Rock Environment and Energy Institute (REEI)

2021 Annual Report



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1. Background Information

Rock Environment and Energy Institute (REEI), was founded in July 2012 in Beijing and registered as non-for-profit organization in Shunyi Bureau of Civil Affairs in April 2018, is an independent think tank working on environment and energy policy research. With the analysis of energy transition policies as the main focus, we discuss the acceleration towards the low-carbon transformation of China's energy system on the basis of social equity, climate change, environmental quality and public health, aimed to promote multi-party participation and open-minded policy debates.

Vision:

We are devoted to promoting the establishment of environmental policymaking mechanism based on procedural justice and critical reasoning, so as to make our society more inclusive, just and sustainable.

2. Institution Building

2.1 Council

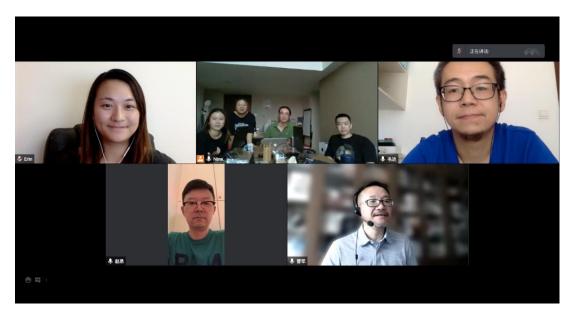


Figure 1: The Fifth Meeting of the First Council

According to the articles of association of Rock Environment and Energy Institute in Shunyi District, Beijing, the institution has five directors and one supervisor. On September 15, 2021, the fifth meeting of the first council of Rock Environment and Energy Institute in Shunyi District, Beijing was held online. Five directors – Lin Jiaqiao, Pan Xiaochuan, Jin Jun, Mao Da and Zhao Ang; supervisor - Li Ying; employees of REEI - Pan Yiren and Yuan Yating; and intern - Chen Shikai attended the meeting, which was chaired by Lin Jiaqiao, and discussed the current and long-term development of the organization.

The meeting included directors sharing, executive team sharing and institutional strategic planning. First of all, five directors took the theme of "The Development of Social Organizations in China in

the Next Five Years and Challenges and Opportunities for REEI" to share and make suggestionsbased on the development of REEI. In the second part, the staff of REEI shared their thoughts on personal growth and its relationship with organizational growth. Finally, all the participants discussed the formulation and planning of the tenth anniversary strategy of REEI.

2.2 Project Strategy

In 2021, REEI's work is carried out mainly in accordance with the strategic topics planned by the organization, with energy transition policy discussion as the main project, climate-smart healthcare and regional cooperation on energy transition and carbon pricing as cornerstones. At the same time, taking into account the role of improving public health and controlling air pollution in climate change decision-making.

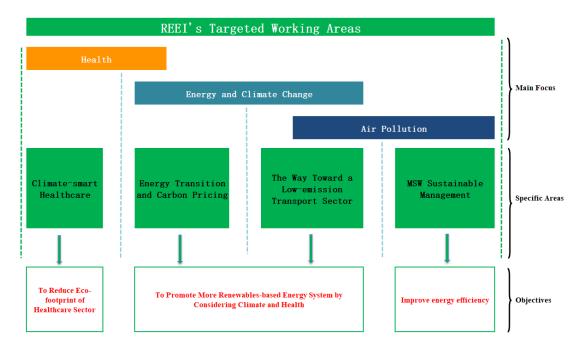


Figure 2: The Working Areas and Objectives of REEI

3. Project Summary

3.1 Climate-smart Healthcare

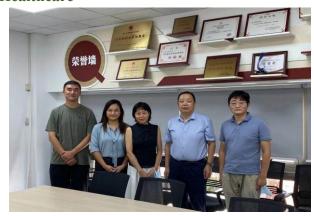


Figure 3: Pan Yiren in Huashan Hospital after the Evaluation of Energy Audit and Energy-saving

Renovation Demonstration Project of Hospital Cooling Systems

The medical and health sector is the core to deal with the health problems caused by climate change, but at the same time, the energy consumption and pollutant emission of the medical and health sector also has an environmental impact, which will lead to direct and indirect public health burden. Promoting the development of climate-smart healthcare, that is, reducing carbon emissions from the health care sector and improving the climate resilience of the health care sector, will play an important role in mitigating and adapting to global climate change. REEI's Climate-smart Healthcare Project aims to promote the green and low-carbon transition of China's health sector and encourage the participation of the health sector in climate change policy discussions.

Climate-smart Healthcare projects are mainly divided into three sub-projects: Sustainable Health in Procurement Project, Energy Audit and Energy-saving Renovation Demonstration Project of Hospital Cooling Systems. The focus of Sustainable Health in Procurement Project is the procurement of medical goods, including the comprehensive procurement evaluation of hospitals and the possibility of replacing specific harmful chemicals; Energy Audit and Energy-saving Renovation Demonstration Project of Hospital Cooling Systems strive to achieve more possibility of energy consumption reduction through energy audit and energy-saving renovation, with the goal of setting an industry benchmark for energy consumption of medical department in China.

Project Progress

Table 1: Progress of Climate-smart Healthcare Project in 2021

Area	Progress	
Project	In July, REEI finished the translation of the summary of the report "Global	
Communication	Roadmap for Healthcare Decarbonization ", where REEI designed and launched	
	the Chinese version on live platform "Zhuyitai", in cooperation with Beijing	
	Association for International Medical Exchange. With the theme of "Achieving the	
	goal of "Dual Carbon": How can medical institutions build the capacity to	
	implement carbon emission reduction", this event invited many hospital	
	representatives and researchers and attracted a total of 869 views.	
Sustainable Health	In August, REEI invited procurement directors from Beijing Huilongguan	
in Procurement	Hospital, Beijing Chest Hospital affiliated to Capital Medical University, Peking	
Project	University Hospital and other hospitals to participate in the online seminar on	
	sustainable health in procurement, at which participants shared and exchanged	
	ideas on their work in the procurement process.	
	In September, REEI and Peking University Hospital reached an agreement on the	
	"Pilot Project of Building Sustainable Procurement Capacity of Hospitals". Based	
	on sustainable procurement, the project took the replacement of polyvinyl chloride	
	(PVC) infusion sets as an example to identify possible problems and promoted the	
	realization of successful sustainable replacement demonstration cases. By the end	
	of this year, Peking University Hospital has collected the results of the	
	questionnaire survey conducted by relevant procurement departments and	

Area	Progress		
	completed the analysis work, and is preparing for the procurement related work.		
Energy Audit and	The pilot hospital for this demonstration project is Huashan Hospital affiliated to		
Energy-saving	Fudan University in Shanghai.		
Renovation	In June, through the independent price comparison of Huashan Hospital affiliated		
Demonstration	to Fudan University in Shanghai, the renovation project "Joint Control of Fresh		
Project	Air Carbon Dioxide Concentration in Building 1" began.		
	In July, the project completed the construction of the three renovation sites in the		
	early stage and carried out trial operation. The project team also went to the		
	renovation site of Huashan Hospital to check the renovation and operation results		
	and discuss and determine the follow-up work arrangements.		
	In September, the on-site construction team completed all the renovation. After the		
	project was officially put into operation, Prof. Suxing's team from Shanghai Tongji		
	University carried out the renovation audit and gave relevant opinions.		
	In October, with the assistance of the audit team, the project team and the project		
	partner China Green Hospital Committee completed the report of Case Manual of		
	Energy-saving and Emission Reduction of Hospital Building Air Conditioning		
	System.		
	In November, at the end of the project, REEI confirmed with the sponsor (United		
	Nations Development Programme) that the remaining funds of the project would		
	be added to the project partner (China Green Hospital Committee) to support the		
	follow-up renovation of Huashan Hospital and the promotion of the project.		

3.2 The Way Toward a Low-Emission Transport Sector



Figure 4: Seminar on Carbon Reduction in Transport Sector

In the past two decades, with the increase of car ownership, the consumption of fossil fuels in the transportation field and the greenhouse gases produced during vehicle use have had a great impact on China's environmental and economic development. As carbon emissions from China's transport sector continue to grow, the next 10-15 years will be an important window of opportunity for the

transport sector, especially the road transport sector, to rapidly weaken its dependence on oil, which is of great significance for the realization of the "Dual Carbon" goal. In recent years, local governments have issued strategic plans for the development of new energy vehicles, providing strong support for its related industries. Car companies are also constantly exploring the electric vehicle market, and the market prospect of new energy vehicles is exciting. In 2021, with the support of Heinrich-Böll-Stiftung Beijing Representative Office, the project team continued to carry out research on low emission from urban road traffic with the theme of "How can Behavioral Change Promote the Development of Electric Vehicles".

"The Way Toward a Low-Emission Transport Sector Project" was planned to be carried out in the three years from 2019 to 2021, aimed to establish a regional expert group to promote policy exchange on low-emission transportation by incorporating climate and health assessment. In 2019, the project team carried out research on the low-carbon transition policy of China's transportation sector, and in 2020, the project was located in Shaoxing City to discuss topics like the opportunities faced by Shaoxing's low-carbon transportation development in renewable energy power, electric vehicle growth, low-carbon transportation experience of international cities, Shaoxing citizens' travel awareness, etc. In 2021, the project team took the popularization of electric vehicles as the main focus, combined with the important impact of behavior change on its development, to provide more ideas for promoting emission reduction in the field of transportation.

Project Progress

Table 2: Progress of Low-emission Transport Sector Project in 2021

Time	Progress		
From June to	The project team conducted interviews on the development of electric vehicles in citie		
September	including Beijing, Shanghai and Zhuhai. The interviewees are mainly research scholars		
	and enterprise employees. The content of the interview gave enlightenment for the		
	project team to carry out the project research work, and also contributed to the follow-		
	up output.		
December	The project team completed the report " How can Behavioral Change Promote the		
	Popularity of Electric Vehicles " and held a seminar on carbon emission reduction in the		
	transport sector to share this year's research results. In addition, Dr. Xie Chi from		
	College of Transportation Engineering, Tongji University and Dr. Xuan Yuanzhe from		
	United International College of Beijing Normal University-Hong Kong Baptist		
	University were also invited to share and discuss their research in this topic surrounding		
	the theme of the conference.		

3.3 Municipal Solid Waste (MSW) and its Sustainable Management



Figure 5: The workshop "From Project Re – engineering to Carbon Emission Accounting: Opportunities for Social Organizations in Solid Waste Management to Cope with the Climate Crisis"

Since China proposed in September 2020 to achieve carbon neutrality by 2060, the pathway to implement carbon neutrality strategy has become a hot public policy topic. Environmental social organizations working in the field of municipal solid waste also face a problem: how to integrate the concept of carbon neutrality into project design and implementation, and conduct carbon emission reduction accounting when emission reduction has become one of the most important indicators to measure sustainable management of municipal solid waste?

To help social organizations that were already engaged in sustainable management of municipal solid waste integrate climate policy into their project design, planning and implementation, and enhance the relevance of these projects to climate change and the capacity of participating organizations to help the Chinese government achieve the 2060 carbon neutrality goal. Keeping in mind social organizations in the field of solid waste rarely integrated carbon neutrality strategy and carbon emission reduction accounting into project implementation, financed by Vanke Foundation and in collaboration with the China Zero Waste Network, REEI tried to improve the understanding and cognition of social organization that focused on solid waste management issues on the evolution, logic and its impact on the municipal solid waste management of climate policy at home and abroad. At the same time, we assisted social organizations to enhance their capacity to integrate climate policies and strategies into project design and implementation, and to gain an initial understanding of methods for estimating the carbon reduction potential of projects.

In addition, this year, REEI also undertook Zero Waste Network's commission to complete overview research on carbon neutrality, circular economy and MSW sustainable management. Attempted to find opportunities for China's MSW sector to reduce carbon emissions under the dual carbon target by sorting out policies of EU sustainable management.

Project Progress

Table 3: Progress of Municipal Solid Waste Sustainable Management Project in 2021

Project	Progress	
From Project Re -	In July, we carried out a survey on the current situation of social organizations	
engineering to Carbon	incorporating national mid and long-term carbon emission reduction strategies	
Emission Accounting:	into projects under the solid waste issue, in order to understand the current	
Opportunities for Social	situation of relevant social organizations combining the "dual carbon" strategy	

Project	Progress	
Organizations in Solid	with project strategies.	
Waste Management to	In August, we carried out an online live broadcast of " Under the Dual Carbon	
Cope with the Climate	Goal: The Possibility of Integration and Development in the Field of	
Crisis	Sustainable Management of Solid Waste ". Starting from why China proposed	
	the dual carbon target, this event compared the policy development and changes	
	at home and abroad, and looked for the possibility of integration and	
	development in the field of sustainable solid waste management based on how	
	Chinese NGOs participated in global emission reduction work.	
	In September, we held the workshop "From Project Re – engineering to Carbon	
	Emission Accounting: Opportunities for Social Organizations in Solid Waste	
	Management to Cope with the Climate Crisis". In line with the concept of	
	openness and integration, the workshop invited 17 social organizations and	
	many other foundations, enterprises and individuals.	
Overview research on	In July, we undertook the commission of Zero Waste Network to determine the	
carbon neutrality,	policy framework, and the final report is expected to be completed in January	
circular economy and	2022.	
MSW sustainable		
management		

3.4 Energy Transition and Carbon Pricing



Figure 6: Carbon Market Seminar of Beijing Energy Network

How to bring economic, environmental and social considerations into the establishment of carbon pricing system and how to make this topic more widely discussed have always been REEI's goal. Since 2017, REEI has started to carry out energy transition and carbon pricing projects, which has attracted domestic and foreign attention to the sustainability and effectiveness of China's carbon pricing.

During 2018-2021, in collaboration with the China Association for NGO Cooperation (CANGO),

REEI has incorporated discussions on energy and climate change into the project and carried out the Energy Transition and Carbon Pricing (ETCP) Project with the support of Bread for the World. It aims to establish a wide-range regional cooperation platform to promote the exchanges of technologies and policies related to energy transition and carbon pricing through the effective participation of expert groups, and then provide valuable suggestions for the rational formulation of regional energy and climate change policies.

Project progress

Table 4: Progress of Energy Transition and Carbon Pricing Project in 2021

Time	Progress		
February	The Chinese audio podcast program "Energy Review" was introduced, with a total of 25		
	episodes released throughout the year. The content involved many topics covering		
	emission reduction targets and emission reduction path.		
March	Lin Jiaqiao, co-director of REEI, was invited to a seminar on carbon market organized by		
	Beijing Energy Network to share his views on the development of China's carbon market		
November	Lin Jiaqiao, co-director of REEI, was invited to participate in an online sharing session		
	organized by the United Nations Population Fund on environmental and climate cha		
	issues, during which ETCP project was introduced and exchanged.		
Whole year	r Edited and published six newsletters in English (subscribe), including timely news at		
	research reports on energy transition and carbon pricing;		
	Published 18 articles related to energy transition and carbon pricing;		
	In addition to the new album, the Chinese podcast program " Commentary of Oversea		
	Think Tank Energy and Climate Change Report" and the English podcast program "REEI		
	Energy and Climate Podcast" were also updated regularly.		

4. Projects Outcomes

In 2020, the outcomes of REEI's projects mainly included workshops and training, reports and articles, and audio-visual output. According to the schedule of the project, we carried out online and offline discussion and training activities and authored reports. At the same time, we actively increased the output of articles and auditions to enrich variety and achieve the output target of the project.

4.1 Impact of Workshops and Training

In 2021, the organization participated in and organized many sharing sessions and workshops, invited well-known experts and scholars at home and abroad to participate in the discussion, which had comparatively more fulfilling content than last year.

Table 5: Details and Impact of Workshops and Training

Project	Main Content and Impact	
Climate-smart Healthcare	Achieving the goal of "Dual Carbon": How can medical institutions build the	
	capacity to implement carbon emission reduction	
	REEI launched the translated Chinese version of "Global Roadmap for Healthcare	
	Decarbonization" on live platform "Zhuyitai", in collaboration with Beijing	
	Association for International Medical Exchange. This event invited many hospital	
	representatives and researchers and attracted a total of 869 views.	
Climate-smart Healthcare	Webinar on sustainable health in procurement	
	REEI invited procurement directors from Beijing Huilongguan Hospital, Beijing	
	Chest Hospital affiliated to Capital Medical University, Peking University Hospital	
	and other hospitals to participate in the webinar on sustainable health in	
	procurement, at which participants shared and exchanged ideas on their work.	
The Way Toward a Low-	Seminar on Carbon Reduction in Transport Sector	
emission Transport Sector	The project team held a seminar on carbon emission reduction in the transport sector	
	to share this year's research results. In addition, Dr. Xie Chi from College of	
	Transportation Engineering, Tongji University and Dr. Xuan Yuanzhe from United	
	International College of Beijing Normal University-Hong Kong Baptist University	
	were also invited to share and discuss their research in this topic surrounding the	
	theme of the conference. The total number of participants is 68.	
Municipal Solid Waste	Under the Dual Carbon Goal: The Possibility of Integration and Development	
Sustainable Management	in the Field of Sustainable Management of Solid Waste	
	REEI carried out an online live broadcast by comparing the policy development and	
	changes at home and abroad, starting from why China proposed the dual carbon	
	target, and looked for the possibility of integration and development in the field of	
	sustainable solid waste management based on how Chinese NGOs participated in	
	global emission reduction work. The total number of participants is over 1000.	
Municipal Solid Waste	From Project Re – engineering to Carbon Emission Accounting: Opportunities	
Sustainable Management	for Social Organizations in Solid Waste Management to Cope with the Climate	
	Crisis	
	This event was a continuation of the online live event "Under the Dual Carbon Goal:	
	The Possibility of Integration and Development in the Field of Sustainable	
	Management of Solid Waste", It was held to support social organizations	
	integrating climate policies into project design, and mastering the method of	
	estimating carbon emissions from solid waste. In line with the concept of openness	
	and integration, the workshop invited 17 social organizations and many other	
	foundations, enterprises and individuals. The workshop included four main	

Project	Main Content and Impact	
	components: expert sharing, partners' project introductions and experts commenting,	
	round table discussion, and application of the carbon emission calculation tool.	
Energy Transition and	Researchers of REEI were invited to participate in seminar and training that included	
Carbon Pricing	many organizations and networks, like the United Nations Population Fund and The	
	Beijing Energy Network, to actively achieve project objectives by promoting	
	technical and policy exchanges on energy transition and carbon pricing.	

4.2 Impact of Reports and Articles

This year, the institute participated in writing and publishing research outputs of various types including articles and reports, covering energy transition, behavioral change, circular economy and other issues, which were reprinted by many media outlets such as Lianhe Zaobao and Carbon Emission Trading Network.

In public discussions on climate policy, members of REEI were also interviewed by prominent media to share their views on relevant issues. For example, Lin Jiaqiao, co-director of REEI, said in an interview with 21st Century Business Herald with regards to Carbon Border Adjustment Mechanism that "there are still uncertainties in the legislation process of the EU, and it is hard to judge whether this mechanism can be implemented in 2023. As China launched a national carbon market from 2021, it will not be easy for the EU to impose a carbon tax on Chinese products".

Table 6: Details and Impact of Reports and Articles

Table 6. Details and Impact of Reports and Articles		
Reports and Articles	Main Content	Impact
Global Roadmap for	The report was jointly published by Health Care	The report has reached many
Healthcare Decarbonization	Without Harm and Arup Group, and was	hospitals to promote their
	compiled and translated to Chinese by REEI in	thinking and action on
	July 2021. In the report, it was clear that the	emission reduction through
	medical sector had the responsibility to	capacity building activities of
	implement climate actions. Three interactive	"Achieving the goal of 'Dual
	paths and seven high-impact actions of the	Carbon': How can medical
	medical sector were given as the reference of	institutions build the capacity
	emission reduction paths. The report also	to implement carbon emission
	provided detailed data and recommendations for	reduction".
	China's medical sector decarbonization	
	roadmap.	

Reports and Articles	Main Content	Impact
Case Manual of Energy-	The medical industry plays an important role in	As one of the leading green
saving and Emission	dealing with climate change. As the world's	medical institutions in China,
Reduction of Hospital	growing population increases the demand for	Huashan Hospital has
Building Air Conditioning	health care, its carbon footprint cannot be	achieved its goal of energy
System	ignored. On this basis, the project team	saving transformation through
	completed the report based on the experience of	this project. By sharing its
	Shanghai Huashan Hospital Indoor Carbon	transformation experience
	Dioxide Concentration Monitoring and Air-	through the manual, it can
	conditioning System Fresh Air Linkage	provide feasible practical
	Automatic Control Project.	cases for hospitals around
		China as reference.
How can Behavior Change	Starting from discussing how to adopt different	This report has promoted
Promote the Popularization	decision models to change people's behavior to	discussions among experts,
of Electric Vehicles	promote the popularization of electric vehicles,	scholars and the electric
	this report combined decision making	vehicle industry on the role of
	development of Europe and the United States,	behavioral change to promote
	and analyzed the experience of traditional	the development of electric
	policies and behavioral economics-based	vehicles, and other related
	policies in promoting the development of	issues. It also provided more
	electric vehicles in China, Japan and South	research directions and results
	Korea chapter by chapter. Under the analysis of	for the emission reduction in
	updated existing climate policy, feasible and	the transport sector.
	effective policy suggestions were given on the	
	potential of behavioral economics model to	
	promote the popularity of electric vehicles.	
Articles	In addition to the above report outputs, REEI has	These articles have been
	written several articles related to the research	republished by many media,
	topics of the project in 2021.	including Beijixing Power
		Network, and the updated
		content that kept pace with the
		times has provided rich and
		valuable research results for
		different audiences.

4.3 Impact of Audio-visual Output

This year, REEI maintained a fixed frequency of audiovisual output and has achieved some results in terms of broadcast volume and audience response.

Table 7: Details and Impact of Audio-visual Output

Table 7. Details and Impact of Addio-visual Output			
Name	Main Content	Effect	
Podcast	In 2021, the project team constantly updated the Chinese	By the end of 2021, the Chinese	
	podcast "Interpretation of Overseas Think Tank Energy	podcast album was played more	
	and Climate Change Report", with a total of 24 episodes.	than 100,000 times. The English	
	The English podcast "REEI Energy and Climate Podcast"	audio album was mainly distributed	
	has been updated for 41 episodes in total. The Chinese	in Asia and North America,	
	podcast "Energy Review" was added, with a total of 25	covering more than 50 countries	
	episodes released throughout the year. These podcasts	and regions.	
	focused on topics related to the project.		
Video	In October, the 26th UN Climate Change Conference of	REEI has increased its international	
	the Parties (COP26) officially kicked off in Glasgow, UK.	exposure through online	
	Due to the impact of the pandemic, the side event planned	exhibitions.	
	for COP26 could not proceed normally, so the exhibition		
	was held online. Therefore, the project team made three		
	long videos for the online exhibition (registration		
	required), which were "the Introduction of the		
	Organization", "the Introduction of the Project", and "the		
	Podcasts Introduction".		
Short video	In December, based on this year's Low-emission	The video has been played more	
	Transport Sector Project, the project team made two short	than 300 times.	
	videos for project communication and conference warm-		
	up.		

5. Financing and Expenditures

5.1 Funding Sources

REEI's total project funds for 2021 was RMB 1,369,839.00. The main donors are China Association for NGO Cooperation (CANGO), Heinrich-Böll-Stiftung Beijing Representative Office (HBS) and the China Office of the United Nations Development Programme (UNDP China).

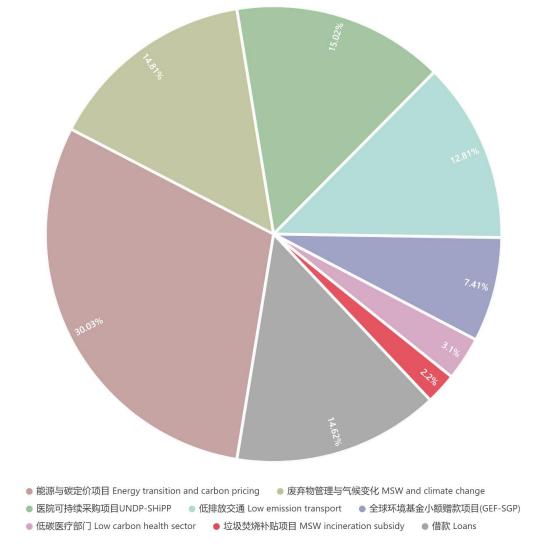


Figure 7: Summary of Funds of REEI's Projects in 2021 (%)

5.2 Expenditures

The total expenditure in 2021 is RMB 1,412,352.00. As shown in the figure below, among the categories of expenditure, staff salary and welfare account for the largest proportion, accounting for RMB 524,776.00 in total expenditure, followed by social security and provident fund, and travel expenses (all expenditure figures are project records and are not audited).

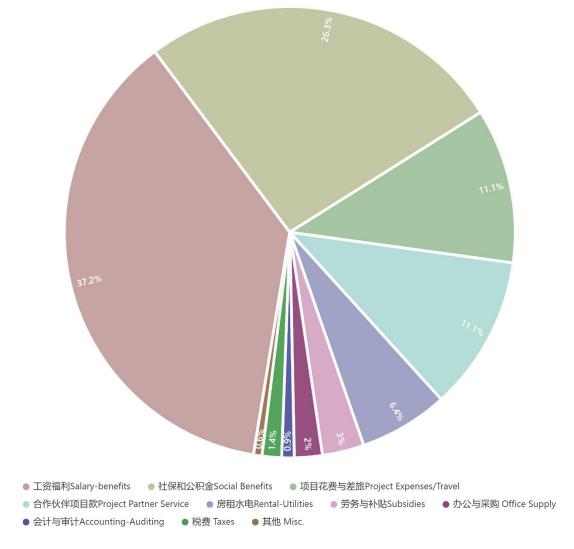


Figure 8: Expenditures of REEI in 2021 (%)

6. Conclusion

In 2021, the impact of the global pandemic continued. New challenges and opportunities continued to be presented to Rock Environment and Energy Institute. While maintaining the original project plan, REEI also actively explored new projects, striving to promote multi-dimensional and comprehensive participation in environmental and energy issues. In the inherent project mode, we actively explored new methods to constantly improve the project influence, and expanded the influence of the organization. At the same time, we also maintained a certain output frequency, methodically provided new perspectives and new ideas for the policy analysis of energy and environmental issues. In the future, we will continue to adhere to our goal of transforming China's energy system to a low carbon one that takes into account social equity, climate change, environmental quality and public health.

7. Acknowledgement

We hereby appreciate the support from Heinrich-Böll-Stiftung Beijing Representative Office, Vanke Foundation, China Association for NGO Cooperation, the United Nations Development Programme and other organizations that provide us with help and support. Thanks also to REEI's guidance organization, Beijing Shunyi District Association of Science and Technology, for their thoughtful guidance and valuable opinions on the development of our organization.