

Frequency Content Analysis of R&D Projects of the EC Framework Programs with the Participation of Euro-Mediterranean Partnership Countries

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Abstract—On the basis of the CORDIS data on FP5–FP7 programs the activity of MEDA countries in these projects was studied in the priority areas of action. A content analysis of the participation MEDA country organizations in FP5–FP7 has been performed and 25 large-scale investigation areas have been identified. A frequency analysis was also carried out of the project with the simultaneous participation of four to six MEDA countries. For the benchmarking of FP5–FP7 projects it is proposed to organize information about them in the form of hyperlink matrices, making it possible to browse the profiles of these projects.

Key words: MEDA countries, FP5–FP7 projects, frequency content analysis, hyperlink matrices, project benchmarking

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The availability of the internet-accessible data base of the European Commission CORDIS¹ allows researchers to carry out efficient monitoring and a comparative analysis of the participation of different countries in all the R&D Framework programs (FP) of the European Union (ÖU).

We have performed a frequency content analysis of the FP5–FP7 projects (consortiums)² using by way of example the Arabic countries of Euro-Mediterranean partnership (MEDA countries)³.

The participation activity of MEDA countries in FP5–FP7 projects is shown in Table 1, where the obvious participation leaders are Morocco, Tunisia, and Egypt. The participation activity of these countries in FP5–FP7 projects exceeds by 1.5–2.5 times the similar activities of the remaining three countries (Jordan, Algeria, and Lebanon). Three other Arabic MEDA countries, Libya, Syria, and Palestine, do not take part in the considered programs.

A detailed analysis of the participation MEDA countries in FP5–FP7 projects, with allowance for their priority areas of action, is presented in Table 2.

As is obvious from Table 2, the maximum participation activity of the countries considered in old Framework programs is observed for special RTD coopera-

tion subprograms (FP5–INCO-2, FP6–INCO) intended for all MEDA countries⁴. As far as priority areas of action are concerned, at present the prevailing FP7 projects include those in the sphere of information and communication technologies (although the actual leader is FP-7–INCO, as was the case for FP5 and FP6); the leading projects in FP5 and FP6 were environmental protection and sustainable development projects (FP5-EESD, FP6-SUSTDEV). It should be recalled at the same time that in the total participation of MEDA countries in FP5–FP7 projects, which number 642 (see Table 2), there are only 286 different (nonoverlapping) projects (see Table 1). Their content analysis is given in Table 3.

The main areas of research were identified on the basis of content analysis of the project names. The first three leading problems of the MEDA region (protection and management of water resources, archeological monuments and sites, cultural heritage, and public health) accounted for 34% of the projects.

On the whole, the ecological (environment and sustainable development) problem areas (problems number 1, 4, 5, 7, 8, 11, 12, 16, 18, 20, 22, 24, and 25) account for about 53% of all the projects and medical and health problems (numbers 3, 10, and 15) account for about 16%, thus about 69% of the projects are connected with environmental and medical problem areas.

Many of the remaining projects (about 12% of the total number) are associated with such problems as

¹ <http://cordis.europa.eu>.

² as of May 15, 2008.

³ MEDA (Mediterranean Economic Development Area) countries are the states of the south and east Mediterranean and the Middle East (mostly Arabic) that signed the partnership agreement with the EU.

⁴ These projects actually correspond to various priority areas, even though they formally are not included in them.

Table 1. Participation activity of MEDA countries in FP5–FP7 projects

Country	Participation number			
	FP5	FP6	FP7	Total
Morocco	53	99	13	165
Tunisia	51	82	7	140
Egypt	38	73	10	121
Jordan	32	43	7	82
Algeria	19	49	5	73
Lebanon	18	40	3	61
The total of different (nonoverlapping) projects with the participation of MEDA countries				286

research integration and the development of information and communication technologies (problems 6 and 9).

A frequency analysis of FP5–FP7 projects (consortiums) that have the simultaneous participation of four to six MEDA countries is presented in Table 4. The total number of such projects was 51, or about 18% of the total project number. The organizations of all six MEDA countries took part or are still participating simultaneously in 12 consortiums.

The profiles (descriptions) of all the projects or consortiums can be found in the CORDIS database. For benchmarking of FP5–FP7 projects (monitoring, comparative analysis, and decision making) and for user's convenience we propose to format Table 2 as a hyper-link table, which will enable the users to browse the

Table 2. The participation activity of MEDA countries in FP5–FP7 projects in priority areas of action

	Morocco	Egypt	Tunisia	Jordan	Algeria	Lebanon	Total
EP7-ICT	3	3	1	2	1	2	12
FP7-SSH	1			1			2
FP7-Environment	2	2		1			5
FP7-Transport	1		1		1		3
FP7-Energy	1	1		1	1		4
FP7-People	1						1
FP7-Health	1	1	3				5
FP7-KBBE	3	2	1		1		7
FP7-INCO	1	1	1	1	1	1	6
FP7-Infrastructure				1			1
FP6-INCO	58	40	47	36	34	29	244
FP6-Citizen	3	2	4	1	2	1	13
FP6-SUSTDEV	15	5	11	1	5	2	39
FP6-Infrastructure	2	2	3		2	2	11
FP6-Policies	5	6	5	2	2	1	21
FP6-Food	6	4	3	1		1	15
FP6-Innovation	1		1				2
FP6-IST	3	5	3	2	2	1	16
FP6-Aerospace	2	2					4
FP6-Society						1	1
FP6-NMP					1		1
FP6-Lifescihealth		3	2			1	6
FP6-Mobility		1					1
INTAS, EP6-Food	3	3	3		1	1	11
FP5-INCO-2	44	33	43	30	17	12	179
FP5-IST	2	1	1	2		1	7
FP5-Growth	1						1
FP5-Life quality	1		2		1		4
FP5-EESD	5	4	5		1	1	16
FP5-Human potential						4	4
Total	165	121	140	82	73	61	642

Table 3. Content analysis of MEDA countries organizations participation in FP5–FP7

Item No.	Problem area	Number of projects	Notes
1	Integrated and sustainable management of water resources in the Mediterranean countries	37	
2	Monitoring, preservation, and management of the cultural heritage of the Mediterranean countries	31	
3	Public health problems in the Mediterranean countries	29	Health service in the post-genomic world, epidemiologic situation and combating viral infections. Healthy lifestyle promotion, ecological education. Lipidic micro-nutrients
4	Alternative and renewable energy sources for the purposes of sustainable development of the Mediterranean region.	27	Solar thermal systems, solar cooling technologies, wind power stations. Making use of alternative and renewable energy sources in agroindustrial development (for the purposes of irrigation, soil desalinization etc.), in the system of air conditioning etc.
5	Rational use of natural resources in arid and semi-arid areas of the Mediterranean region	21	Sustainable development of agriculture, water deficit irrigation, protection of agroforestry systems, salinity and nitrate control in irrigation systems, agrosystem adjustment to climatic changes etc.
6	Research integration in the Mediterranean region, development of the common research space and knowledge networks	21	Establishing the networks of research centers and knowledge transfer, political support of scientific research and technologies, programs of scientists' mobility, and global scientific forums
7	Waste water treatment and utilization and treatment of sewage sludge	18	Membrane and catalytic technologies, biological treatment, etc.
8	Assessment and modeling of marine ecosystems, management of marine data banks	18	Climatic changes and their effect on coastal systems and shelf areas, tsunami early warning systems, atmospheric deposition on offshore zones, etc.
9	Development of information and communication technologies in the Mediterranean region	14	Programs of the information-oriented society, transfer of information and communication technologies from the EU countries, e-government, digital inequality, etc.
10	Development of vaccines and new antiparasite strategies, cell parasitism	11	antimalarial and hepatitis-C vaccines etc., DNA-vaccines
11	Development of drought-resistant crops aimed at efficient management of water resources in the Mediterranean region	10	Wheat genome, vegetable and citrus production
12	Safe and high-quality food supply chains and networks	9	Integrated systems for reliable food supply chains (citrus fruit, vegetables, sea foods etc.)
13	Political and economic management and administration in Euro- Mediterranean partnership	7	Problems of economic transformation, security and migration, political initiatives aimed at the mitigation of water conflicts (e.g. agriculture versus tourism)
14	Intercultural communications, Arabic (multi-) linguistic borrowings, cultural tourism	5	
15	Specific biomedical research	5	
16	Surveillance and control systems, geoinformation systems	5	Pesticide control for olive plantations, bacterial control in water supply systems, etc.
17	Transport infrastructure, transportation system safety in the Mediterranean region	4	
18	Desertification problems	3	Evaluation, monitoring
19	Liberalization of trade between the EU and the Mediterranean countries	3	Trade policies
20	Earthquake early warning	2	
21	Problems of modern Art and architecture;	2	
22	Innovations in the production of agricultural industrial crops (cotton)	1	
23	Crystal growing	1	
24	Eco-friendly aircraft engines	1	
25	Fire management	1	
	Total	286	

Table 4. FP5–FP7 consortiums with the simultaneous participation of four to six MEDA countries

Various combinations of MEDA countries	Name of the consortium	Number of consortiums
Tunisia, Morocco, Algeria, Egypt, Jordan, Lebanon	JOIN-MED, MEDGENET, MIRA, SOLATERM, GEWAMED, PROMEDACCESS, ERA-MED, ADURES, MELIA, WASAMED, MEDA-TENT, MED-COASTLAND-NET	12
Tunisia, Morocco, Egypt, Jordan, Lebanon	MED-IST, MEDRESSA II, NEMLAR, Geoinformation for sustainable management of land and water resources in the mediterranean region*	4
Tunisia, Morocco, Algeria, Egypt, Lebanon	WADI, MEDA GO EUROPE, INECO	3
Tunisia, Morocco, Algeria, Egypt, Jordan	ECHINONET, IDEALIST7FP	2
Tunisia, Morocco, Algeria, Egypt, Jordan, Lebanon	SOLAR BUILD	1
Tunisia, Algeria, Egypt, Jordan, Lebanon	EURO-MEDANET	1
Tunisia, Morocco, Algeria, Egypt	RAMSES II, ARIMNET, RABMEDCONTROL, AQUARHIZ, MEDRES, NOSOMED, EUMEDGRID	7
Tunisia, Morocco, Algeria, Lebanon	CHILD TRAUMA NETWORK, BIOHEADCITIZEN, SEADATANET	3
Tunisia, Morocco, Egypt, Jordan	FOOD-N-CO, GO-EUROMED, ARMED	3
Tunisia, Egypt, Algeria, Jordan	EFESTUS, WIND-CHIME	2
Morocco, Egypt, Algeria, Jordan	MED-CSD, SHADUF	2
Morocco, Algeria, Egypt, Lebanon	DISTRES	1
Morocco, Egypt, Jordan, Lebanon	MEDAR	1
Algeria, Egypt, Jordan, Lebanon	OPERHA	1
Tunisia, Algeria, Egypt, Lebanon	Mediterranean network to assess and upgrade the monitoring and forecasting activity in the region*	1
Tunisia, Morocco, Jordan, Lebanon	WATNIMED, OPTIMA, HY-PA	3
Tunisia, Morocco, Algeria, Jordan	LEISH-MED, SOWAMED	2
Tunisia, Algeria, Jordan, Lebanon	OPEN-GAIN	1
Morocco, Algeria, Jordan, Lebanon	CREMED	1
	Total number of consortiums	51

* No abbreviation of the consortium is presented.

profiles of all the projects. This is what the European developers of the INNO-Policy TrendChart project did when they worked out an electronic hyperlink matrix of the European innovation policy trends.

Analysis of the participation structure of all the projects presented in Table 4 showed only two projects with Russian participation, i.e., IDEALIST-7FP (January 10, 2006–September 30, 2008, with a project cost of 2.12 million euros and 49 participants, coordinated by a German organization) and SEADATANET (April 1, 2006 to March 31, 2011, with a project cost of 10.51 million euros, and 47 participants, coordinated by a French organization).

Among the Russian participants in these large-scale network projects, the first of which was aimed at the support of the infrastructure for information and communication technologies and the second of which was

aimed at supporting the infrastructure for the transparent access to marine data sets and data products, were, respectively, the Institute of Operating Systems and the All-Russian Research Institute of Hydrometeorological Information–International data center.

The participants of these projects also included Ukrainian partners, i.e., the Kiev State Centre for Scientific, Technical and Economic Information and the Marine Hydrophysical Institute of the Ukrainian National Academy of Sciences (Sebastopol).

In conclusion, it should be noted that the considered methodology for the frequency content analysis of FP5–FP7 projects can be applied to an arbitrary groups of countries, e.g., for the CIS countries, which are not yet sufficiently integrated into the European Research Area (ERA).