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“Wissenschaft weltoffen 2020”

Since 2001, the DAAD has been analysing data on the internationalisation of studies, research and higher education from Germany as well as from particularly relevant countries and regions such as the USA, the United Kingdom or Asia.

These include figures on international students in Germany, data on mobility behaviour, an overview of students' countries of origin and host countries as well as developments in the field of doctorates. A special data analysis sheds light on the status quo and trends at universities and research institutes during the Covid-19 pandemic.

The study integrates international data from OECD and UNESCO as well as national data from the Federal Statistical Office in Germany. In combination with other indicators, it provides a valid basis for long-term analyses.

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The European Union’s “Horizon 2020” Research Framework Programme (RFP) is proving to be an important instrument for promoting the internationalisation and international mobility of science and research in the participating countries. In addition to academic excellence, a prerequisite for projects within this RFP is usually the initiation of an international consortium of cooperating institutions. These consortia, which may include companies in addition to universities and non-university research institutes, must each include three independent institutions from three different EU member states or associated states.<sup>1</sup> The implementation of an EU research project therefore requires substantial cooperation with institutions in other countries and is therefore a further indicator of the networking of the participating academics and researchers.

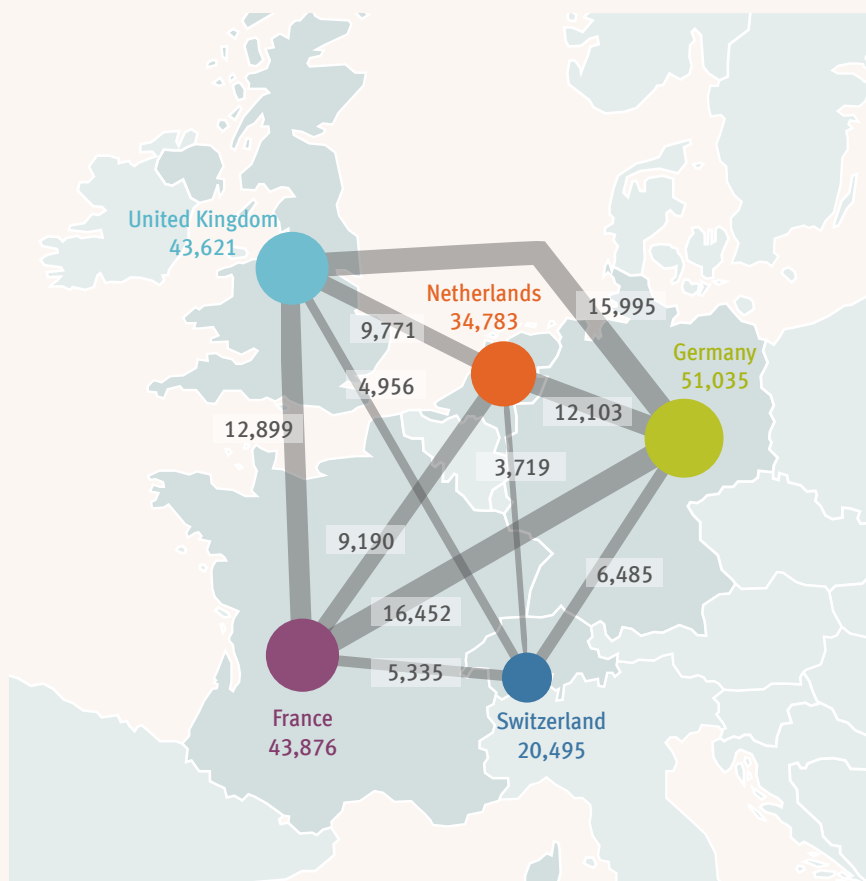
“To date, there are almost 200,000 bilateral cooperation links between Germany, France, the United Kingdom, the Netherlands and Switzerland under Horizon 2020.

However, this potential for internationalisation did not exist in the EU’s RFPs from the outset, and the programmes have changed over time with the development of the research systems and their funding, but also with the process of European integration as a whole.<sup>2</sup> In addition to the changes in the content orientation of the RFPs, their funding volume has also grown continuously since the first programme. While the funding volume of the first period still amounted to 3.3 billion euros, it already amounted to 56 billion euros in RFP7 and rose again to 80 billion euros for Horizon 2020.

The internationalisation effects for Horizon 2020 (H2020) result from the networking between academics and researchers. For their analysis, the cooperation or, more precisely, the cooperation links of a country within the framework of European research funding

can be used. A cooperation link is a link between two participating institutions from different countries within an EU-funded research project. The more institutions and countries are involved in such research projects, the more cooperation links are created. For example, if an EU-funded project consists of one French and four German institutions, the project will result in four cooperation links between the two countries. The same applies to a project involving two institutions in both countries. In order to be able to assess how balanced the academic networking of two countries

AS1.1 Cooperation between selected countries in the EU Research Framework Programme Horizon 2020 (2014–2020)<sup>4</sup>



Source: EU office of the Federal Ministry of Education and Research; calculations from EU ECORDA database of ERC funding (as of 01/03/2020)

### \* Footnotes

- 1 The following countries are currently associated with Horizon 2020: Albania, Armenia, Bosnia and Herzegovina, Faroe Islands, Georgia, Iceland, Israel, Macedonia (FYR), Moldova, Montenegro, Norway, Switzerland, Serbia, Turkey, Tunisia and Ukraine.
- 2 Cf David/Gaul (2009).
- 3 The countries with the strongest research performance are the countries with the highest citation impact, cf for example Wissenschaft weltoffen 2016, p. 161, Fig. F81. These are also the five countries with the most ERC funding (cf p. 22/23 in Chapter A2).
- 4 A cooperation link is the connection between two participating institutions from different countries within an EU-funded research project.

AS1.2 Bilateral networks and project participation of major European countries within the EU Research Framework Programme Horizon 2020 (2014–2020)

Country 1	Participants in country 1		Participants in country 2		Country 2
	Number	(%)	Number	(%)	
Germany	8,242	50	8,210	50	France
Germany	8,487	53	7,508	47	United Kingdom
France	6,878	53	6,021	47	United Kingdom
Germany	6,810	56	5,293	44	Netherlands
United Kingdom	5,210	53	4,561	47	Netherlands
France	5,136	56	4,054	44	Netherlands
Germany	4,259	66	2,226	34	Switzerland
France	3,527	66	1,808	34	Switzerland
United Kingdom	3,097	62	1,859	38	Switzerland
Netherlands	2,200	59	1,519	41	Switzerland

Source: EU office of the Federal Ministry of Education and Research; calculations from EU ECORDA database of ERC funding (as of 01/03/2020)

is within the framework of the cooperation projects considered here, it is therefore also necessary to consider the number of institutions involved in both countries.

In the following, the networking between the five European countries with the strongest research performance – Germany, France, the United Kingdom, the Netherlands and Switzerland – that has been achieved within the framework of the previous H2020 funding will be examined as an example.<sup>3</sup> This section alone demonstrates the strong impetus that RFP Horizon 2020 is giving to the internationalisation of research in Europe. For example, the number of cooperation links between any one country and the four other countries currently (as of 1 March 2020) ranges from around 20,000 for Switzerland to around 51,000 for Germany. So far, a total of almost 200,000 cooperation links have been established

between the five countries. A look at the bilateral networking between the countries reveals that most links are between Germany and France (16,500) and Germany and the United Kingdom (16,000). There are also well over 10,000 cooperation links between the United Kingdom and France (13,000), and Germany and the Netherlands (12,000).

The balance of these bilateral cooperation links depends in particular on the number of research institutes in the two countries involved. Switzerland, for example, represents a significantly smaller proportion of the participating institutions, especially in the case of collaborations involving institutions in Germany, France or the United Kingdom. In comparison, the project participations in research collaborations between France, the United Kingdom and Germany are relatively balanced.