



Enhancing the bilateral S&T Partnership with Ukraine

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Abstract	<p>This report analyses benefits and barriers of RTD cooperation between researchers from the European Union (EU) and from Ukraine. The specific objectives of this analysis are, firstly, to identify and assess barriers impeding the RTD cooperation within multilateral programmes at the levels of</p> <ul style="list-style-type: none"> - personal and administrative factors - institutional and systemic factors and - under the practical implementation of collaborative RTD projects. <p>Secondly, the study identifies and assesses the benefits and effects of RTD cooperation between the EU and</p>
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Ukraine.

The study reveals that many of the barriers and problems as well as benefits and effects of RTD cooperation are differently perceived, depending whether the respondent was a researcher from Ukraine or from the EU. Thus, solutions to overcome the problems have to be contextualised and approached on different intervention levels by different stakeholders. Ostensible differences in terms of benefits and barriers can also be detected at the level of the RTD programmes which funded the collaborative projects. The recommendations at the end of this study propose measures to overcome the identified weaknesses, which prevent an even better impact of RTD cooperation between the EU and Ukraine.

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1. Introduction

This report analyses benefits and barriers associated with collaborative projects carried out between researchers from the European Union (EU) and from Ukraine. It provides analytical support to S&T policy makers from the EU and Ukraine, especially those engaged in the setting up of bi-lateral working groups. The recommendations at the end of this study give orientation and propose measures to enhance the future of cooperation between the RTD communities under scrutiny.

The specific objectives of this analysis are, firstly, to identify and assess barriers impeding the RTD cooperation in multilateral programmes between EU and Ukraine at the levels of

- personal and administrative factors
- institutional and systemic factors and
- under the practical implementation of collaborative RTD projects.

Secondly, the study identifies and assesses the benefits and effects of RTD cooperation between the EU and Ukraine.

For our working hypothesis, we focused on two independent variables, which we considered of having paramount influence on the extent and shape of barriers, problems, benefits and effects:

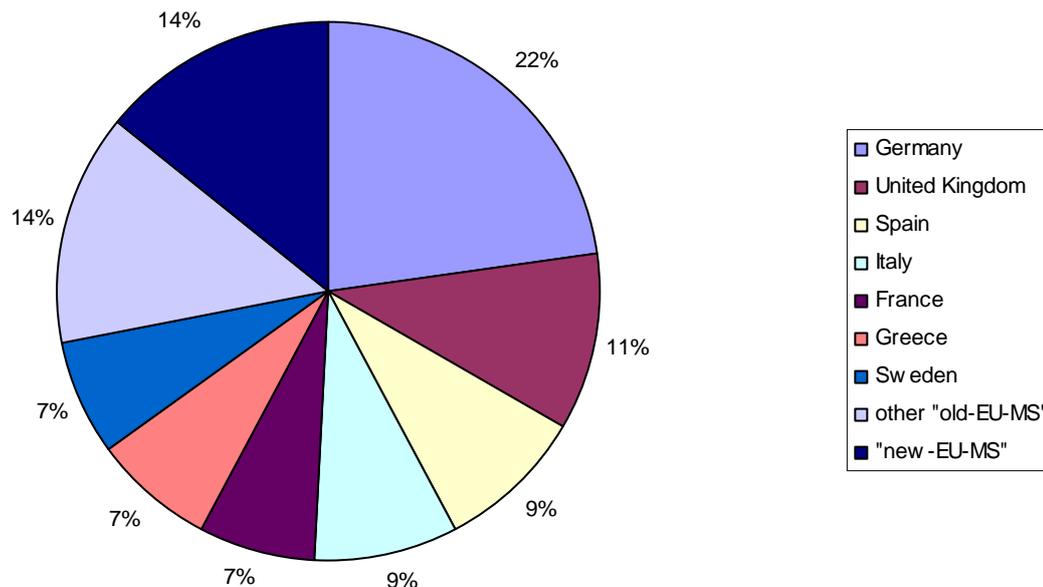
- 1) origin of respondents
- 2) specific RTD funding programme.

The first independent variable distinguishes whether the respondents are from the EU or Ukraine. It is assumed that the specific national S&T environment of the researchers has a strong influence on the specific efficacy and perception of barriers, problems, benefits and effects of international RTD cooperation. In order to approach a large enough number of researchers from both the EU and Ukraine, the BILAT-UKR project (grant number 222712) collected a large sample of collaborative RTD projects in a database (BILAT-UKR Deliverable 2.2.). In total 927 researchers from the EU and Ukraine who have been involved in collaborative RTD projects between the EU and Ukraine have been contacted by ZSI with an online questionnaire, out of which 113 persons responded (see Tab. 1). This represents a response rate of 12.2%.

Around 50% replies came from researchers from Ukraine and 50% from EU researchers. Fig. 1 shows the distribution among the respondents from the EU. 86% of the responding

researchers from the EU belong to the “old-EU-Member States”¹. The rest comprises researchers from the “new-EU-MS”². 42% of the respondents were project coordinators, while most of the rest can be equally divided in lead partners (with work package lead) and regular project partners. Only 3% of the respondents felt rather marginally involved or were subcontractors. Due to the above average involvement of the respondents in the EU-UA projects, the substance of their answers can be considered as robust.

Fig. 1: Distribution of responding researchers from EU-Member States



The second independent variable distinguishes between the multilateral programmes under which the RTD collaboration took place. We analysed projects under the following European respectively international RTD programmes: 6th and 7th European Framework Programme for Research and Technological Development (FP6 resp. FP7), INTAS, NATO Science for Peace (SfP), COST and STCU (Science and Technology Centre in Ukraine) (see Tab. 1). The assumption behind this differentiation is that specific programmes generate specific effects on the way how RTD collaboration is organised. Specifically, we assume that some problematic issues are programmatically embedded in the RTD programmes themselves.

Although the responses are in general well distributed across the investigated programmes, they are not meant to be representative. There is especially a shortage of responses from FP6 projects. In order to create more comparable sizes for the independent variable ‘programmes’, some of the programmes were pooled into larger entities (see Tab. 1):

¹ „old-EU-MS“ is defined as sum of European Union Member States who joined the EU in the last century.

² Responses were received from Bulgaria (2), Czech Republic (1), Hungary (1), Lithuania (1), Poland (1) and Slovakia (2).

participants in FP6 and FP7 projects were taken together into the category FP (European Framework Programme for RTD); and participants in NATO Science for Peace projects, STCU projects and COST actions were pooled in the category 'other' programmes. INTAS remained as a category due to the high enough number of respondents.

Tab. 1: Distribution of respondents across programmes

Programme	Number of projects contacted	Number of persons contacted	Number of responding persons	Responses in %
FP7	34	78	14	18.0
FP6	111	222	14	6.3
INTAS	114	228	39	17.1
NATO SfP	17	46	7	15.2
COST	14	30	6	20.0
STCU	136	323	33	10.2
<i>TOTAL</i>	<i>426</i>	<i>927</i>	<i>113</i>	<i>12.2</i>
FP	145	300	28	9.3
INTAS	114	228	39	17.1
Other	167	399	46	11.5
<i>TOTAL</i>	<i>426</i>	<i>927</i>	<i>113</i>	<i>12.2</i>

2. Basic characteristics of the investigated sample

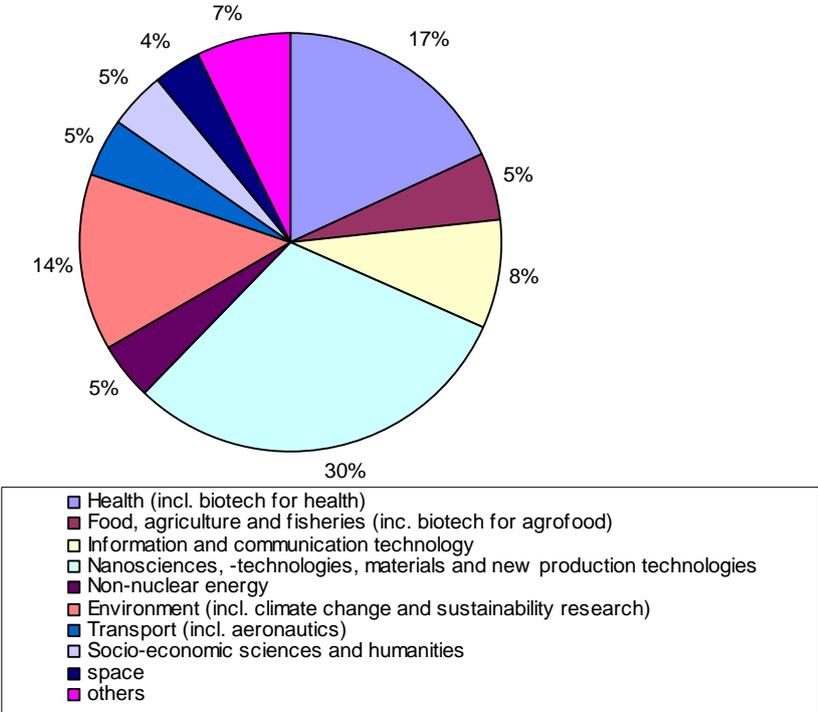
Almost 3/4 of the analysed projects are rather small in terms of available budget, which is lower than € 200k. This corresponds with the programmes which were funding the collaborations with smaller-sized INTAS projects counting the highest share (34.2%), followed by STCU projects (29%), FP6 and FP7 projects (each 12.3%), NATO SfP projects (6.1%) and COST (5.3%).

Almost 45% of the collaborating researchers both from the EU and Ukraine came from large research organisations with more than 500 employees. 38% came from research organisations between 51 and 500 employees and only 17% from small research organisations. This distribution pattern indicates that for EU-UA research cooperation obviously a critical organisational mass is of advantage. Moreover, EU-UA research cooperation seems to be based on experienced collaborators. ¾ of the respondents have 11 or more years of professional experience in international cooperation projects. One can cautiously conclude that EU-UA research cooperation is favoured by both critical organisational mass and professional experience. Beginners and researchers coming from smaller organisational backgrounds are only exceptionally found.

Our responding population was at the extent of 72% engaged in collaborative research projects. 9% were involved in coordination and support projects and 8 % in innovation and exploitation oriented projects. The small rest got involved in specific actions to promote research infrastructures, mobility oriented projects, specific projects for SMEs, and other rather marginal schemes. Thus, the collaboration experience of the majority of respondents is highly research (basic and applied) oriented and, thus, trustworthy with respect to their opinion, statements and conclusions regarding barriers and obstacles in terms of scientific cooperation between Ukraine and the EU.

Fig. 2 shows the distribution of the thematic fields of the respondents. Almost a third of the respondents subsume their research collaboration under “nanosciences, nanotechnologies, materials and new production technologies”. Many INTAS funded projects initially assigned there to the field of physics might be subsumed under this ‘nano-related’-category. Biosciences and also environmental research are well represented too. The share of ICT collaborations is surprisingly low compared to its size and scope within collaborative European research. Almost 60% of the respondents consider their research collaboration as cutting across scientific disciplines or with a trans-disciplinary outreach on RTDI policies.

Fig. 2: Thematic distribution of the analysed scientific EU-UA collaborations



The overwhelming majority of respondents is “very” (40.4%) or “quite” (50.9%) satisfied with the overall success of their joint EU-UA project. Only 4.4% consider the collaboration as

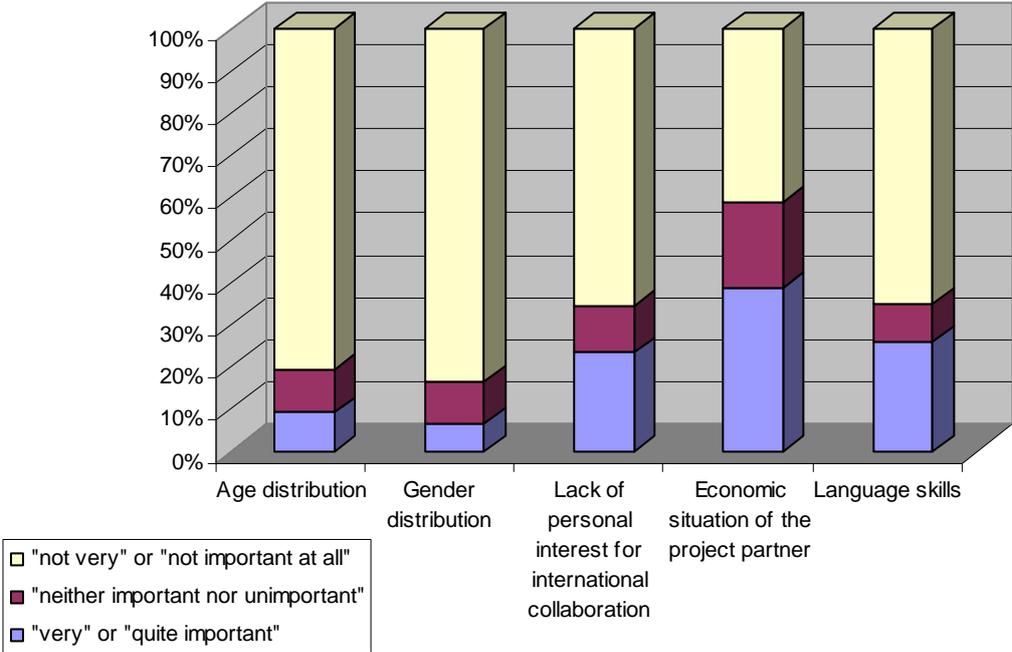
minor successful and 2.6% as not successful at all. This assessment corresponds largely to a recent study about bilateral intergovernmental scientific and technological programmes of Austria, in which also Ukraine was considered (Schuch et al. 2011). 42% of the respondents are convinced that the project would not have been possible without international collaboration. The rest replied that the project could eventually have been carried out by national means only, but 2/3 of these respondents are sure, that a national project design would never have produced the same good results. This evidences the added value of the collaborations for improving quality and excellence of research, which is an objective often used as an argument to support internationalisation of RTD (Boekholt et al. 2009; CREST 2007).

3. Barriers impeding R&D cooperation in multilateral programmes between the EU and Ukraine

3.1. Personal and administrative factors

Among the *personal* factors impeding a more smooth and fruitful scientific collaboration between researchers from EU and the Ukraine, the most influential factor seems to be the economic situation of the project partner (see Fig. 3).

Fig. 3: Personal factors impeding EU-UA collaboration



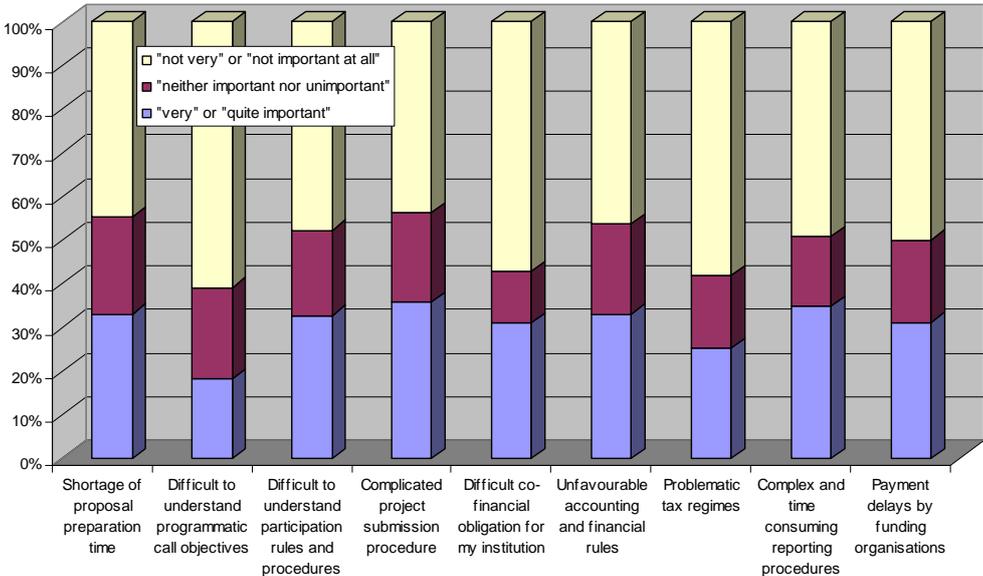
By trend EU researchers consider the economic situation of their Ukrainian partners a more influential barrier for cooperation than vice-versa. Lack of personal interest for conducting international cooperation and lacking language skills do play some role, but only for around 30% of respondents, while age and gender issues are only exceptionally problematic. There were no significant differences between the responses of EU and Ukrainian researchers (see Tab. 2).

Tab. 2: Significance of personal factors impeding project cooperation between EU and Ukraine

Variables (barriers for RTD cooperation)	valid cases	sig. (chi ² Pearson)
Age distribution	112	0.625
Gender distribution	112	0.773
Lack of personal interest	112	0.878
Economic situation of the partner	112	0.655
Language skills	112	0.418

By comparison, *administrative* barriers seem to be more prevalent at average (see Fig. 4). Basic operational issues like too complicated proposal submission procedures or shortage of time to prepare proposals plays a relative dominant rule. Also factors which are more embedded in the programmatic design of the funding programmes can become important cooperation barriers. The latter subsume administrative barriers such as unfavourable accounting and financial rules or difficulties in understanding the participation rules and procedures. Complex and time-consuming reporting procedures are also of concern for almost 50% of the respondents. Payment delays and difficulties in securing necessary co-finances were perceived as rather problematic by around 40% of the respondents.

Fig. 4: Administrative factors impeding EU-UA collaboration



Difficulties in understanding the programmatic call objectives, however, are less critical. The same holds true regarding difficulties in tax regimes. Summarizing these issues, a considerable additional effort of NCP work seems still be necessary to resolve or at least minimise the raised concerns. As shown in Tab. 3, there are no significant differences between the answers given from EU or Ukrainian researchers.

Tab. 3: Significance of administrative factors impeding project cooperation between EU and Ukraine

Variables (barriers for RTD cooperation)	valid cases	sig. (chi ² Pearson)
Shortage of proposal preparation time	112	0.090
Difficulty to understand participation rules and procedures	112	0.879
Complicated project submission procedures	112	0.088
Difficult co-financing obligations	112	0.324
Unfavourable accounting and financial rules	112	0.198
Complex and time consuming reporting procedures	112	0.318
Payment delays by funding organisations	112	0.463

Besides these administrative factors, which are at least partly embedded in the operative implementation of the programmes, the three most difficult *administrative* problems outside the programme's influence were

- financial problems (for 15% of respondents a big problem and for another 33% at least a minor problem)
- visa procurement (for 15% of respondents a big problem and for another 22% at least a minor problem) and
- custom issues (for 14% of respondents a big problem and for another 14% at least a minor problem).

Although there were no significant differences identified from the responses of EU respectively Ukrainian researchers, a closer look into data reveals that in case a visa problem emerges than it usually became a big problem especially for Ukrainians to obtain the visa permission. The majority of researchers both from Ukraine and the EU, however, did not have problems in obtaining visa.

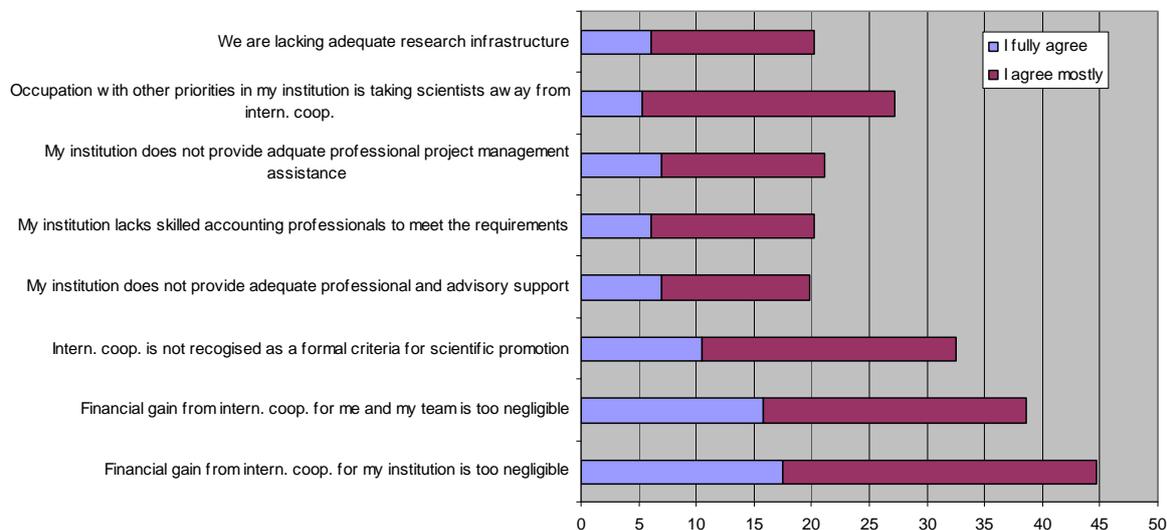
Communications problems with project partners (6.14%) and lack of information exchange were occasionally perceived as big problems (5.26%). IPR issues (3.51%) and other legal issues were seldom perceived as big problems (2,63%).

3.2. Institutional and systemic factors

Institutional barriers have some influence on the conduct of the EU-UA collaborations too. Institutional factors are defined as factors mostly induced by the inner fabric of the participating institutions. Most important are financial issues and the value of international

cooperation for internal promotion (which at the end has also a financial implication) (see Fig. 5).

Fig 5: Institutional barriers impeding EU-UA collaborations



45% of all respondents argue with the too negligible financial gain from international cooperation for their own institutions. Here, the inadequate overhead funding might aggravate the financial institutional problem, since less than 40% of the respondents consider the personal financial gains for themselves and their research teams as problematic. Slightly more than 30% perceive international cooperation as not enough recognised by their institutions as a formal criteria for the scientific promotion of individual scientists. Five to seven percent of respondents “agree fully” with the other inherent institutional barriers, of which the occupation of researchers with other than research priorities within the own institution (e.g. teaching activities), which takes away scientists from international cooperation, received most agreement (sum of “fully” and “largely” agree) (see Fig. 5).

Tab. 4: Significance of institutional factors impeding project cooperation between EU and Ukraine

Variables (barriers for RTD cooperation)	valid cases	sig. (chi ² Pearson)
No adequate institutionalised professional advisory support	112	0.079
Lack of skilled accounting professionals	112	0.006
Lack of adequate project management assistance	112	0.109
Distraction from research through teaching etc.	112	0.310
Too negligible financial gain for my institution from international cooperation	112	0.363
Too negligible financial gain for me and my team from international cooperation	112	0.010
Lack of adequate research infrastructure	112	0.000
International R&D cooperation not recognised for scientific promotion	112	0.131

The responses concerning the lack of skilled accounting professionals who are available in the own institution, and are capable to meet the requirements for international collaborative research, differ significantly between Ukraine and EU (see Tab. 4). Ukrainian researchers are distinctively more sceptical in this respect. Another unambiguous significant difference between the responses from the EU and Ukrainian researchers refers to the availability of adequate research infrastructure (see Tab. 4). While 71.9% of EU researchers do not agree with the statement, that their institution lacks adequate research infrastructure, only 29.1% of Ukrainian researchers do not agree.

By trend, the lack of institutionalised professional advisory support to international cooperation is more a problem perceived by Ukrainian researchers than by EU researchers. Ukrainian researchers perceive also a more severe institutional lack concerning adequate professional project management assistance and argue that international cooperation is not enough recognised as a formal criteria for scientific promotion of individual researchers.

Regarding the perceived negligible financial gain for the researcher and his or her team, EU researchers are by trend more critical in this respect. It seems that they do not feel to be adequately awarded for their efforts, which are most probably also more challenging compared to intra-European RTD cooperation.

The respondents informed us also about other perceived barriers impeding EU-UA RTD cooperation which are neither personal, nor red tape caused nor institutionally embedded but rather fall under *national systemic shortcomings*. In this respect, the following four statements received a majority approval of the respondents (*"I fully agree" and "I agree mostly"*). Firstly, slightly more than 70% of the respondents see a basic problem for international cooperation in terms of underinvestment in science and technology in general. There are significant differences in the response behaviour of EU and Ukrainian researchers (see Tab. 5). Ukrainian researchers are significantly more critical in this respect. 89% of Ukrainian researchers agree at least mostly with the statement, that there is a general underinvestment in S&T. The corresponding rate of EU researchers is 54.4%. Secondly, more than 2/3 of the respondents argue with a lack of financial support from governments for international cooperation (see Fig. 6). Ukrainian researchers are again significantly more critical in this respect. 90.9% share this argument, while the corresponding rate of EU researchers is half of it (45.6%).

Thirdly, 28% of all respondents are convinced that the lobbying skills of their own country towards the EU administration are too marginal. Another third of the respondents agrees

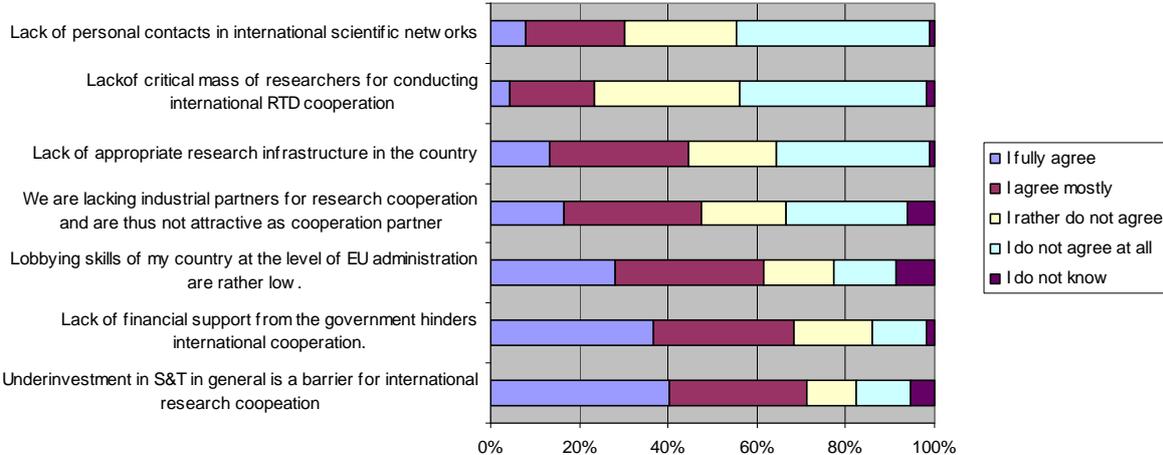
mostly with this statement, which shows both a generic trust problem in policy making and in the processes of European consultation and decision-making. Obviously, the EU is considered as an institution dominated and influenced by national interest (of strong national players). Therefore, the perception of the Ukraine as a remote third country in this policy-making process is little surprising. As could be expected significant differences between the responses of EU and Ukrainian researchers were identified. Ukrainian researchers feel a significantly higher lack of lobbying skills of their own country (74.5% agree at least mostly) than EU researchers (47.4%). This high mistrust might also be caused by the imperfect national ERA governance system in Ukraine. However, also data for European researchers cause concern.

Tab. 5: Systemic national factors impeding project cooperation between EU and Ukraine

Variables (barriers for RTD cooperation)	valid cases	sig. (chi ² Pearson)
General underinvestment in science and technology	112	0.000
Lack of financial support from government for international cooperation	112	0.000
Lack of national lobbying skills towards EU administration	112	0.026
Lack of industrial partners for international research cooperation	112	0.062
Lack of research infrastructure	112	0.000
Lack of critical mass of researchers for conducting international RTD cooperation	112	0.118
Lack of personal contacts in international scientific networks	112	0.024

Fourthly, the absence of a sufficient number of industrial cooperation partners is also perceived as a major problem for international RTD cooperation between the EU and the Ukraine. By trend, Ukrainian researchers perceive this issue even more problematic than EU researchers.

Fig 6: Systemic barriers impeding EU-UA collaborations



However, in contrast to this critical assessment of some systemic barriers, the majority of respondents did not agree with a series of other statements which also targeted potential systemic problems. For instance, more than 70% disagreed with the statements that “*the national economy and technology do not benefit from international cooperation*” and that “*we are suffering from parochialism – a low national openness to international cooperation*”. Concerning the latter statement, however, significant differences between EU and Ukrainian researchers can be observed. While only 15.8% of EU researchers agree at least mostly with this statement, more than half of the Ukrainian researchers support this argument (54.6%).

Slightly below 70% of all respondents disagree with the statements that “*my country has a low overall international reputation and scientific image*” and that “*there are difficulties with researcher’s mobility exchange in terms of legal rules and procedures*”. In general, the respondents are overwhelmingly confident, that in their country enough internationally recognised scientists are available who can compete in the international research arena (80% approval) and that, more specifically, their own institution’s competitive status at the international „research map“ is high enough to become engaged in international cooperation (90% approval). Nevertheless, despite the confidence in the own institution’s ability to become successfully engaged in international RTD cooperation, there are severe concerns regarding the availability of appropriate research infrastructure (45%) as well as a perceived lack of personal contacts in international scientific networks (31%). Regarding the latter two categories Ukrainian respondents are significantly more sceptic than European respondents. The general state of laboratory equipment and the poor involvement into international scientific networks are of big concern of the Ukrainian researchers.

3.3. Implementation problems

Asked about experienced difficulties directly related to the implementation of the collaborative RTD project almost a fifth responded that the other team caused *some difficulty* and another 2.6 % experienced *a lot of difficulty* created by the team from the other side (either Ukrainian or European). Significant differences between Ukrainian or EU respondents could not be detected (see Tab. 6). Differences in management approaches and management cultures were perceived as highly influential in terms of trouble making from both sides. Almost 40% of the respondents experienced at least some difficulty in this respect (which in fact is a higher share than the roughly 20% who generally reported about cooperation difficulties). Also problems regarding the dependency on (expected) deliverables of project partners and difficulties concerning reporting and the meeting of reporting deadlines have to be seen in connection with differing project management behaviour and

attitudes. More than a third of respondents experienced at least some difficulties in this respect. For 6% the issue of depending on the deliverables of the partners caused even a lot of difficulty.

Tab. 6: Difficulties concerning RTD project cooperation between EU and Ukraine

Variables (barriers for RTD cooperation)	valid cases	sig. (chi² Pearson)
Difficulty generated by the cooperation partner	112	0.479
Differences in management approaches and cultures	112	0.889
Difficulty caused by the dependency on deliverables of project partners	112	0.256
Difficulty due to reporting requirements (and meeting of deadlines)	112	0.165
Substantial travel and other costs	112	0.009
Poor quality of outputs	112	0.078
Lack of personal contacts in international scientific networks	112	0.024

Most problematic are the substantial travel and other transaction costs. These costs caused for almost 50% of respondents at least some difficulty and are significantly more problematically perceived by the Ukrainian respondents than by the EU respondents (see Tab. 6). Travel and other transaction costs are a concern for 63.6% of all Ukrainian researchers, and for 31.6% of EU researchers. On the other hand, other potentially problematic issues, like the size of the consortium, complexity in decision-making, the application of IPR issues, budget overspending of partners, the quality of the outputs, and the issue of communication and exchange of information caused - at average - comparatively little difficulties.

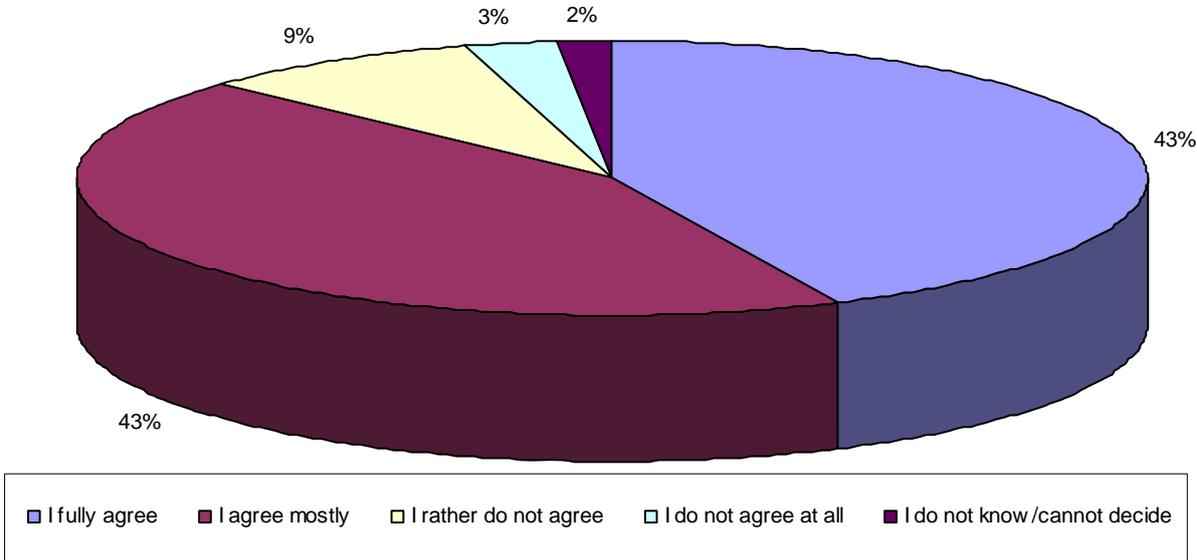
3. Benefits and effects of the RTD cooperation

Only 50% of the respondents reported that the benefits from the involvement in the project were equally distributed between the Ukrainian and the EU partners. 39% believed that the Ukrainian partners benefited more, while 9% see the EU partners at the side of the winners. In general, the Ukrainian partners perceive the benefits as more balanced, while the researchers from the EU mainly perceive their Ukrainian colleagues as beneficiaries of the RTD cooperation.

Almost 70% of the respondents reported “*very high*” or “*rather high*” learning gains on their own side in terms of project management, while 5% answered with only “*very low*” and another 9% with “*rather low*” learning gains in this respect. The rest was neutral. Learning gains in terms of scientific progress were slightly even higher estimated. 72% of the respondents reported “*very high*” or “*rather high*” learning gains on their own side in terms of scientific advancements. 15% were neutral and 13% sceptical. In total, however, almost 87%

of the respondents agreed at least mostly with the statement that the “EU-Ukraine cooperation was very successful in scientific terms” (see Fig. 7).

Fig 7: Was the EU-Ukraine cooperation very successful in scientific terms?



Apart from the scientific results of the EU-UA research cooperation, for most of the respondents (81.6%) the establishment of new partnerships for future international research cooperation was a major outcome (“very important” and “quite important”) of the research collaboration (see Fig. 8). Besides this self-contained result, which usually is not considered to be an end in itself, slightly more than 75% of the respondents perceived the bringing in of new ideas and ways of thinking and the door-opening function of the conducted collaborative project for future long-term and more ambitious goals as very or at least quite important. More than 70% responded a very or quite important impact of their EU-UA project cooperation

- on an enhanced opportunity for giving presentations at international conferences (which was, however, significantly less important for researchers from EU; see Tab. 7),
- on the improvement of the own skills for working in international project consortia,
- to have a basis to submit further projects in national and international programmes and
- on reaching or consolidating the state of the art in research in the specific thematic field under scrutiny.

The latter is by trend more important for the Ukrainian partners than for the EU researchers.

Around two thirds of the respondents estimate the access to complementary knowledge/material/infrastructure and the insight into other scientific cultures as very or quite

important. The high value for the latter aspect, which also coincides with the high estimation of the importance of the transfer of new ideas and ways of thinking mentioned above, might be an indication for a functioning cross-fertilisation caused by (previously) different research environments with different research trajectories and eventually also differences in reasoning as a legacy of science history. Schuch (2002) already highlighted the fact that Austrian researchers were curious to experience different scientific approaches from their research fellows from the successor states of the former Soviet Union and to conduct and test with them alternative experiments and research designs which the Austrian researchers would usually not undertake at home. In their international collaborations with their fellow researchers from the successor states of the former Soviet Union, Austrian researchers aimed at overcoming usual mainstreamed domestic approaches. In this analysis, however, the Ukrainian researchers estimate gaining insight into other scientific culture(s) and ways to organise research by trend more important than their EU counterparts.

Tab. 7: Effects of RTD project cooperation between EU and Ukraine

Variables (barriers for RTD cooperation)	valid cases	sig. (chi² Pearson)
Who has the major benefit from the involvement in the project?	112	0.037
Was the EU-Ukrainian cooperation successful in scientific terms?	112	0.337
Generation of new ideas and ways of thinking	112	0.111
Enabling presentations at international conferences	112	0.003
Helping to reach or consolidate the state of art in research	112	0.072
Access to complementary knowledge/material/infrastructure	112	0.099
Insight into other scientific culture(s)	112	0.002
Insight into other ways to organise research	112	0.003
Gain in prestige and reputation	112	0.011
General contribution to the scientific career of scientists	112	0.063
Exchange of personnel	112	0.752
Development of new or improved products, processes and services	112	0.003
Establishment of equipment and techniques matching international standards	112	0.001
Higher impact factors of publications	112	0.012
Development or improvements of standards and regulations	112	0.012
Application of international patent(s)	112	0.001

Other *important* or at least *quite important* results and outcomes of the EU-UA collaboration were (see Fig. 8)

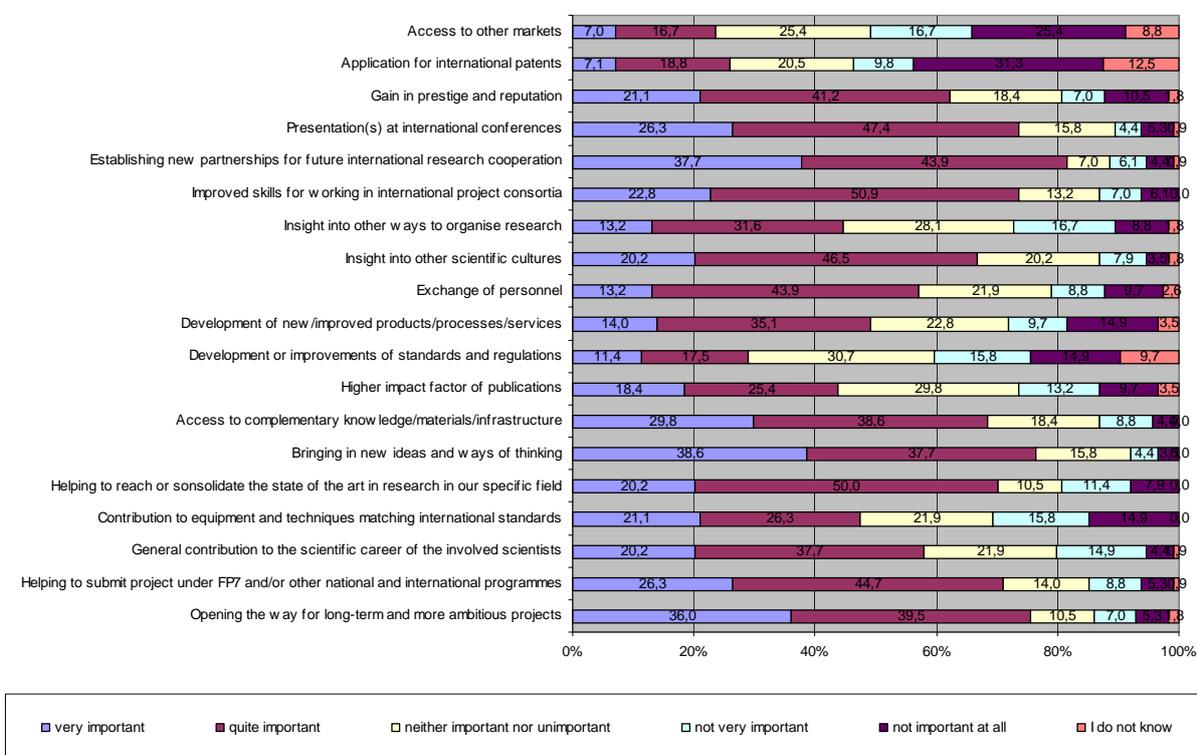
- gains in prestige and reputation (62,8%), which by trend were more important for the Ukrainian partners,
- a contribution to the scientific career of the involved scientists (57,9%), which by trend again was perceived more important from the side of the Ukrainian researchers and
- the exchange of personnel between the partner organisations, which was for 57% of the respondents an *important* or *quite important* result of the previous international

Innovation oriented impacts, such as *developing new or improved products/processes or services, or the establishment of equipment and techniques matching international standards* were considered less important at average, but significantly more important by the Ukrainian respondents (see Tab. 7)

The production of publications with higher impact factors was in general at rather average importance for RTD cooperation between the EU and Ukraine. By trend, this factor was perceived more important by the Ukrainian colleagues than by the EU researcher (see Tab. 7).

Less than 30% of respondents considered the impact of their previous EU-UA research collaboration on the development or improvement of standards and regulations or on gaining access to other markets or on the filing of international patents as at least *quite important* (see Fig. 8). Despite these low affirmation in general, both aspects were also significantly less important for the European researchers.

Fig 8: Results and outcomes of the international collaboration



5. Programme Specific Differences

Programme specific influences on the perceived barriers of cooperation and the gains associated with the collaborative projects carried out between Ukrainian and EU researchers were tested too. For this purpose, we distinguished

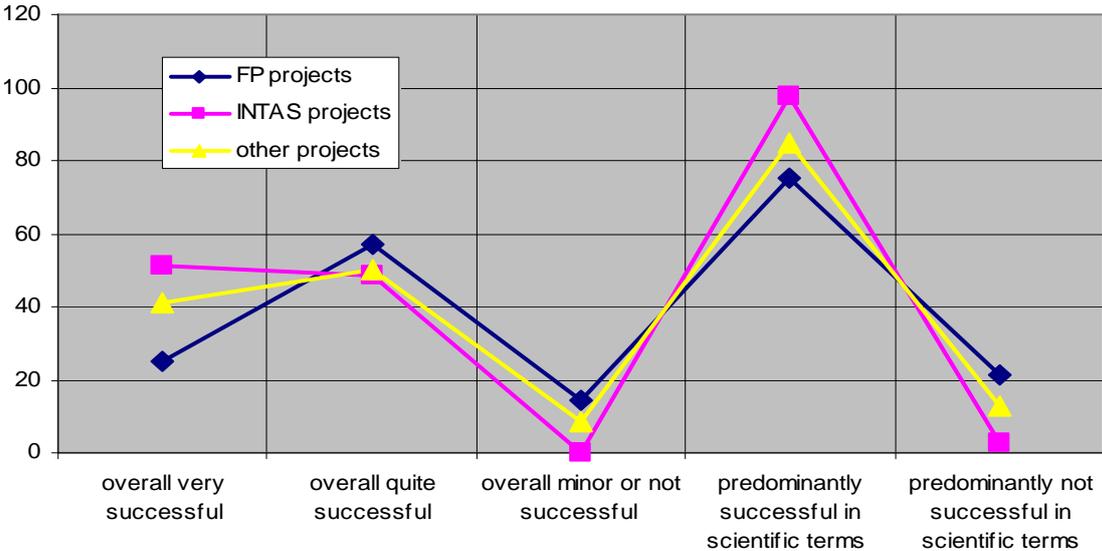
- projects carried out under the European Framework Programme for RTD (FP) (n= 28)
- INTAS projects (n= 46) and
- other projects subsuming projects implemented under STCU, NATO and COST (n= 39) (see Tab. 1).

Tab. 8: The influence of programmes on benefits and effects of RTD project cooperation between EU and Ukraine

Variables (benefits and effects)	valid cases	sig. (chi ² Pearson)
Overall success of the project collaboration	113	0.016
Scientific success of the project collaboration	113	0.074
Distribution of benefits	113	0.011
Contribution to the scientific career of scientists	113	0.931
Production of new knowledge which cannot be achieved within national frameworks	113	0.206
Development or improvement of standards and regulations	113	0.314
Development of new/improved products, processes, services	113	0.542
Application of international patents	113	0.115
Gain in prestige and reputation	113	0.399

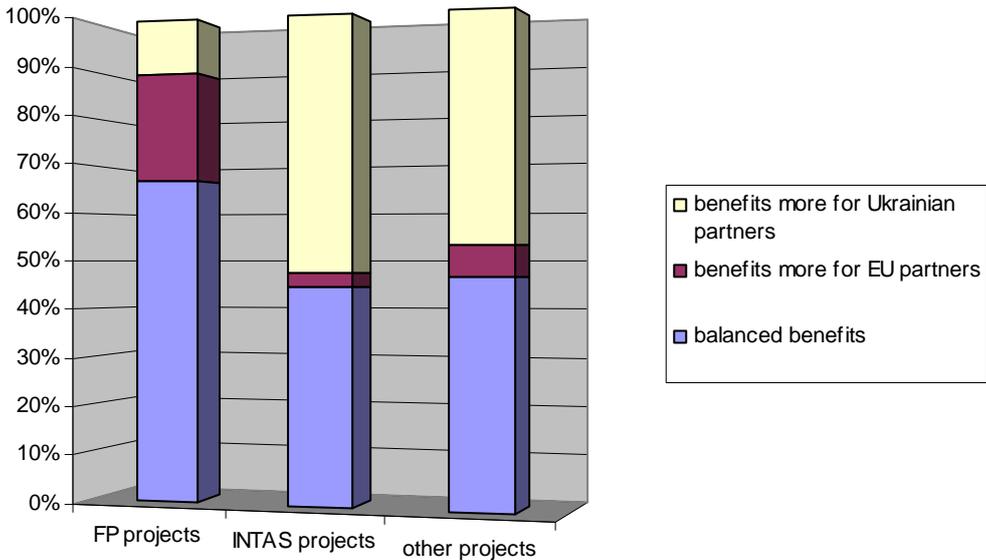
As shown in Tab. 8 there are some remarkable differences between the programmes under scrutiny. First of all, there is a conspicuous tendency in the assessment of overall success of the projects by the project partners. INTAS projects are regarded overall mostly successful, while FP projects are comparatively rather sceptical assessed. 51.3% of all INTAS project partners assessed their INTAS projects as *'very successful'*, while only 25.0% of FP-partners assigned this label to their FP projects. Those engaged under other programmes were in between these two extremes (41.3%). This overall low success assessment under FP collaboration might be caused by the more pronounced complexity of FP projects in terms of objectives, which go beyond the pure scientific character of collaboration. The programme specific responses were less differentiated when we were directly asking about success in pure scientific terms. 97.5% of INTAS project partners replied that their projects were successful or at least predominantly successful, while this was the case of 84.8% of partners who collaborated under other programmes and 75.0% of FP project partners regarded the RTD collaboration in pure scientific terms as predominantly successful (see Fig. 9).

Fig 9: Success by programmes



On the other hand, among the three programmes analysed, FP project collaboration was regarded as most balanced or even slightly more beneficial for the EU partners, while especially INTAS based project collaboration was perceived by the majority of partners as more beneficial for the Ukrainian partners. In this way, INTAS was probably also perceived as an aid programme (see Fig. 10), an issue often disputed in course of the INTAS evaluation (Idenburg et al. 2004).

Fig 10: Distribution of the benefits to Ukrainian and EU researchers by programmes



By trend, FP projects were in comparison to the other investigated programmes perceived as most supportive

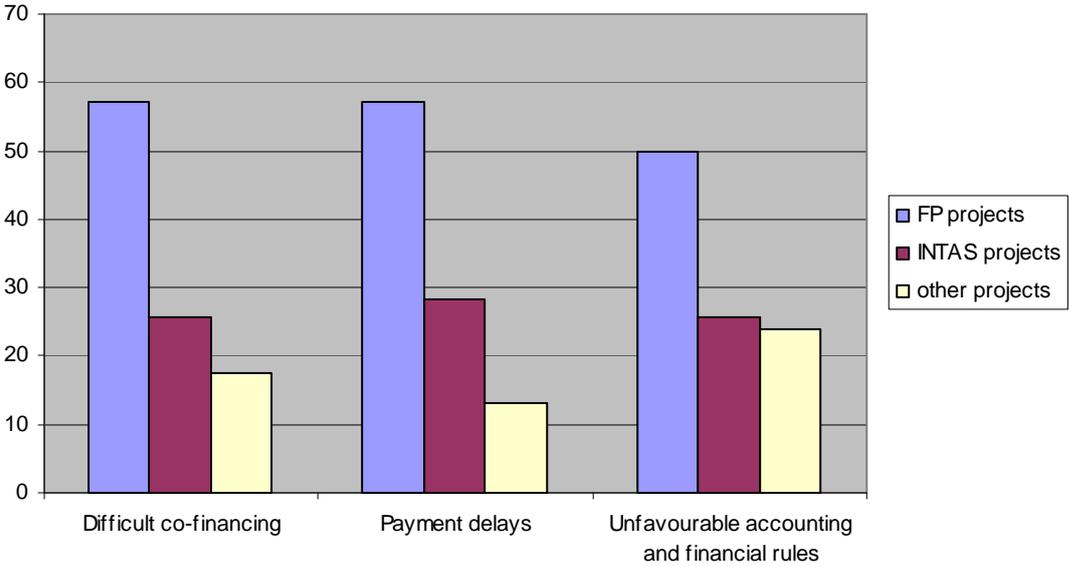
- to develop or improve standards and regulations (50.0% acceptance while only 17.9% acceptance in case of INTAS and 26.1% acceptance in case of other programmes);
- to develop new/improved products, processes and services (64.3% acceptance versus 35.9% [INTAS] and 50.0% [other programmes]);
- to apply for international patents (39.3% vs. 15.4% vs. 26.1%).

No statistical significant differences or ostensible trends among the three programmes under scrutiny were identified in terms of

- contribution of the project collaboration to the scientific career of scientists;
- production of new knowledge which cannot be achieved within national frameworks only;
- gain in prestige and reputation.

Programme specific differences could also be detected in terms of barriers for cooperation. All administrative factors, which displayed statistical significant differences between the three programmes under scrutiny, are connected to financial issues (see Tab. 8). In general, 48.6% of all respondents across all programmes reported financial problems, which seems to be a (too) high share.

Fig 11: Financial barriers of the programmes as perceived by Ukrainian and EU researchers in % of programme participants



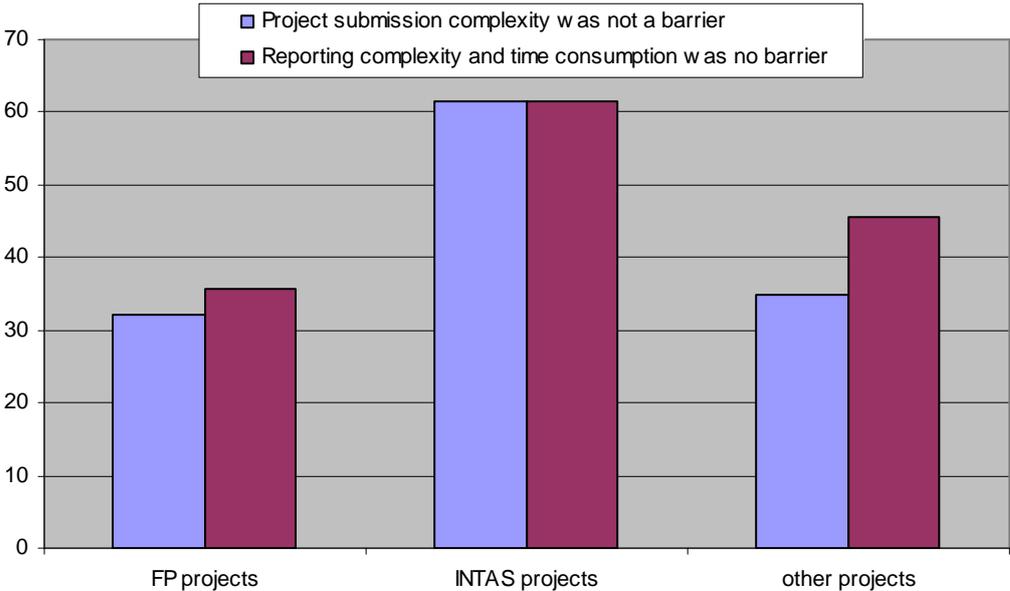
As shown in Fig. 11, FP participation is perceived as most critical in financial aspects, followed with significant distance by INTAS and the other programmes, which were obviously least critical in this respect. 57.2% of FP participants had a very or at least quite important problem to secure the co-financing, 57.1% experienced important or at least quite important payment delays and 50.0% assessed the accounting and financial rules of the FP as unfavourable.

Tab. 9: The influence of programmes on barriers in RTD project cooperation between EU and Ukraine

Variables (administrative barriers)	valid cases	sig. (chi ² Pearson)
Difficult co-financing	113	0.009
Payment delays by funding organisation	113	0.005
Unfavourable accounting and financial rules	113	0.001
Complicated project submission procedure	113	0.153
Complex and time consuming reporting procedures	113	0.611
Difficult participation rules and procedures	113	0.659
Shortage of proposal preparation time	113	0.937
Difficult to understand programmatic objectives of the call for proposals	113	0.291

Regarding further potentially important administrative barriers, one can detect that by trend INTAS was perceived by its clients by far as least complicated in terms of project submission procedures and least complex and time consuming in terms of reporting procedures. Most heavy in this respect was again the assessment of FP participants (see Fig. 12).

Fig. 12: Project submission and reporting complexity as barriers for RTD cooperation by programmes



Around 33% of all respondents had difficulties to understand the participation rules and procedures and had also experienced a shortage of proposal preparation time, but there was an almost equal distribution across the programmes under scrutiny (see Tab. 9). Only 17.7% of all respondents across all programmes had problems to understand the programmatic objectives of the calls for proposals. Interestingly in this regard is that the FP participants did not assign a higher importance to this aspect than participants in INTAS or other programmes. This shows that if an applicant is once engaged in a successful project submission, the differences between programmes in terms of understanding the programme's objectives are more or less cleared out.

6. Conclusions and recommendations to improve RTD cooperation between the EU and Ukraine

Based on the responses of 113 mostly experienced researchers from predominantly larger research organisations (> 51 employees), out of whom 50% were coming from Ukraine and 50% from EU countries, we can generate several conclusions concerning the state-of-art of RTD cooperation between the EU and Ukraine as well as recommendations to improve the identified shortcomings.

Firstly, we have to summarise that there is a strong belief that the exercised RTD collaboration between the EU and Ukraine has been generally very successful and generated a major added value which would not or only partly be achievable within national projects. The design of RTD programmes used for realising collaborative RTD projects between EU and Ukrainian researchers and the '*corridor of action space*', which these programmes provide or limit, must not be underestimated. Apart from the perceived pure scientific success, other success factors which are inherent in the design of the different programmes produce remarkable different results. The most complex and demanding RTD programme in terms of design and attitude (including structure, objectives, financial and managerial issues etc.) is the European Framework Programme for RTD. It is also the programme, where the overall success of collaboration was most critically perceived. This is not surprising, because the likelihood of failing (at least partially) is higher in programmes following a multitude of objectives and conditions than in simpler ones. The development and extension of professional policy and advice structures (e.g. national ERA governance and NCP systems) has to address this complexity in order to reduce transaction costs and to create improved participation frameworks for the domestic scientific communities. Based on the experiences made under the BILAT-Ukraine project, we can summarise that the

development of the NCP system is finally on its (slow) way, but that the fundamentals for sufficient national ERA governance still have to be laid. We would recommend the new Ukrainian government to advance these structures to support international, especially European RTD cooperation, probably in a shared division of labour between the involved ministries and the State Agency for Science, Innovation and Information. Examples how other countries structure their NCP systems, respectively how international RTD cooperation is institutionally supported have been recorded and described under the BILAT-Ukraine project.

It is also interesting to state, that FP based project collaboration was regarded as most balanced or even slightly more beneficial for EU partners, while especially INTAS, the most simple programme investigated in terms of design, was perceived by the majority of INTAS partners as more beneficial for the Ukrainians. While INTAS placed the pure scientific collaboration aspect in its foreground, which could be achieved to an almost optimum extent according to the involved researchers, more translateral aspects of RTD cooperation, such as improvement of standards and regulations, development of products, services and processes, or the filing of patents could be much better addressed under FPs. Given the intention of Ukraine to overcome its shortcomings in translating scientific research into the economy and society, we consider a more strategic investment in an enhanced participation of Ukrainian researchers under the FPs as particularly important. However, it became also clear from our findings, that the financial barriers for participation in FP projects are the highest among the investigated international RTD programmes. Thus, we recommend to the Ukrainian S&T policy makers to develop financial support schemes which would facilitate the financial burden of Ukrainian research organisations participating in FP projects. An association to the European Framework Programme for RTD alone would not solve this problem. We rather recommend making use of other flanking measures, such as project-preparation or top-up funding schemes, for which comprehensive policy briefs were prepared by the BILAT-Ukraine consortium.

We also conclude that systemic and administrative barriers or problems are perceived as more influential (in a negative direction) than cooperation problems identified at the personal level or during the de-facto implementation of collaborative RTD projects. Institutional factors range in the middle. According to the respondents of our survey, the most outstanding systemic factors, which negatively influence collaborative RTD cooperation between the EU and Ukraine are a general underinvestment in science and technology in general, and in particular an underinvestment in international RTD cooperation. Both factors were significantly more critically assessed by the Ukrainian respondents. In addition, Ukrainian

researchers were not very confident with the lobbying skills of their country vis-a-vis EU administration and policy-making. This refers to deficiencies which need to be addressed at the national level at first instance. However, it is recommended that the EU continues supplying structural advice and support projects which enhance planned or existing national efforts and stimuli targeting European RTD cooperation.

Administrative issues rank second regarding barriers for RTD cooperation between EU and Ukraine. Many of them are rather procedural and belong to the implementation of the funding programmes, such as complicated project submission procedures, unfavourable accounting and financial rules, shortage of proposal preparation time of (too) complex and time consuming reporting requirements. Not particularly surprising is the fact, that the perception of administrative barriers shows no significant differences between Ukrainian and EU researchers. There are, however, differences perceived between RTD programmes. The continuation of simplification efforts, where appropriate, is thus recommended, but without loss of functional properties of more demanding RTD programmes, such as the European Framework Programme for RTD. A special administrative concern raised was the visa problem, which caused many, also emotionally enhanced troubles, especially for Ukrainian researchers (but not only). The abolishment of entry visa for European researchers facilitated the problem on their side, but a possible re-introduction of strict visa regimes would pressure again RTD cooperation, instead of solving this issue with a light procedure on both sides once and for all.

Institutional barriers, defined as factors induced by the inner fabric of the participating RTD institutions, have some negative influence on the conduct of the EU-UA RTD collaborations too. The three most important factors in this respect are the non-recognition of international cooperation as a formal criterion for scientific promotion, the too negligible financial gain from international cooperation for the institution, but – thirdly - also for the participating personnel. While the latter is significantly more negatively perceived by Ukrainians, the lacking financial gain for the institution is seen as a major barrier for both Ukrainian and EU researchers. It is more than obvious, that international RTD cooperation increases significantly the transaction costs of collaboration, which are usually borne by the participating institutions. International RTD collaboration generates higher search costs, negotiation and management costs, legal costs, financial administration costs and travel and communication costs than projects which are only internally implemented or carried out under well-known regional or national frameworks. Since the overhead situation in view of higher transaction costs is much more under pressure in international RTD cooperation projects, we recommend to treat international RTD collaboration, especially between less aligned RTD systems, such as

between Ukraine and many EU Member States, more generous regarding the overhead rate eligible for funding. A higher financial contribution to the general costs of an institution engaged in international RTD cooperation would probably also facilitate the introduction of (a) better skilled accounting professionals, (b) of adequate institutionalised professional advisory support and (c) project management assistance (i.e. factors which are regularly subsumed under overheads), and whose absence cause problems, especially for the Ukrainian researchers engaged in international RTD collaboration.

Differences in management approaches and management cultures belong also to the highest ranked factors causing troubles during the implementation of RTD projects. During RTD project implementation, however, most problematic are again the substantial travel and other transaction costs, especially in view of the Ukrainian participants. Top-up funding schemes and higher overhead eligibility rates are recommended to smoothen this problem. Cooperation barriers at the personal level are least important. Here only the general economic situation of the (Ukrainian) project partner has to be highlighted as a potential barrier for cooperation, but this issue is strongly connected to the unfavourable financial situation at the institutional level, which often 'materialises' in travel budget shortages.

Despite these barriers and hindering factors at systemic, institutional, administrative and personal level, the RTD cooperation between Ukraine and EU produces generally a good level of satisfaction for the participating researchers. Apart from the strongly attributed scientific success, more than 3/4 of all respondents perceive EU-Ukraine RTD cooperation as important for bringing in new ideas and ways of thinking and as door-opener for future long-term and more ambitious goals. In this sense, international RTD cooperation transcends the limitations of the national RTD trajectories and RTD milieus. Moreover, more than 2/3 of respondents experienced enhanced opportunities for giving presentations at international conferences, improved their own skills, gained access to complementary knowledge/material/infrastructure, reached in total a better basis to submit further competitive projects in national and international programmes and assessed international RTD cooperation as important for reaching or consolidating the state of art of research in their specific thematic fields. This evidences the contribution of international collaboration to increasing quality and attaining excellence in the delivery of scientific research. Innovation oriented impacts were at average considered less important under EU-Ukraine RTD cooperation, but were in general significantly more important for the Ukrainian researchers, for whom also this aspect of RTD cooperation transcended the domestic opportunities. Based on these findings, we can to the best of our knowledge recommend a further intensification of international RTD collaboration between Ukraine and EU through the supply

of financially more generous and programmatically more demanding, but administratively less burdening, instruments and schemes. We appeal, especially to the stakeholders in the Ukraine, to make better use of the existing international instruments for RTD cooperation provided at the EU level by the European Commission and advice to increase their engagement in less-costly collaborative schemes like the *“Twinning Programme”* (for which the BILAT-Ukraine project delivered a policy brief³) or in ERA-NETs.

³ D2.8. – Proposal for a joint funding mechanism (Policy brief about the FP7 “Twinning” scheme in INCO), prepared by Jana Machacova and Klaus Schuch.

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