Fund for Less Developed Regions

The Fund for Less Developed Regions is a project type within the talent fostering series that is developing very fast. It supports scientists in specified regions of China to conduct creative research within the funding scope of NSFC, so as to foster and support researchers in these regions and stabilize and gather outstanding talents to serve the regional innovation system and social and economical development of the region.

Any applicant for the Fund for Less Developed Regions should have the following qualifications:

(1) Experience of undertaking basic research project or doing other basic research;
(2) Senior academic rank (title) or doctoral degree, or recommendations by 2 researchers in the same research area with senior academic rank (title).

Researchers having above qualifications and working in the autonomous regions of Inner Mongolia, Ningxia, Xinjiang, Tibet and Guangxi, the Yanbian Korean Prefecture and the provinces such as Qinghai, Hainan, Guizhou, Jiangxi, Yunnan and Gansu may apply for the Fund for Less Developed Regions. Other scientists may not apply, but may work as main participants. Graduate students may not apply, but on-job students may apply through their employer institutions at the consent of their supervisors. Scientists listed in Clause, Article 10 of the *Regulations of the National Natural Science Fund* may not apply for the Fund for Less Developed Regions.

Applicants for the Fund for Less Developed Regions should have the above qualifications, and pay attention to special requirement in specific areas.

The application, evaluation and management mechanism of the Fund for Less Developed Regions are almost the same as those for General Program projects. Its feature is the promotion of talent training and development by using the management model for General Program in coordination with national major strategic plans of coordinated regional development and by strengthening the communication and cooperation with local governments. Please follow the outlines of the application for the Fund for Less Developed Regions when filling in the application form. The collaborative units may not exceed 2, and the research period is 3 years in general.

In 2009, the Fund for Less Developed Regions funded 922 projects, with a total funding of 221.80 million yuan. The average funding per project was 240,600 yuan, which is 11,200 yuan less than that of 2008. Due to a large increase of applications, the funding rate was 19.09%, which is 1.08% lower than that of 2008 (please see the table below for the funding statistics). In 2010, the average funding per project will be limited to about 250,000 yuan, and the funding rate will be increased accordingly.

Funding for Projects of the Fund for Less Developed Regions in 2009

Unit: 10 000 yuan

Scientific department	Applications	Projects and funding approved				Funding rate (%)
		Projects	Funding	Percentage of the total (%)	Average funding per project	
Mathematical and Physical Sciences	248	65	1, 338	6. 03	20. 58	26. 21
Chemical Sciences	411	76	1, 902	8. 58	25. 03	18. 49
Life Sciences	2, 840	533	12, 956	58. 41	24. 31	18. 77
Earth Sciences	284	65	1, 702	7. 67	26. 18	22. 89
Engineering and Materials Sciences	532	93	2, 310	10. 41	24. 84	17. 48
Information Sciences	308	56	1, 218	5. 49	21. 75	18. 18
Management Sciences	207	34	754	3. 40	22. 18	16. 43
Total	4, 830	922	22, 180	100	24. 06	19. 09

Please see the General Program sections of various departments for the funding scope of the Fund for Less Developed Regions, and for funding statistics in recent years and relevant requirement.

Department of Mathematical and Physical Sciences

The Fund for Less Developed Regions in mathematical and physical sciences is aimed at creating a good research environment for these regions, fostering and stabilizing an appropriate amount of researchers, fostering talents in basic research for local scientific and technological development, and increasing the capability of solving urgent scientific problems in the development of national economy. In project review, special attention is paid to the construction of research teams and researches which have good bases with characteristics and relative strength, playing the role of talent fostering of the Fund for

Less Developed Regions and strengthening the support to researchers in the western regions of China.

Funding for Projects of the Fund for Less Developed Regions in the Department of Mathematical and Physical Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions	2008			2009		
	Projects	Funding	Funding rate (%)	Projects	Funding	Funding rate (%)
Mathematics	14	310	20. 29	29	541	23. 97
Mechanics	4	112	18. 18	8	176	25. 00
Astronomy	2	60	33. 33	4	92	40. 00
Physics I	9	241	25. 00	16	353	28. 07
Physics II	6	164	28. 57	8	176	28. 57
Total	35	887	22. 73	65	1, 338	26. 21
Average funding per project	25. 34			20. 58		

Department of Chemical Sciences

On the basis of stabilizing the funding scale of the Fund for Less Developed Regions, the Department of Chemical Sciences will make efforts to further increase the research level and efficiency of the Fund, stabilize a batch of research talents for basic research, and continuously reduce the gap with developed regions. Applicants are encouraged to do research related to the local resources so as to promote the economic development of the regions.

Funding for Projects of the Fund for Less Developed Regions in the Department of Chemical Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2008			2009		
		Projects	Funding	Funding rate[++] (%)	Projects	Funding	Funding rate[++] (%)
Division I	Inorganic chemistry	6+2*	171	19. 51	10+2*	292	19. 05
	Analytical chemistry	5+1*	149	19. 35	8+1*	229	17. 30
Division II	Organic chemistry	17+3*	507	22. 22	21+3*	604	18. 90
Division III	Physical chemistry	7+2*	211	21. 95	9+2*	264	19. 30

Division IV	Polymer sciences	3	78	20.00	5	138	17.86
	Environmental chemistry	4+1*	128	20.00	6+1*	174	17.95
Division V	Chemical engineering	8+1*	217	19.56	6+2*	201	17.39
Total		50+10*	1,461	20.76	65+11*	1,902	18.49
Average funding per project		24.35			25.03		

Notes: * Projects of Small Fund for Exploratory Studies.

++ Including projects of Small Fund for Exploratory Studies.

Department of Life Sciences

The Fund for Less Developed Regions is a talent fostering fund of NSFC to stabilize researchers in remote areas and promote S&T development in these regions. In 2009, there were 2,838 applications to the Department for the Fund for Less Developed Regions (2,672 were accepted), which are 774 more than that in 2008 and an increase of 37.50%. 533 projects (393 in 2008) were funded, including 7 within the Joint Fund for Less Developed Regions. The funding rate is 18.78% and the average funding is 243,100 yuan per project (252,600 yuan per project in 2008). In the future, the Department will continue to follow the principle of stabilizing and fostering researchers in these regions, supporting and gathering outstanding talents by funding their research and serving the construction of the innovation system and coordinated development of science and technology in these regions, and encourage researches related to local resources and natural conditions. For details, please see the sections in the General Program of the Department in the *Guide to Programs*.

Funding for Projects of the Fund for Less Developed Regions in the Department of Life Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2008			2009		
		Projects	Funding	Funding rate (%)	Projects	Funding	Funding rate (%)
Division I	Microbiology	19	473	20.21	22	522	18.80
	Botany	19	478	20.00	26	633	20.16
Division II	Ecology	22	563	21.15	31	766	19.38
	Forest science	14	358	19.44	21	510	20.59
Division III	Biochemistry, biophysics and molecular biology	7	176	20.00	7	171	19.44
	Cell biology	4	96	21.05	8	185	20.00
	Genetics	14	357	19.72	19	465	18.10

	Immunology	8	206	19.51	9	223	18.00
Division IV	Neuroscience and psychology	8	211	19.05	10	237	18.87
	Biomedical engineering	5	121	20.83	9	204	19.57
Division V	Agricultural science	49	1,230	20.59	67	1,634	19.36
Division VI	Animal husbandry, veterinary and aquatic sciences	39	1,000	20.42	58	1,423	19.46
	Zoology	9	235	19.15	10	237	19.23
Division VII	Physiology and pathology	25	634	19.84	34	873	17.26
	Preventive medicine and hygienics	23	568	20.35	29	697	18.59
Division VIII	Basic clinical medicine I	35	875	20.11	42	1,010	17.07
Division IX	TCM and materia medica	15	372	20.27	21	512	18.26
	Pharmacology	46	1,151	20.09	66	1,601	18.80
Division X	Basic clinical medicine II	32	823	20.51	44	1,053	18.41
Total		393	9,927	20.21	533	12,956	18.78
Average funding per project		25.26			24.31		

In 2008 and 2009, there was no project for Small Fund for Exploratory Studies in the Fund for Less Developed Regions.

Starting from 2010, NSFC has divided the Department of Life Sciences into two departments, namely, the Department of Life Sciences and the Department of Health Sciences. Disciplinary setup has therefore been changed accordingly. Please read this guide carefully to select proper application code when making applications.

Department of Earth Sciences

The objectives of the Fund for Less Developed Regions is to foster researchers in these regions, gather outstanding talents by supporting their research and promote regional development. In 2009, the Department of Earth Sciences received a total of 284 applications for the Fund for Less Developed Regions from 83 research units. Among them, 217 are from universities, accounting for 76.4%, and 50 from research institutes, accounting for 17.6%. 65 projects were funded, with a total funding of 17.02 million yuan, the average funding of 260 000 yuan per project and the funding rate of 22.9%. Among the projects funded in 2009, 48 are undertaken by universities, accounting for 73.9%, and 14 by research institutes, accounting for 21.5%. In 2010, while maintaining the funding rate, the average funding per project will be increased.

Funding for Projects of the Fund for Less Developed Regions in the Department of Earth Sciences in the Last Two Years

Unit: 10,000 yuan

Divisions		2008			2009		
		Projects	Funding	Funding rate (%)	Projects	Funding	Funding rate (%)
Division I	Geology (including soil science and remote sensing)	30	750	31.25	41	1,073	22.16
Division II	Geology	7	175	33.33	6	157	24.00
	Geochemistry	3	75	30.00	5	131	23.80
Division III	Geophysics and space physics	3	75	33.33	1	26	25.00
Division IV	Marine science	3	75	33.33	3	79	25.00
Division V	Atmospheric science	8	200	36.36	9	236	24.32
Total		54	1,350	32.34	65	1,702	22.89
Average funding per project		25.00			26.18		

Department of Engineering and Materials Sciences

In order to foster basic research talents in less developed regions and encourage basic research related to local economic development, the Department adopted some preferential policies for the less developed regions when setting up the funding plan, namely, increasing the funding rate while maintaining relatively high funding intensity. In 2009, the Department received 532 applications for the Fund for Less Developed Regions, which is a large increase of 63.19% compared with that in the previous year. Applications in mining science and metallurgy, architecture and environmental engineering and mechanical engineering account for a large percentage of the total, all exceeding 50, which reflected strong regional features and the character of applied research of the projects in the Department. The Department funded 93 projects with 23.10 million yuan. The average amount of funding per project is 248,400 yuan with a funding rate of 17.48% (22.09% in 2008).

Funding for Projects of the Fund for Less Developed Regions in the Department of Engineering and Materials Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2008			2009		
		Projects	Funding	Funding rate (%)	Projects	Funding	Funding rate (%)
Materials Sciences I	Metallic materials	8	221	20.51	10	260	17.24
Materials Sciences II	Inorganic and non-metallic materials	9	221	19.57	11	272	17.19
	Polymer materials	5	123	33.33	6	148	17.65
Engineering sciences I	Metallurgy and mining science	11	324	21.57	14	356	18.92
Engineering sciences II	Mechanical engineering	11	274	20.75	17	423	15.60
Engineering sciences III	Engineering thermo physics and energy utilization	3	73	23.08	4	96	16.67
Engineering sciences IV	Architecture, environmental and structural engineering	12	306	20.69	17	404	18.89
Engineering sciences V	Hydrology and marine engineering	9	231	25.71	10	250	17.24
	Electrical science and engineering	4	91	25.00	4	101	19.05
Total		72	1,864	22.09	93	2,310	17.48
Average funding per project		25.89			24.84		

Department of Information Sciences

In 2009, 308 applications for the Fund for Less Developed Regions were received by the Department of Information Sciences and 56 projects funded, with a total funding of 12.18 million yuan. The funding rate is 18.18% (18.78 in 2008) and the average funding is 217,500 yuan per project (251,400 yuan in 2008). In 2010, the Department will continue to give preferential support to the Fund for Less Developed Regions, and make proper increase in the funding level and funding rate. All eligible researchers are welcome to apply.

Funding for Projects of the Fund for Less Developed Regions in the Department of Information Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2008			2009		
		Projects	Funding	Funding rate++ (%)	Projects	Funding	Funding rate++ (%)
Division I	Electronic science and technology	3	76	25	3	56	18.75
	Information and communication system	2	51	22.22	4	80	22.22
	Information acquisition and processing	2	52	11.76	6	106	23.08
Division II	Theoretical computer science and computer software and hardware	6	144	19.35	7	151	16.67
	Computer application	8	194	18.60	13	278	17.81
	Network and information security	2	49	18.18	6	127	20.00
Division III	Control theory and control engineering	4	100	22.22	5	121	20.83
	Systems science and system engineering	0	0	0	1	22	8.33
	AI and intelligent systems	4	100	21.05	4	95	18.18
Division IV	Semiconductor science and information devices	2	62	22.22	2	52	12.50
	Information optics and photoelectric devices	2	52	18.18	3	78	23.08
	Laser technology and technical optics	2	50	18.18	2	52	13.33
Total		37	930	18.78	56	1,218	18.18
Average funding per project		25.14			21.75		

Department of Management Sciences

In 2009, the Department of Management Sciences accepted 207 applications for the Fund for Less Developed Regions, which is 42.76% more than that (145) in 2008, accounting for 4.00% of the total in three types of programs, namely, General Program, Young Scientists fund and the Fund for Less Developed Regions, slightly higher than that (3.46%) in 2008. 34 projects were funded, which is 11 more than that in 2008. The total funding was 7.54 million yuan, which is 34.28% more than that (5.615 million yuan) in 2008. The average funding is 215,400 yuan per project and the funding rate is 16.43%. This is the highest among the above three types of programs, reflecting the preferential policy to researchers in less developed regions.

Division I of the Department received 38 applications for the Fund for Less Developed Regions, which is an increase of 40.74% compared with 27 applications in 2008, 33 applications were accepted and 7 projects were funded, the funding rate is 18.42%. Division II received 55 applications, which is an increase of 61.76% compared with 34 applications in 2008, 49 applications were accepted and 10 projects were funded. The funding rate is 18.18%. Division III received 114 applications, with an increase of 35.71% compared with 84 applications in 2008, 104 applications were accepted and 17 projects were funded. The funding rate is 14.91%. Please see the following table for the funding of the Fund for Less Developed Regions in the last two years.

Considering the features of talent fostering of the Fund for Less Developed Regions, the average funding per project in 2010 will continue to be increased. The number of projects funded will depend on the actual number of applications. Generally speaking, the quality of applications from less developed regions needs to be improved.

The requirement given in the general description of the General Program in the Department of Management Sciences in this guide is also valid for applying for the Fund, so applicants are requested to read them carefully.

Funding for Projects of the Fund for Less Developed Regions in the Department of Management Sciences in the Last Two Years

Unit: 10 000 yuan

Divisions		2008			2009		
		Projects	Funding	Funding rate (%)	Projects	Funding	Funding rate (%)
Division I	Management science and engineering	4	97	14.81	7	155	18.42
Division II	Business administration	5	121.5	14.71	10	222	18.18
Division III	Macro management and policy	14	343	16.67	17	377	14.91
Total		23	561.5	15.86	34	754	16.43
Average funding per project		24.41			22.18		

Note: No projects of Small Grant for Exploratory Studies were funded.

Department of Health Sciences

The Department of Health Sciences mainly supports basic research and applied basic research on the form, structure, function and abnormal development of body cell, tissue, organ and systems, as well as the occurrence, development, transfer, diagnosis, therapy

and prevention of diseases.

In 2010, the Department of Health Sciences will receive applications for the first time. Scientists doing disease related basic research and applied basic research are welcome to submit proposals to the Department of Health Sciences for funding. The Fund for Less Developed Regions aims at stabilizing and fostering research teams in these regions where science is less developed, promoting regional S&T development and serving local economical and social development. The Department encourages applicants to propose creative research ideas and conduct research, to use research means and methods of modern life sciences to carry out disease related basic research and applied basic research with local characteristics, and to make full use of various advanced research facilities and systems in universities, research institutes and labs in developed regions to conduct collaborative research. Please see the general description for the Fund for Less Developed Regions in this guide and sections in General Program of the Department of Health Sciences for detailed information of application.

Jointly Funded Projects for Less Developed Regions

In the funding scope of Jointly Funded Projects for Less Developed Regions, NSFC supports research programs in some special fields together with some provinces or autonomous regions in order to jointly support research with regional advantages and characteristics or with urgent needs regionally, and to serve the training of talented people and the promotion of local social and economic development.

The selection of project type should be “projects for less developed regions”, the sub-category should remain empty, and the annotation should be the research area applied.

1. The impact of climate change on extreme synoptic and climatic events in Tibet

To study, by using the diagnostic analysis method of modern climate, the spatiotemporal pattern and discrepancy of basic climate elements in Tibetan region, to exam completely extreme synoptic and climatic events, to analyze typical extreme synoptic and climatic events in order to study its spatiotemporal characteristics and impact degree, and to explore future climate prediction with advanced climate models.

Eligibility of applicants: Research staff from the universities or scientific research institutes under the jurisdiction of Tibet Autonomous Region.

The Department of Earth Sciences is responsible for handling applications (Application code 1: D0512).

2. Rules of sweet sorghum sugar accumulation and sugar composition structure

Sweet sorghum is one of the most important crops in the biomass development of Xinjiang, but there is less study on the accumulation of sugar in sweet sorghum stalk, physiological mechanism of sugar composition and the discrepancy with other regions. This project will take sweet sorghum, a Xinjiang biomass plant, as its research object, under the unique condition of abound sunlight, cold winter and hot summer, big temperature difference between day and night, etc., to study the sugar content in the stems of sweet sorghum, sugar composition and rules of PH value changing, to analyze key factors affecting the accumulation and composition of sugar in the stems of sweet sorghum, to explain the physiological mechanisms of sugar accumulation and sugar composition structure formation under typical climatic conditions of Xinjiang at physiological and biochemical levels, so as to provide a theoretical basis for the cultivation of new variety of biomass plant with high photosynthetic efficiency of sweet sorghum.

Eligibility of applicants: Researchers from the universities or research institutions under the jurisdiction of Xinjiang Uyghur Autonomous Region.

The Department of Life Sciences is responsible for handling applications (Application code 1: C0204).

3. Structure, properties and damage mechanism of Al_2O_3/Nb-Al ceramic reinforced metal matrix composites

To carry out researches on the structure, properties and damage mechanism of Al_2O_3/Nb-Al ceramic reinforced metal matrix composites by taking full advantages of the abundant resources of tantalum and niobium ores in Ningxia Hui Autonomous Region, and provide a necessary scientific foundation and theoretical basis for the development of niobium based material industry chain in the region. It is expected to build a relationship between technological process, structure and properties of ceramic-metal interpenetrating network composite materials, based on the understanding of key scientific questions in the preparation process through metal preparation into porous ceramics. The damage mechanism is to be revealed on the basis of systematical investigation of the damage process combined with mathematic simulation.

Eligibility of applicants: Researchers from the universities or research institutes under the jurisdiction of Ningxia Hui Autonomous Region.

The Department of Engineering and Materials Sciences is responsible for handling applications (Application Code 1: E0102).

4. Migration behaviors of harmful solid inclusions in aluminum and aluminum based alloys

Harmful solid inclusions often impose significant effects on the properties of aluminum metal and aluminum alloys, and therefore call for intense fundamental research. By investigating the microstructure and formation mechanism of the harmful solid inclusions at electron scale level, and congregation and separation mechanism of the inclusions, it is expected to design a new type inclusion-collection system so as to control the migration direction and velocity of the inclusions. New techniques for removing harmful solid inclusion and purification methods should provide a scientific foundation and theoretical instruction to the transform of the aluminum industry in Guangxi Zhuang Autonomous Region to an intensive processing level.

Eligibility of applicants: Researchers from the universities or research institutes under the jurisdiction of Guangxi Zhuang Autonomous Region.

The Department of Engineering and Materials Sciences is responsible for handling applications (Application Code 1: E0109).

5. Fundamental theory on *in-situ* leaching of Rare Earth Ores

Taking the weathering crust strain amass-type rare earth ores (ion-absorbed rare earth ores) in China as the research object, it is to seek the mechanism of *in-situ* leaching, its process, seepage rules, dynamical and hydrodynamics rules, etc., to study the recycling ammoniated wastewater of rare earth ores, to explore the reaction rules among the medicament, of rare earth ores and other impurities, etc., in order to offer a theoretical basis for increasing the utilization ratio of rare earth ores and the social and environmental benefits.

Eligibility of applicants: Researchers from the universities or research institutions under the jurisdiction of Jiangxi Province.

The Department of Engineering and Materials Sciences is responsible for handling applications (Application Code 1: E041104).

6. Research on the effective compound material medicine and the standardization of traditional Mongolian medicine

It is to conduct basic research on the extraction, separation and analysis of the active fraction and the chemical composition of traditional Mongolian medicine compounds, with pharmacodynamics on the composition regularity and quality control of the

compounds, and research on the fingerprint spectrum and fingerprint-efficacy relationships and the *in vivo* process study of Mongolian medicine will be funded, to improve the quality standards and explain the laws compatibility as well as the mechanism of traditional Mongolian medicine compounds.

Eligibility of applicants: Researchers from the universities and research institutes under the jurisdiction of Inner Mongolia Autonomous Region.

The Department of Health Sciences is responsible for handling applications (Application Code 1: H2818).

7. Actinomycetes diversity and the excavation of functional polyketide synthase genes under typical salt environment of Tarim basin

Taking the typical high salt ecogeological environment (salt lake, salt pool, saline-alkali soil, salt hills, etc.) of Tarim basin as the research object, it is to carry out the physiological character studies of the selecting and adapting diversity of Halophilic (salt-tolerant) Eubacteria under different salt environments, to find out actinomycetes resources and their new group and make clear of Actinomycetes diversity and community composition, and to establish Actinomycetes germplasm repository and gene bank of 16s rRNA.

This project will sieve functional polyketide synthase genes of Halophilic (salt-tolerant) Actinomycetes, to explore the diversity of polyketide synthase genes groups of culturable Halophilic (salt-tolerant) Eubacteria and non-culturable Actinomycetes under Xinjiang salt circumstances, to understand the distribution of polyketide synthase genes in different Halophilic (salt-tolerant) Actinomycetes, and to provide a new route for the development and utilization of polyketide synthase genes.

Eligibility of applicants: Researchers from the universities or research institutions under the jurisdiction of Xinjiang Production and Construction Corps.

The Department of Life Sciences is responsible for handling applications (Application Code 1: C0101).