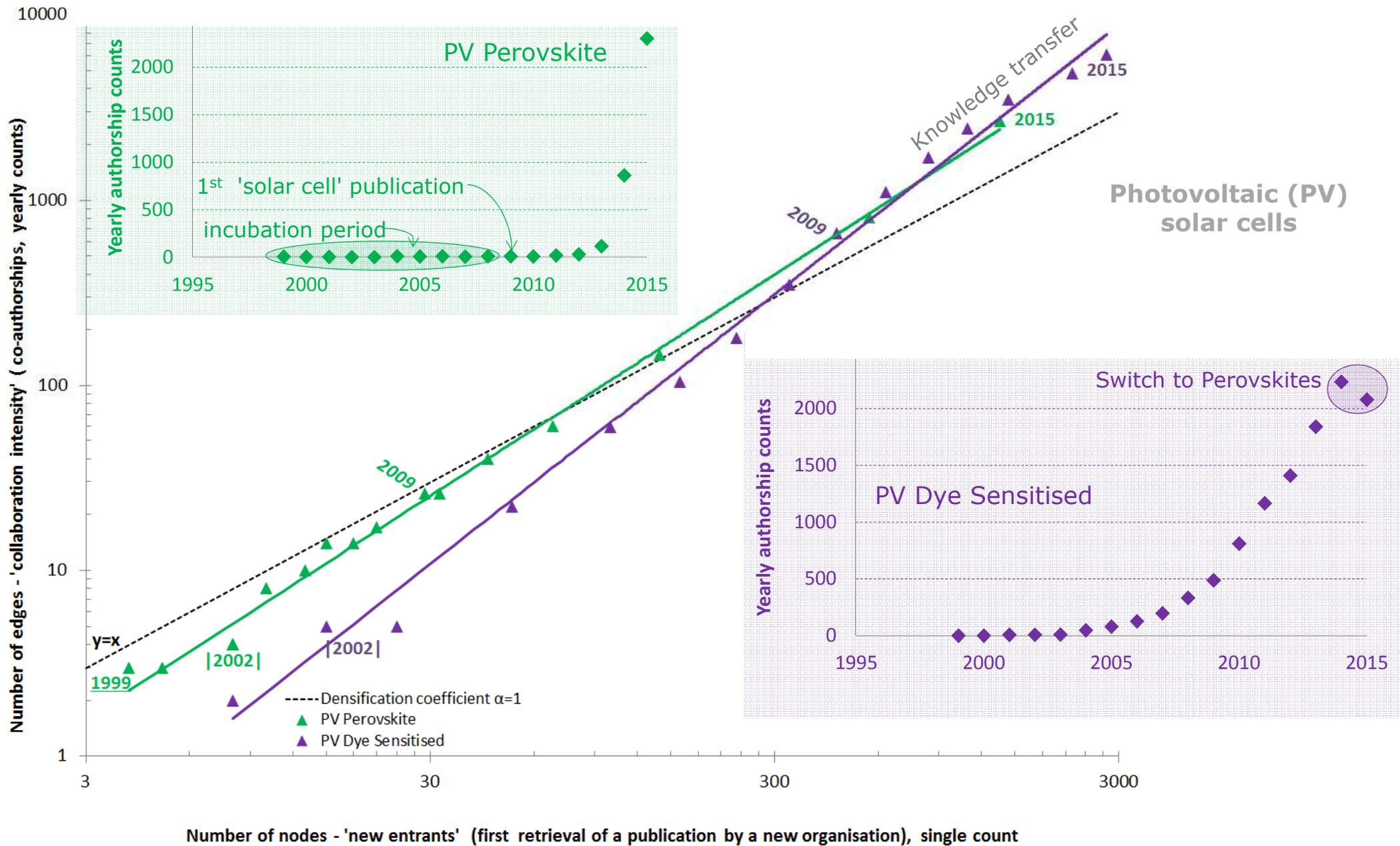
Search string example: ti_abs_key: ("enhanced geothermal system" OR "hot dry rock")

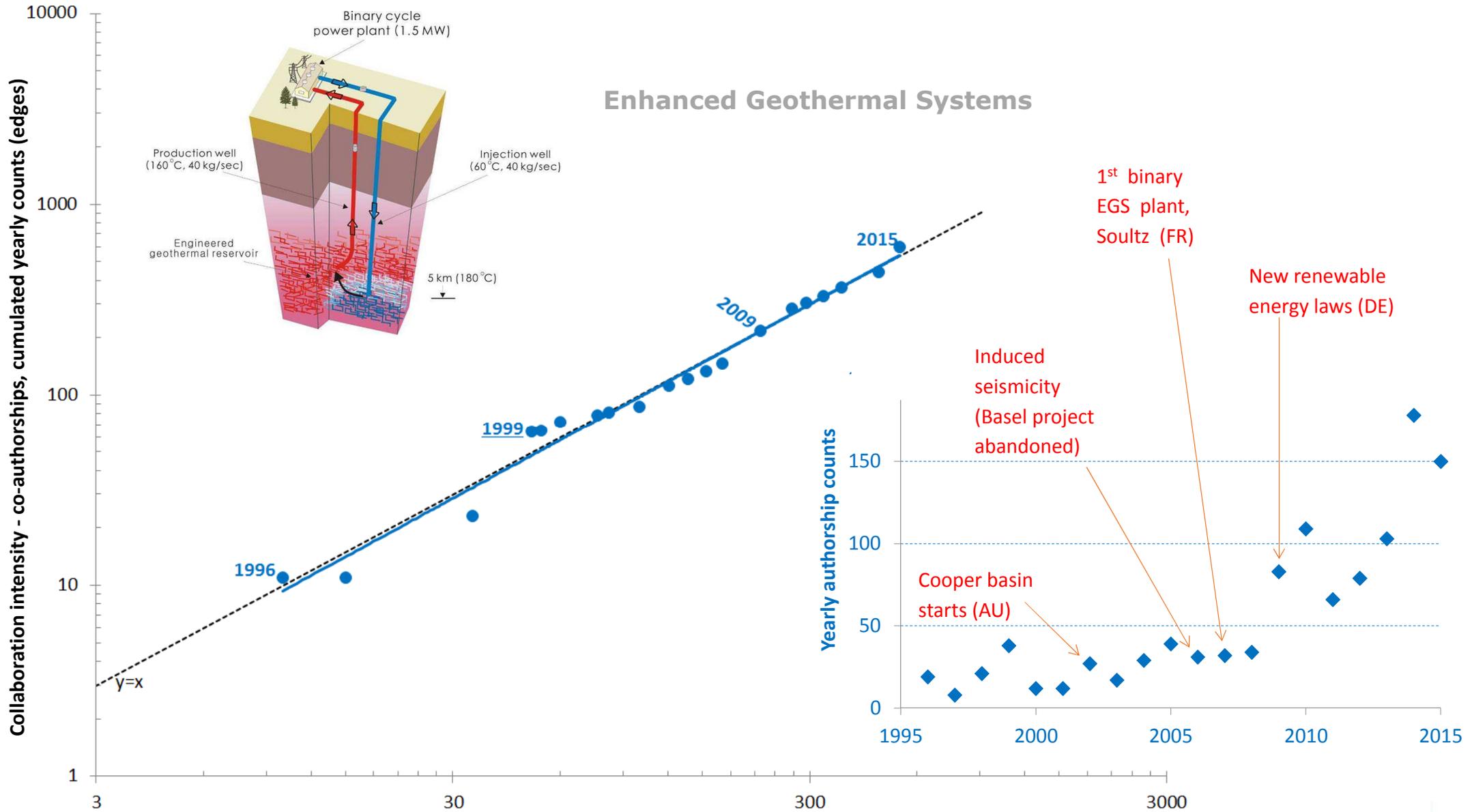
Publication patterns for two technologies

Technology	Search field	Period (all searches: 1996-2015)	Authorship counts	Entity counts
Wind energy	Offshore support structures	2002-2015	1730	620
Wind energy	Blades	1996-2015	8510	2430
Solar PV cells	Perovskites	1999-2015	3380	1160
Solar PV cells	Dye sensitised (DSSC)	2001-2015	10850	2770
Geothermal energy	Enhanced Geothermal Systems	1996-2015	1090	540









New entrants - 1st retrieval of a publication by a new organisation, cumulated yearly counts (nodes)

Final remarks – analysis

- JRC is developing TIM and building institutional capacity in applications of text mining and network analysis for policy support
- Our network theory & bibliometric analysis results provided potentially relevant metrics for gauging technological development stages

Final remarks – results

- Densification patterns for three renewable energy technologies in line with their developmental stages
- Technology granularity levels and approach potentially applicable to wider ranges of upcoming renewable energy technologies

Thank you



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