



EU-EASTERN PARTNERSHIP STI COOPERATION IN ADDRESSING ENERGY

**Research and Innovation** 

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> Results of the co-publication analysis between EaP Countries and EU Countries with an emphasis on "Energy"

Presented by: Hanna Scheck ZSI-Centre for Social Innovation, Austria

ZENTRUM FÜR SOZIALE INNOVATION



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# Goals of the study

The study has the following goals:

- Provide a picture and an analysis of the state-of-the-art and recent trends in EU/AC-EaP research collaboration
- Provide input, via the IncoNet EaP project, to the political dialogue, joint agenda setting and Horizon 2020 related activities
- Focus specifically on a number of topics considered relevant for both EaP and Europe: Climate Change, Energy and Health. What collaboration is going on in this fields?
- Make the ongoing collaboration visible
- → The study is an extended mapping exercise and as such applied social scientific /scientometric research;

## Data sources

- Sources: data retrieved from *Elsevier's Scopus* database and Thomson-Reuters *Web of Science (WoS)* database in May 2014
  - Data from 2003 to 2013
  - with at least one author affiliated with an institution in a EaP country
  - Focus on Climate Change, **Energy** and Health

# Glossary

**Co-Publications** - international scientific copublications, indexed in Scopus/WoS database, with the participation of at least two institutions/ organisations in at least two different countries of which one has to be an EaP country. We chose to apply full counting. Each publication involving country x and country y is counted as exactly one copublication between these countries (neither more not less), regardless of the number of authors involved (in case there are 3 authors in country x and 2 in country y, the record is still only counted as 1 co-publication between these countries).

## **Basic figures – research output (pub)**

 All EaP publications from 2003 – 2013 (indexed journal publications including journal papers, proceedings, book series, etc.): 139,279

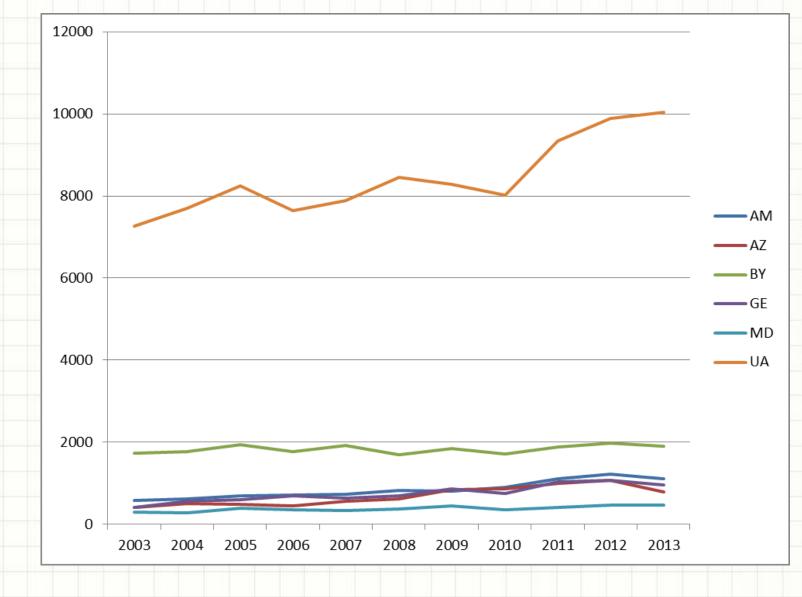
	Scientific publications 2003 - 2013	Scientific publications per million population 2003 - 2013		
AM	9,330	3,094		
AZ	7,59	7 802		
BY	20,163	2,132		
GE	8,25	7 2,214		
MD	4,154	1,317		
UA	92,763	3 2,165		

(sum is 142,262; i.e. in some publications EaP Cs were multiple represented)

- All EaP publications listed in Scopus 2003 2013: 119,601
- All EaP publications listed in WoS 2003 2013: 95,027

\*EU/AC are the following countries (according to http://erawatch.jrc.ec.europa.eu/ EU Member States and countries associated to the 7th European Framework Programme for Research): Albania, Austria, Belgium, Bosnia, Bulgaria, Croatia, Czech Republic, Cyprus, Denmark, Estonia, Faroe Islands, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Moldova, Montenegro, Netherlands, Norway, Portugal, Poland, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom

## EaP publication output 2003 - 2013



# Share of international co-authored papers from EaP

Co-authorship shares in 2012:

- AM: 55%
- AZ: 38%
- BY: 51%
- GE: 55%
- MD: 54%
- UA: 34%

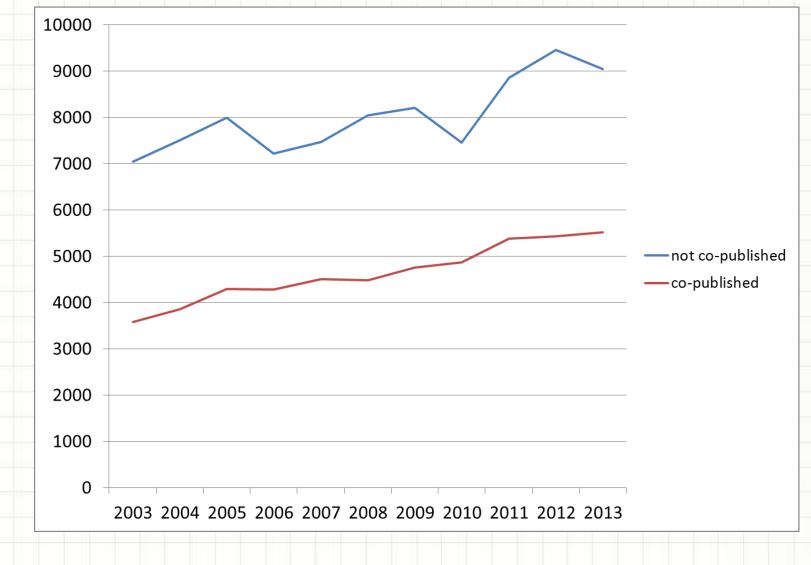
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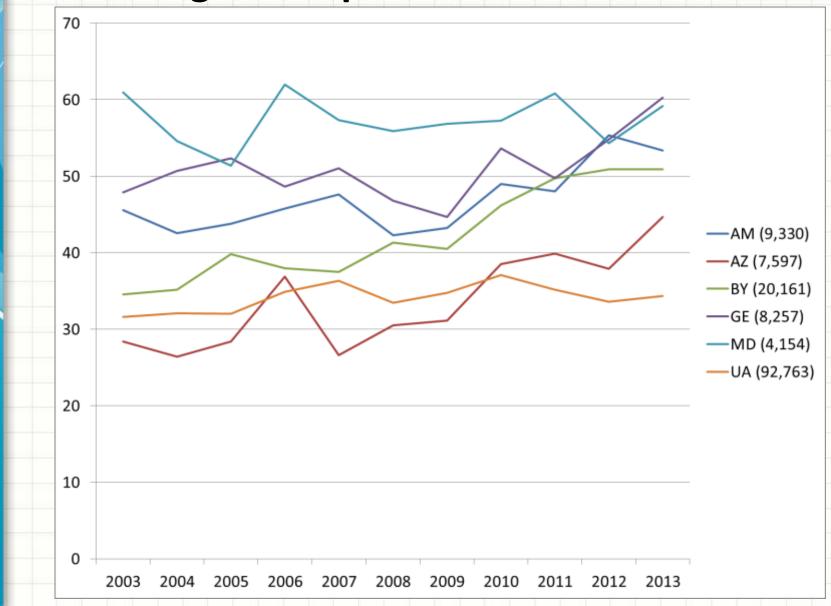
For means of comparison, the international co-authorship shares in 2012 in other countries:

- France: 49%
  - UK: 47%
- Germany: 46%
  - US: 31%
- Russia: 30%
- Korea: 27%
  - India: 16%
  - China: 15%

# Development of (co-)publications from EaP



## **Percentage of co-publications**

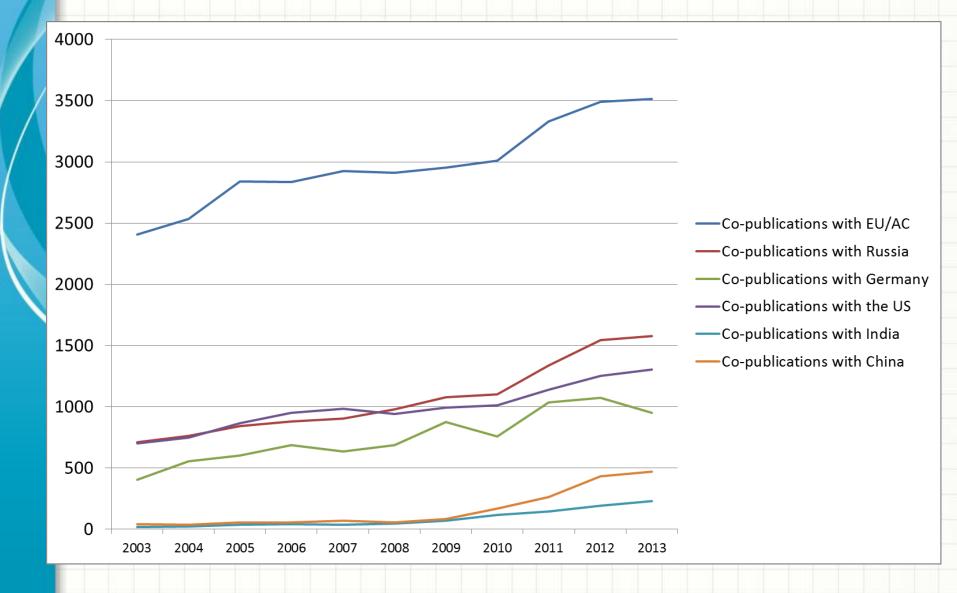


# Most important co-publication countries for EaP 2003 - 2013

AM		AZ		ВҮ		GE		MD		UA	
US	1900	TR	1205	RU	3324	US	1818	DE	481	DE	6848
DE	1701	RU	684	DE	2266	DE	1285	US	481	RU	6717
RU	1607	US	587	PL	1569	RU	1147	RU	407	US	6679
FR	1489	DE	475	US	1470	IT	980	RO	292	PL	4889
IT	1417	GB	424	FR	1198	GB	949	FR	229	FR	3787
GB	1275	FR	368	GB	1178	FR	861	PL	219	GB	3179
PL	1071	IT	353	IT	1069	СН	821	ES	208	IT	2383
СН	1036	JP	352	ES	861	ES	820	IT	201	ES	1933
CZ	893	CA	333	РТ	838	PL	803	UA	165	JP	1450
ES	852	СН	329	СН	805	AT	706	BE	94	СН	1357
GR	821	PT	323	UA	774	TR	697	GB	94	CZ	1238
CN	785	ES	320	CN	757	GR	690	СН	91	KR	1206
BR	771	AM	319	AT	715	CN	682	IL	75	AT	1178
AT	730	BY	318	CZ	715	РТ	657	NL	74	SE	1128
RS	728	PL	315	BR	710	BR	644	FI	70	NL	1123

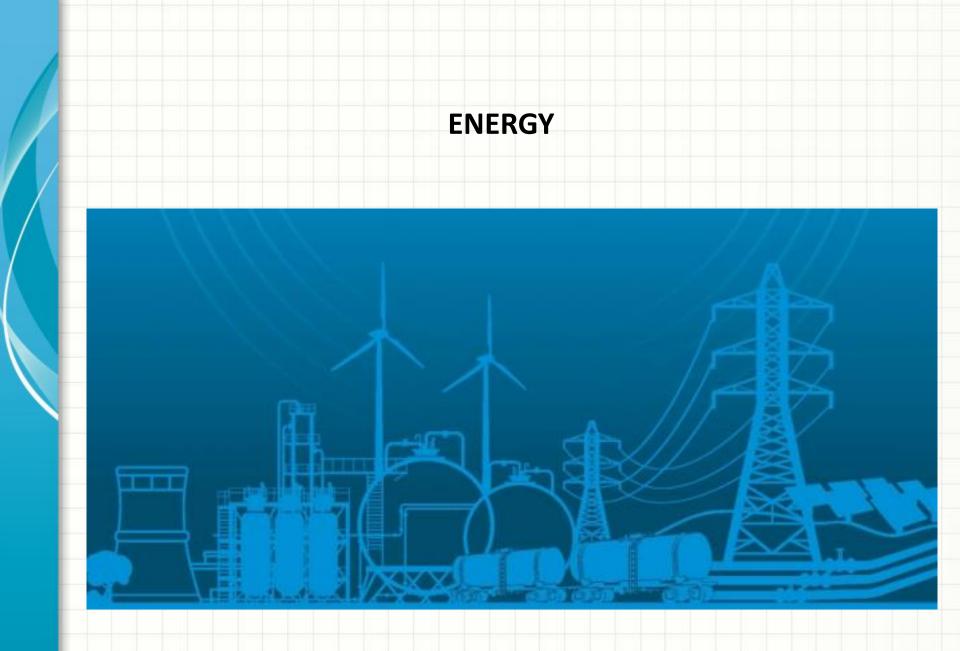
Strongest co-publication countries for all EaP countries: RU, DE, US, PL, FR, GB and IT

## **Development of co-publication output with selected countries**



# **Co-publications between the EaPcountries 2003 - 2013**

	AM	AZ	BY	GE	MD	UA
AM	9330		_			
AZ	319	7597				
BY	632	318	20161		_	
GE	641	309	605	8257		_
MD	13	2	34	17	4154	
UA	446	74	774	428	165	92763
	AZ BY GE MD	AM9330AZ319BY632GE641MD13	AM9330AZ3197597BY632318GE641309MD132	AM9330AZ3197597BY63231820161GE641309605MD13234	AM9330AZ3197597BY63231820161GE6413096058257MD1323417	AM9330AZ3197597BY63231820161GE6413096058257MD13234174154



# Definition of "Energy" in this study

### <u>SM Domain</u>

- Applied
  Sciences
- Arts &
  Humanities
- Economic & Social Sciences
- General
- Health Sciences
- Natural
- Sciences

### <u>SM Field</u>

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- Agriculture, Fisheries & Forestry
- Built Environment & Design
- Enabling & Strategic Technologies
  - Engineering Information & Communication
  - Technologies

## <u>SM Sub-Field</u>

- Bioinformatics
- Biotechnology

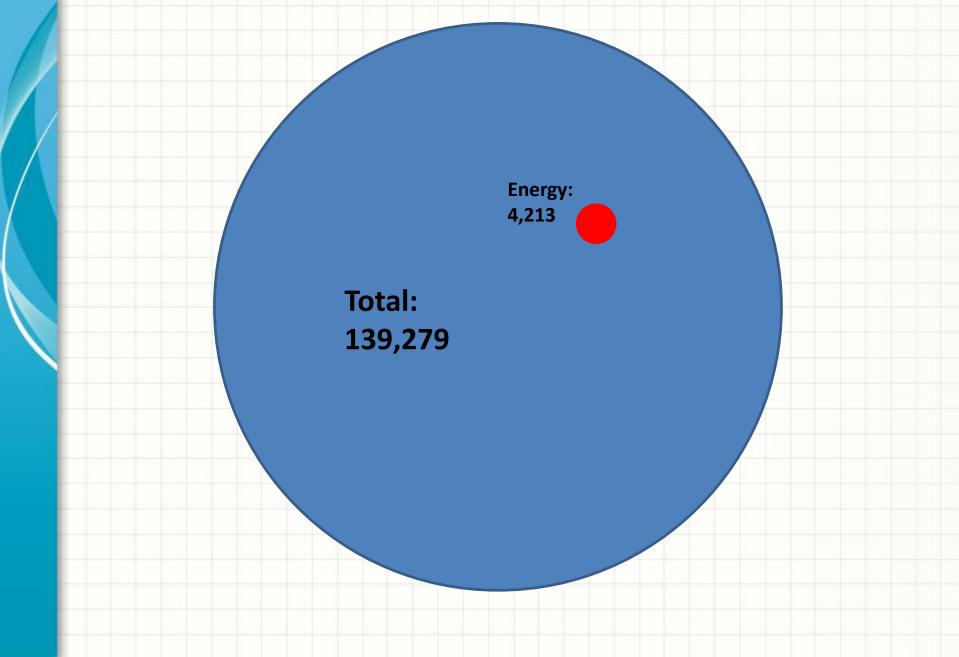
## Energy

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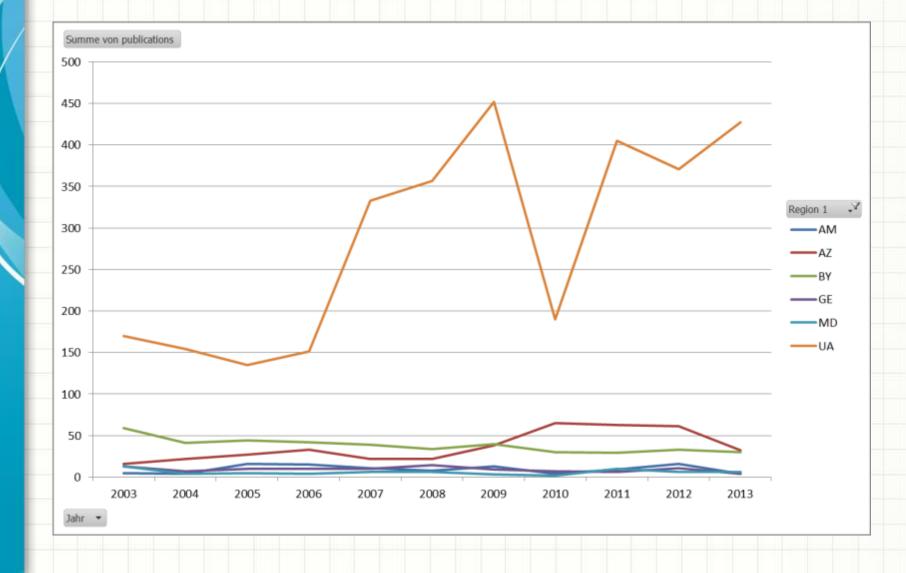
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- Materials
- Nanoscience & Nanotechnology
- Optoelectronics & Photonics
- Strategic, Defence & Security Studies

## Publications from EaP between 2003 and 2013



# EaP countries involved in publications dealing with energy (2003 – 2013)

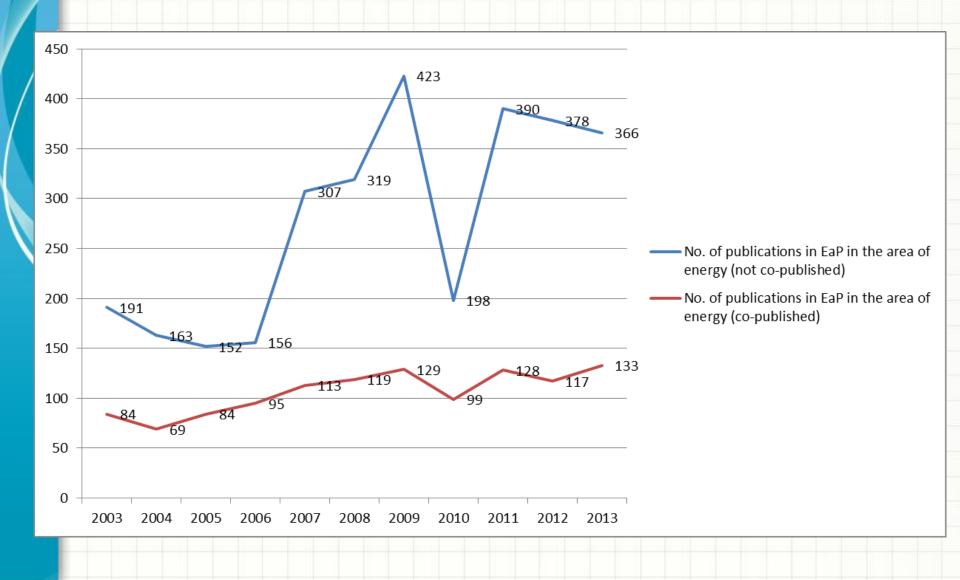


## Most used author key-words in EaP-publications

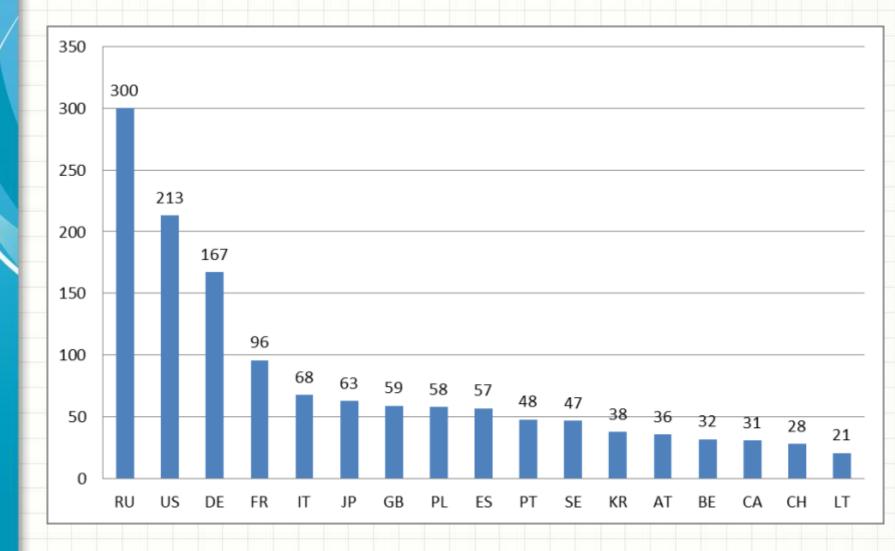
## related to energy



## No. of (co)-publication in energy over time



# Most important co-publication partners in energy 2003 - 2013



### Most publishing institutions from EaP-countries in energy 2003 - 2013

#### Ukraine

National Academy of Sciences in Ukraine(584) National Science Center Kharkov Institute of Physics and Technology(476) Kharkiv National University(180) National Technical University of Ukraine, Kiev Polytechnic Institute(139) Institute of Plasma Physics, Kharkov(135)

#### Azerbaijan

Azerbaijan National Academy of Sciences(155) Oil Gas Scientific Research Project Institute(59) Azerbaijan State Oil Academy(23) Baku State University(15) State Oil Company of Azerbaijan Republic(5)

#### Belarus

National Academy of Sciences of Belarus(153) Belarusian State University(51) Belarusian State Technological University(26) Argonne National Laboratory(21) B. I. Stepanov Institute of Physics(20)

#### Georgia

Georgian Academy of Sciences(20) Georgian Technical University(15) Ivane Javakhishvili Tbilisi State University(11) Joint Institute for Nuclear Research, Dubna(7) Scientific-Research Institute of Automatic Systems 'Skhivi'(4)

#### Armenia

Yerevan State University(34) National Academy of Sciences of the Republic of Armenia(17) Yerevan Physics Institute(9) NP ZAO Arev(6) State Engineering University of Armenia(4)

#### Moldova

Academy of Sciences of Moldava(31) Technical University of Moldova(11) State University of Moldova(6) State Agrarian University of Moldova(5)

## Conclusions

- Publication output is in all EaP countries stable or slightly increasing, only UA shows a stronger growth.
- Very low level of regional co-publications.
- Percentage of co-publications of AM, AZ, BY and GE is increasing, while it is declining in UA.
- Most important co-publication partners are: RU, DE, US and PL. China and India are getting more important. Turkey especially important partner for AZ.

# Conclusions

- Co-publications with the EU/AC countries have a high growth
  - EU-EaP cooperation is an important driver of EaP
  - internationalisation in R&D
- Strong decrease of publications in energy in Ukraine 2010.
- Clear trend vs. internationalisation of energy publications.
- The topics Hydrogen, Coal/Coke and Nuclear Energy are in the focus of energy-publications with EaP.
- RU, US, DE, FR, IT, JP and GB are the most important co-publication partners in energy for EaP-countries.
- Institutions with highest output in energy are the Academies of Sciences.

**Study authors:** Philipp Brugner Katharina Büsel Hanna Scheck Johannes Simon Ivan Zupan

with contributions from Alexander Degelsegger Dietmar Lampert Klaus Schuch Isabella Wagner

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