

Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Pu'er Project Site, P.R.China)

PROJECT PROPOSAL

Wanzhangshan Forest Farm, Simao Distract, Pu'er Prefecture, Yunnan

Province, P.R.China

20 October 2016



Asia-Pacific Network for Sustainable Forest Management and Rehabilitation

Project title	Integrated Forest Ecosystem Management Planning and Demonstration Project in
	Greater Mekong Sub-region (Pu'er Project Site, P.R.China)
Supervision	Forestry Bureau of Pu'er Prefecture
department	
Executive agency	Wanzhangshan Forest Farm, Simao District, Pu'er Prefecture
Project period	Jan. 2017 - Dec. 2021. 60 months
Project location: Simao District, Pu'er Prefecture, Yunnan Province, P.R.China	
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Total budget(US\$)	APFNet(US\$)	Counterpart Contribution (US\$)
1,094,022	740,306	353,716

Outline of the Project:

The project site of Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Pu'er Project Site, P.R.China) is located at Wanzhangshan Forest Farm (WFF), Simao Distract, Pu'er prefecture. Planning area of the project is 20859.4hm² and the implementation area is 396.7hm². The total budget is US\$1,094,022, among which APFNet's grant is US\$740,306 and counterpart contribution from WFF is US\$353,716.

Project Goal:

Through designing and implementing the project of Integrated Forest Ecosystem Management Planning and Demonstration Project in GMS (Pu'er Project Site, P.R.China), optimal integrated sustainable forest management models will be set up in the upper reach region of GMS, so as to improve quality of the forest ecosystem and optimize its integrated ecological, economic and social functions.

Project Objectives:

- 1 to develop the *Master Plan of Integrated Forest Ecosystem Management* and the *Forest Management Action Plan* and conduct scientific planning and effective management in the project site WFF, and act as a demonstration of integrated forest ecosystem management;
- 2 to establish integrated forest ecosystem management demonstration plots, and select the optimal forest management models based on evaluation of advanced techniques and best practices;
- 3 to set the project site as a role model on integrated forest ecosystem management in GMS through project dissemination and capacity building.

Project Outputs:		
1 "Master Plan of Integrated Forest Ecosystem Management of WFF, Pu'er Prefecture (2017-		
2036)", "Forest Management Action Plan of WFF, Pu'er Prefecture (2017–2026)";		
2 Establishment of forest tending demonstration for young-middle aged <i>Pinus kesiya</i> and <i>Betula</i>		
alnoides forest stand;		
3 Construction of efficient resin production demonstration plot and development of effective resin		
collection technical manual;		
4 Demonstration establishment of integrated second	ondary forest management;	
5 Construction of precious plant collection garde	n of south-subtropical region;	
6 Capacity building through trainings and comm	unications.	
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Abbreviations and acronym

APFNet	Asia-Pacific Network for Sustainable Forest Management and Rehabilitation
GMS	Greater Mekong Sub-region
PMA	Project Monitoring Agency
PSC	Project Steering Committee
WFF	Wanzhangshan Forest Farm
YAF	Yunnan Academy of Forestry
YPFD	Yunnan Provincial Forestry Department
FBPP	Forestry Bureau of Pu'er Prefecture
SG	Simao Government
FBSD	Forestry Bureau of Simao District
PFRI	Pu'er Forestry Research Institute

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1 Background and Rationale

1.1 Background

The preparation of integrated forest ecosystem management planning and demonstration project in GMS started from 2015. The scope of the project covers six economies including China, Myanmar, Vietnam, Thailand, Cambodia and Laos. Wanzhangshan Forest Farm is selected as the pilot site of China to carry out planning and demonstration project in 2016.

Pu'er project site is located at the north of Yunnan Province, south-west China and upper reach of the Mekong River. For a long time, the conflicts between forest protection and development have become more and more serious, due to prefer to tree felling than forest tending, as well as poor forest management, forest area in Pu'er gradually has increased but with low-quality and low-benefit forests, and the integrated services of forest ecosystem has decreased, which hinders regional ecological security and stable development of economy and society. The implementation of this project aims to improve the integrated forest management level of executive agency so as to radiate and drive the overall improvement of management level and ability of integrated forest ecosystem at surrounding regions.

1.2 Problem to be solved

Over the years, the governments at all levels in Pu'er have made lots of efforts on sustainable management of forest ecosystem. However, the effects are not significant due to lack of effective long-term development strategy on integrated management of forest ecosystem, appropriate sustainable forest management technologies and models as well as high-quality forest management personnel. Also, Pu'er project site lacks of mid-long term development strategy on integrated management of forest ecosystem and action plan. Meanwhile, during the tending process of main plantations such as *Pinus kesiya* and Betula *alnoides*, the differences in species, age and forest management objectives are always ignored but single tending measure and thinning intensity are used. Forest types and cultivation target are not considered in current resin tapping technical manual for *P. kesiya* resin, which usually applies the same management technical standards indistinctively.

1.3 Project site selection and reason

(1) Project site selection

The project will be implemented at Wangzhangshan Forest Farm, Simao District, Pu'er Prefecture, northern part of Yunnan.

- (2) Reason
 - Pu'er Prefecture is bounded by Myanmar, Laos and Vietnam, which is conducive to demonstrate and disseminate the project results to the Greater Mekong Subregion.

- 2) Pu'er Prefecture is located at the core area of the southwest tropical China. Pu'er Prefecture is not only the biggest forest zone in southwest China, but also major area of timber production and forestry industry development in southwest tropical region.
- 3) Pu'er Prefecture has a warm and humid climate, with abundant rainfall, sunshine, and deep fertile soil, which are suitable for the growth of a variety of tropical and subtropical tree species. The environment and nature condition are unique and suitable for forestry development.
- 4) The project site WFF is located at the cradle of the Xiaohei River and the Dazhong River, two primary tributaries of the Lancang - Mekong River. WFF is a leading forestry producer in Pu'er Prefecture, with abundant resources and capabilities to implement the project.

2 Significance and Necessary

2.1 Significance of project implementation

The Lancang - Mekong River is one of the world's largest rivers, the river with vast watershed area flows through China, Myanmar, Vietnam, Thailand, Cambodia and Laos. The forest ecosystem in watershed is critical for ecological security, and economic and social development of GMS, and plays a very important role in promoting social development, biodiversity conservation, mitigation of climate change, water conservation, and insurance of agricultural production.

To carry out the Integrated Forest Ecosystem Management Planning and Demonstration Project in GMS, the demonstration site in China will be established to accumulate experience and provide reference models to regional integrated management of forest ecosystem and sustainable forest management, to promote the integrated management of forest ecosystem in the watershed, so as to improve economic, social and ecological functions of forest ecosystem in the watershed, and facilitate the construction of ecological civilization in GMS in a better way.

2.2 Necessary

(1) It is the need for safeguarding ecological security of the downstream regions of the Mekong River.

Pu'er forest zone of Yunnan Province is defined as the water conservation forest of upstream of the Lancang-Mekong River, which is of great importance to water conservation, erosion and landslides control and so on. The implementation of the project is crucial in ecological security of downstream economies of the Mekong River.

(2) It is the need for establishing a good image and building southwest ecological security barrier.

Through the implementation of the project, the integrated management of forest ecosystem will be strengthened; best practices on forestry technology of Yunnan Province will be disseminated more widely. It is also conducive to promote a better international image of Chinese government taking ecological responsibility in international community.

(3) It is the need for building a Forest Yunnan and Beautiful Yunnan.

The project will facilitate modernization of Yunnan Forestry by promoting sustainable forest management on pilot site based on integrated planning. The stand structure of demonstration plots will be optimized, and quality and efficiency of forestland will be improved, so as the forestry functions in ecological, economic, social and cultural perspectives will be enhanced through the project demonstration and dissemination in Yunnan, which meets the need for building a Forest Yunnan and Beautiful Yunnan.

(4) It is the need for enhancing the integrated function of forest ecosystem in the project area.

Through the implementation of the project, a series of advanced techniques will be developed and disseminated, such as forest tending techniques aiming to secondary forest in local area, young-middle aged *P. kesiya* and *B. alnoides* forest, standard resin production, and integrated management technique manual. These techniques can be popularized to local and areas with similar conditions, to promote the reservation, restoration and improvement of forest ecosystem, and strengthen the integrated function of forest ecosystem in project area.

(5) It is the need for promoting the communication and cooperation among the GMS economies.

The results of this project will be disseminated among economies and organizations in Asia Pacific region through communications and technical cooperation in the field of integrated management of forest ecosystems and sustainable forest management.

3 Project Goal and Objectives

3.1 Goal

The goal of the project is to establish a demonstration model of integrated forest ecosystem management and forest sustainable management for the upstream regions of the Mekong River, thereby to improve the quality of forest ecosystem and improve the integrated ecological, economic and social functions in GMS.

3.2 Specific objectives

(1) to develop the Master Plan of Integrated Forest Ecosystem Management and the Forest

Management Action Plan and conduct scientific planning and effective management in the project site WFF, and act as a demonstration model of integrated forest ecosystem management;

(2) to establish integrated forest ecosystem management demonstration plots, and select the optimal forest management models based on evaluation of advanced techniques and best practices;

(3) to set the project site as a role model on integrated forest ecosystem management in GMS through project dissemination and capacity building.

4 Expected Output and Major Activities

Specific objective 1 to develop the Master Plan of Integrated Forest Ecosystem Management and the Forest Management Action Plan and conduct scientific planning and effective management in the project site WFF, and act as a demonstration of integrated forest ecosystem management

Output 1 "Master Plan of Integrated Forest Ecosystem Management of WFF, Pu'er Prefecture (2017 - 2036)", "Forest Management Action Plan of WFF, Pu'er Prefecture (2017 - 2026)"

Based on the latest available data and field investigation on the existing forest resources of WFF, an overall planning will be developed at different stages (short, middle and long-term) which covers forest ecological system, forestry industry system, cultural system, security system, institution building, personnel training and so on.

In accordance with the requirements of sustainable management, a 20-year forest management plan for WFF will be developed. Forest ecosystem management will be adopted in the plan, with balance between adopt, active protection and rational utilization of forest resources. The plan aims to enhance the integrated forest ecosystem service function in the region, and establish a model on how to develop and implement an integrated forest management plan in GMS.

Activity 1.1 Develop "Master Plan of Integrated Forest Ecosystem Management of WFF, Pu'er Prefecture (2017–2036)"(See Annex E Project Implementation Plan 1.1)

Activity 1.2 "Forest Management Action Plan of WFF, Pu'er Prefecture (2017–2026)"(See Annex E Project Implementation Plan 1.2)

Specific objective 2 to establish integrated forest ecosystem management demonstration plots, and select the optimal forest management models based on evaluation of advanced techniques and best practices

Output 2 Establishment of forest tending demonstration for young-middle aged *Pinus kesiya* and *Betula alnoides* forest stand

The forestland with the area of 120hm² is designed by two management directions: commercial forest and non-commercial forest.

The objective of demonstration base of non-commercial forest tending is to preserve and cultivate evergreen broad-leaved plants such as *Fagaceae*, *Lauraceae*, *Magnoliaceae* and tea, as a means to achieve a mixed, stratified, uneven-aged stand structure. Try to restore forest ecosystem up to the zonal climax vegetation-monsoon evergreen broad-leaved forest, and continuously improve ecological service function of non-commercial forest. *P. kesiya*.

For commercial forest tending, the objective is to maximize land productivity and restore biodiversity to certain degree.

Activity 2.1 Establish a tending demonstration base of middle aged *P. kesiya* non-commercial forest, with an area of 40hm^2 (See Annex E Project implementation plan 2.1.1)

Activity 2.2 Establish a tending demonstration base of young *P. kesiya* commercial forest, with an area of 40hm^2 (See Annex E Project implementation plan 2.1.2)

Activity 2.3 Establish a tending demonstration base of *B. alnoides* commercial forest, with an area of 40hm^2 (See Annex E Project implementation plan 2.2.1)

Output 3 Construction of efficient resin production demonstration plot and development of effective resin collection technical manual

The goal of demonstration base is to obtain optimal successive resin yield. There are two tapping methods: downward tapping method and shallow-hole drilling sealing method, and two comparison demonstrations: thinning intensity and fertilizer application amount. The downward tapping method mainly compares the influence of tapping tool and cutting intensity on resin yield. The shallow-hole drilling sealing method compares the influence of tapping-hole numbers on resin yield. Set the thinning intensities with 15%, 30%, 45% respectively and the control. The fertilizer application test uses Sanyuan compound fertilizer (N:P:K=15:15:15), compares 500g, 1000g, 1500g respectively and the control. This demonstration zone will show the optimal tapping techniques, and through the construction of the standardized production model forest, strengthen scientific resin tapping and rational use of education and training, regulate local resin collection activities and improve the scientific theories and techniques of resin tapping.

Activity 3.1 Establish a resin production demonstration plot with an area of 30hm² (See Annex E Project major activity implementation plan 3.1)

Activity 3.2 Develop an effective resin collection technical manual (See Annex E Project major activity implementation plan 3.2)

Output 4 Demonstration establishment of integrated secondary forest management

Taking natural secondary forest as the object, an integrated secondary forest management technique demonstration base will be constructed. According to the natural conditions of forest land, the goal is to improve the forest ecosystem service function, increase the comprehensive benefits of forest land and improve sustainable development of the forest. On the basis of the close-to-nature forestry theory, two methods, the understory planting and selective cutting and tending to improve forest ecological function will be used to increase secondary forest productivity and accelerate the succession process to the zonal climax community.

Specific measures include: 1) selective cutting and tending will be conducted on a secondary forest with an area of 45 hm² in order to improve its ecological function, then dominant species of zonal climax community will be replanted in single forest gap more than $15m^2$. The ratio of *P.kesiya* to broadleaved tree species changes from current 7:3 to 2:8, 3:7 and 4:6; 2) understory planting with *Dendrobium* and other medicinal plants will be carried out on a forest land with an area of $5hm^2$.

Activity 4.1 Selective thinning to improve ecological function of the secondary forest (See Annex E Project implementation plan 4.1)

Activity 4.2 Demonstration of understory planting (See Annex E Project implementation plan 4.2)

Output 5 Construction of precious plant collection garden of south-subtropical region

Based on Pu'er Subtropical Botanical Garden, no less than 100 kinds of species resources including south subtropical precious timber species, species of extremely small populations and other forest species with medicinal, flavor and vegetable uses will be introduced, with consideration of landscape construction of botanic garden. The number of each species collected is not less than 50. Labels of species introduction will be tagged on the trees collected, for scientific education so as to promote public awareness on biodiversity conservation and forestry sustainable development.

Activity5.1 South subtropical precious plant collection (See Annex E Project implementation plan 5.1)

Activity5.2 Tree labels (See Annex E Project implementation plan 5.2)

Specific Objective 3 to set the project site as a role model on integrated forest ecosystem management in GMS through project dissemination and capacity building

Output 6 Capacity building through trainings and communications

In order to extend project influence and effectively promote the project results, the project trainings will be targeted at forestry technicians and management personnel of the project executive agency, with topics covering forest resources investigation and monitoring, tree species classification, forest conservation, forest management, state owned forest farm management, project management and project publication and so on. At the same time, forest technicians and management personnel will visit Kunming Haikou Forest Farm and Baoshan Shanzhou Forest Farm to learn and communicate best practices on integrated management of forest ecosystem. They also will visit other GMS economies to improve the management ability of state-owned forest farm.

Activity 6.1 Technical training (See Annex E Project implementation plan 6.1)

Activity 6.2 Domestic communications (See Annex E Project major activity implementation plan 6.2)

Activity 6.3 Visits to other GMS economies for forest ecosystem integrated management (See Annex E Project implementation plan 6.3)

5 Budget and Financial Management

5.1 Budget and Source

The total budget is US\$1094,022, APFNet's grant is US\$740,306 and counterpart contribution from WFF is US\$ 353,716.

5.2 Assets management

5.2.1 Fixed assets management

To simplify the process and improve the efficiency, the purchase of fixed assets will use inquiry purchase approach and are determined by office meeting of WFF. The files of fixed asset will be established and managed by staff pointed with clear responsibility. The department in charge of the project should carry out an inventory of fixed assets at least once a year.

5.2.2 Current assets management

Current assets include cash, bank deposits and low value consumables. WFF should set up a special account for this project, the fund only can be used by this project and the special account will be accounted separately. After each activity finished, the handling personnel should fill in the account application form, after audited by the finance department and signed by project director, the fund could be paid.

5.2.3 Audit

The administrative department will inspect the project financial situation. Executive agency should submit financial report annually to APFNet. An independent project audit will be carried out each year by qualified audit organizations.

6 Project Monitoring and Evaluation

The Project Steering Committee (PSC) and external evaluation experts are responsible for external inspection of the project. PSC will carry out an inspection every year after the start of the project. External evaluation experts will carry out project evaluation in the middle of the project and after the completion of the project according to the requirements of APFNet.

PSC and project administrative department are responsible for the supervision and guidance on the project implementation. The project office shall submit annual progress report, annual work plan and budget to PSC. In addition, the project office will carry out continuous project monitoring, regularly submit the internal assessment report to APFNet, this report explains the achievements of the project, implementation status, budget management, potential risks on management. If the project activities cannot be carried out in accordance with the project plan and implementation plan, or the existence of major issues affecting the progress of the project, the project director shall put forward the inspection application for APFNet in order to find out the causes of the problem and the solution.

Project executive agency WFF and technical support agency will jointly carry out an internal evaluation at 3 months before the end of the project, mainly to evaluate the effectiveness and efficiency of project implementation, the participation of stakeholders, project impact, project risk and how to ease / loss the risk, experience and lessons, evaluation methods, relevant data, material and information will be obtained through on-the-spot investigation, interview and questionnaire. The evaluation report will submitted to as the attachment of the completion report.

7 Dissemination and Sustainability

7.1 Project dissemination

The outputs and results in the process of project implementation will be publicized by many forms of newspaper, TV, internet, media, publishing guide, CD-ROM and publications.

(1) Media: through Pu'er daily, Pu'er television, 'Chinese Green Times', 'China forestry' and other domestic newspapers and magazines. The objectives, content, funding agencies of the project, achievements, experience and practice of the project will be publicized.

(2) Project publicity sign: The publicity sign of demonstration project will be set up at

significant position of the project activity demonstration area, the promotional contents include the construction units, the basic situation of project, measures, implementation time, specific practices and funding agencies.

(3) Internet: The implementation progress and progressive achievement will be shown at the websites of Forestry bureau of Yunnan Province, YAF, Southwest Forestry University, Forestry Bureau of Pu'er Prefecture, Forestry Research Institute of Pu'er Prefecture and APFNet.

(4) Guideline and brochure: Efficient resin tapping operating technical guidelines and project brochures will provide the reference for the similar project area, which will be applied combining with forestry production practice.

(5) Publication: Staged results will be released through the publication of paper and other materials. The main object includes forestry technicians, local forestry authorities, and international organizations and so on.

The details will be found in Annex A-7.

7.2 Project sustainability

(1) Social and economic sustainability

In addition to the revenue from resin collection, thinning wood, understory planting occurring in the project period, the project implementation will also hire local labors, increasing employment and income; moreover, all the activities of project demonstration are carried out on the forestland of WFF, where all the benefit goes to. Once the forest farmers can benefit from the integrated management model of forest ecosystem developed by the project, more forest farmers will be willing to accept the technology demonstrated and promoted by the project so as to promote the economic development of Yunnan.

(2) Environmental resource sustainability

The project is committed to promoting the forest ecosystem management, so will not have negative impact on the environment; in theory, the project will weakly impact on undergrowth vegetation at the time of forest thinning, when there are less water and soil erosion at the time of site preparation. The project sites of demonstration originally are the extensive management woodland, with the implementation of the project activities, the forest structure and forest quality of degraded forest will be greatly improved and the forest will play a greater role in long-term soil conservation.

(3) Administration system and strategy sustainability

The project administrative and management system consists of APFNet, local government of Pu'er Prefecture and Simao District, project executive agency and project technical support team. The project conforms to policies and regulations, guidance and development planning on forest ecosystem protection of central and Yunnan provincial governments; at the same time, the project land belongs to state-owned forest with clear ownership. WFF's commitments for project cooperation are unlikely reversal or major changes during the implementation of the project.

The project is relatively harmonious, compatible in the economy and environment, economy and society, society and environment, institutions and policies, with low risk in conflicts and contradictions, so the overall sustainability of the project is good.

8 Guarantee System

8.1 Human resource

To guarantee the successful project implementation, a project management system will be established consisting of a project steering committee, a project monitoring agency, a project technical support team and a project management office. The Project organizational chart is illustrated as follows:



The Project organizational chart

8.1.1 Project Steering Committee

A Project Steering Committee (PSC) is composed of forestry administrative departments at the level of province, prefecture and district as well as forestry institutes. PSC will inspect annual work plan and activity report, carry out necessary inspection and assessment of project process, research and guide the important issues during the project implementation.

8.1.2 Project Supervisor Panel

A Project supervisor panel is composed of the leaders of Forestry Bureau of Pu'er Prefecture, Forestry Bureau of Simao District and different functional departments, to carry out necessary inspection of the project.

8.1.3 Project technical support team

A project technical support team is composed of the experts from YAF, Forestry research institute of Pu'er Prefecture who are specialized in forest management, forest cultivation, forest ecology, forest protection, etc., to prepare annual project plans and progress reports. The project chief expert is responsible for developing the project proposal, providing technical consultancy and guidance on key technical problems and internal evaluation, etc..

8.1.4 Project implementation office

A project management office will be set up in WFF and is mainly responsible for the project organization, coordination and implementation work. The main work contents include: assisting the project technical supporting team to prepare and submit annual project plans and progress reports, interim assessment and project acceptance; organizing project implementation; financial accounting; communication and coordination.

8.2 Material resource

8.2.1 Clear ownership of forest land and trees in project area

The state-owned forest zone of project site belongs to independent management field of WFF, Simao District. The ownership of forest land and trees is clear and with no controversy.

8.2.2 WFF with a certain infrastructures and equipment

WFF is located in urban area of Simao District, Pu'er Prefecture and has well-grounded infrastructure, convenient access to transportation and communications. There are several management stations in project area which can effectively manage project activities and results. The forest investigation and planning team of WFF is equipped with well-grounded survey equipment and able to independently carry out tending operational design.

8.3 Strategies and regulations

This project emphasizes on the integrated planning and demonstration of the forest ecosystem which will enormously promote forest structure and sustainable forest management, improve the quality and efficiency of forest land and optimize forestry ecological, economic and social function. The project completely conforms to the relevant laws, regulations, rules and development planning of central and Yunnan Provincial governments.

8.4 Organization ability

Project executive agency WFF, as a state-owned forest farm, was established in 2001.WFF has 7 offices responsible for daily management, production, operation, administration, finance, planning and design, and botanical garden. WFF forest zone has 24 forest management sites. There are 48 staffs, among of which, 47 staffs have professional titles. WFF produces and manages orderly and has completed several projects on ecological restoration, afforestation, forest tending, planning and design and so on.

9 Risk Assessment

Risks and corresponding mitigating measures are as follows.

Risk	Measure
1 Coordination problems between	1.1 Clarify the responsibility, right, interest of each agency;
participant agencies which influence the implementation of	1.2 Strengthen the communication between project agencies;
project activity	1.3 Coordinate through project leading team.
2 Integrated management measures	2.1 Coordinate to get approval through PSC and local
of forest ecological system may not	forestry administrative departments;
coincide with the existing forest	2.2 Separately implement activities which greatly impact
management practices, so that the project activities may be limited	forest, to reduce its impact area and intensity.
3 During the 5 years of the project	3.1 Save costs as far as possible in the process of project
implementation, the factors of rising price may result in the budget shortfall	implementation process, do not waste;
	3.2 In the initial stage of the project, each outsourcing task
	will be fixed in the way of the contract to reduce the
	effect of the price rise;
	3.3 Implement the project and purchase the equipment as early as possible.
4 Project execution agency lacks of	4.1Strengthen the training for project technicians on key
technical strength which impacts	techniques before the beginning of each project activity;
the project results	4.2 Strengthen technical support agencies' participation,
	ensure application of scientific and technological
	measures.
5 Poor forest management affects the	5.1 Organize a patrol to improve management;
effectiveness of demonstration	

forest	5.2 Enhance education and publicity on forest protection
	awareness;
	5.3 Build fire isolation belt and livestock fence at key sites.

After a comprehensive assessment, the overall risk of project can be controlled, and project implementation is necessary and feasible.

Annex

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