

VICIOUS CIRCULATION OF WATER DEFICIENCY AND WATER POLLUTION – “CANCER” OF THE RIVERS IN THE NORTH OF CHINA.

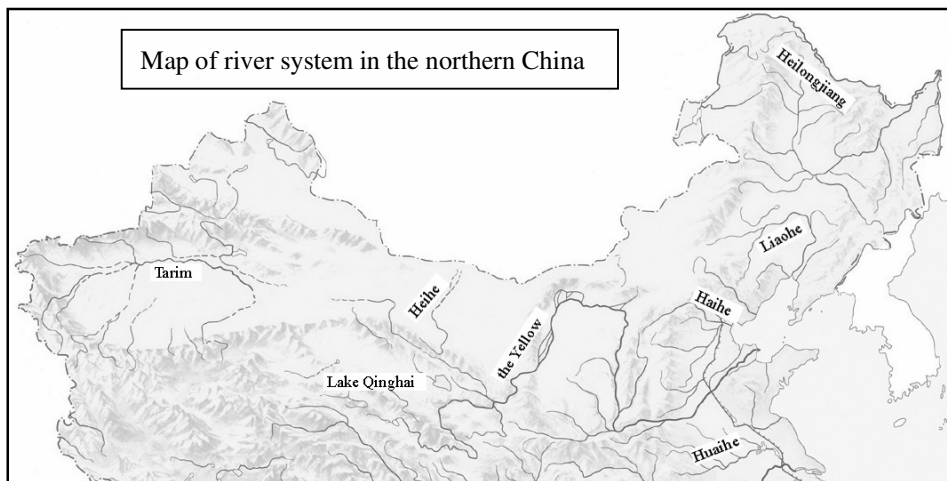
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The North of China belongs to the basin of the Tarim River, the Heihe River, the Yellow River, the Huaihe River, the Haihe River, the Liaohe River, the Heilongjiang River and other shorter rivers and other indraft areas. The total area of all river basin is about 3,200,000 sq. km., exceeds 3/5 of area of land of 13 provinces, municipalities and autonomous regions of the North of China (5, 220,000 sq. km.). [1](See Fig.1)

Fig.1 Map of river system in the northern China



Follow the growth of the economy and the population, lacking of water in the rivers of the northern China is serious,. Since the sixties and seventies of previous century, the blanking has taken place successively in numerous rivers, brought serious influence on the development of the economic, made the society to shake. Afterwards, through certain effort, although the blanking phenomenon is alleviated for the past several years, but the water quality of many rivers has sharply worsened and was dropped to V, bad V grade in the numerous sections, from

the situation that the water quality in a great part sections in the main stream was still rather good for past more than 20 years ago. It has become the first killer, influencing the life of river. Therefore, we must summarize the experiences on that the rivers of the northern China, especially the most influential Yellow River, have gone from blanking to resuming flow, we also must control the pollution and proportionate the development of the society and the economic, with the water yield and the water quality. These affair have already become task of top priority!

1, The lesson and experience about that the Yellow River etc. have gone from blanking to replying of flowing

1, 1, fact

The Yellow River is 5501.1km long, and is one of five major rivers in the world.

The evolutionary history of the Yellow River is the most typical in the great rivers of the whole globe. Following the lifting of Qinghai-Tibet Plateau, its main stream linked up the strata, which have formed since 2.4Ma. According to analysis of the sedimentary gravel layer and the upperlying loess and ancient soil, which have formed since 2.4Ma, we can conclude that in the geological period, although the climate and the water yield of the Yellow River Basin have had a periodical fluctuate, but they were not very different than the data measured before the blanking .in 1972. Its natural total runoff volume is 57,400 million cubic meters and its minimum annual runoff volume of the lower reaches of the river is 27,350 million cubic meters .These two data should be representative. [2]

In the human historical period, the Yellow River is the river, the record on the regimen of which is the most exhaustive in the world,. For 3711 years from 1766 BC. to 1945 A.D, although there are the records of the great drought, caused disaster, for more than 1070 years, but there are few of the records on the downstream blanking, occurring continuously for many years. These record are far inferior to one of the flood in the detail [3]

The modern hydrological observation and measurement of the Yellow River started in 1919, Up to 1971, there were only three incidents of blanking: digging out dam and hanging the course of river Huayuankou near Zhengzhou City, Henan Province in the summer of 1938; damming up water at the pivot dam of Huayuankou in June of 1960; damming up water at the

pivot dam of Sanmenxia Gorge, Henan Province in December of 1960. Besides there is no record of the blanking.

But for 28 years from 1972 to 1999, the blanking occurred for 22 years in the low reaches of the Yellow River. Accumulative total amount of days is 1090. The blanking of 1997 year was the most serious, the days of the blanking is 226; the section of the blanking is 704 km long. It is a rare river phenomenon in the historical period of the Yellow River. The blanking of lower reaches was alleviated only after the person who administer water has implemented the unified dispatch of the water yield since March 1 1999 .Up to now the person , administering water, has further obtained the score of resuming flow in the whole river at the whole year for continuous 5years (See Table 1, Fig.2).

Table 1 Cut-offs and return of the Yellow River in 1972-2004

Year	Days of cuts-off of the hydrographic stations above river mouth						Length of cuts-off/km
	Jiahetan	Gaochun	Sunkou	Aishan	Likou	Lijing	
1972					6	9	278
1973							0
1974					10	20	278
1975					4	13	278
1976						8	104
1977							0
1978						5	104
1979					5	21	278
1980						8	104
1981		11	12	12	16	36	579
1982					3	10	278
1983						5	120
1984							0
1985							0
1986							0
1987						17	139
1988						5	104
1989						27	178
1990							0
1991						16	178
1992					36	82	337
1993					3	60	299
1994					31	75	237
1995	4	12	51	62	74	122	683
1996		6	11	22	67	132	604
1997						226	704
1998			10	15	42	142	449
1999					16	41	278
/1999.3.1						7	104
2000							0
2001							0
2002							0
2003							0
2004							0

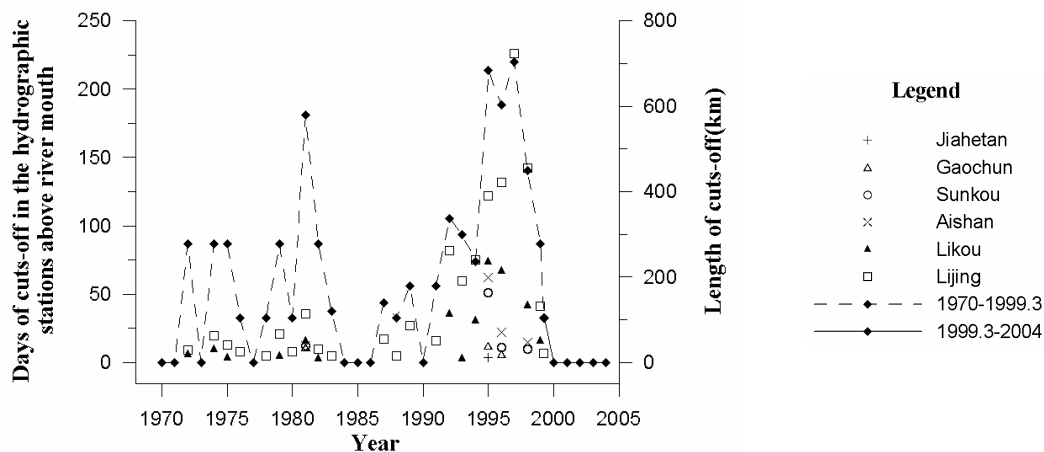


Fig.2 Days and length of blanking and resuming of flowing in the lower reaches of the Yellow River, form 1972 to 2004

1.2 The affirmation of the fact and reason of the blanking in the Yellow River

In the earliest several years, because the days of the blanking in the lower reaches of the Yellow River generally did not exceed 10-20, moreover the section of blanking is relatively far from the communication lines, the earliest reports of fact on the blanking of the lower reaches of the Yellow River occurred in the " Administration and development of the Yellow River " published by the Water conservancy committee of the Yellow River (YRCC) in December of 1984 and in the " Opening up the new studying field about developmental history of the whole course of the great river" published by first author of the present paper in January of 1985, and the "Story of the Yellow River" published by the first author collaboration with the Japanese scholars in the May of 1986. [6]

These works were independently published almost at same time. Among them, the visual angles of the author of the book "Administration and development of the Yellow River" and the author of the present paper are certainly different. The former proposed "because the flow leans towards withered and the water yield utilized by the industry and the agriculture increase, the phenomenon of the blanking often present itself" [6]. They emphasized "the flow leans towards withered" at first. This viewpoint becomes the only reason why the media explained blanking for the Yellow River to the public at that time. The Author of the present paper has thought "that the utilizing of the water without a definite plan in eastern part of our country

has caused the difficulty of utilizing water in many areas” even has caused the blanking of some rivers. The author obtained this conclusion because in the investigation of the whole course of the Yellow River on foot in 360 days, he discovered that the influence of water quantities of drawing and of drawing in plan to the Yellow River is far greater than one of climatic change to the Yellow River But drawing a large number of water was related with the further development of irrigation in all parts of the country and actively changing the features of arid mountainous area after ending of the “Culture Revolution” in 1976.

Recent study has indicated that although the materials on the precipitation of the Yellow River Basin in 1950-1995 showed that the precipitation leaned towards decreasing after 1970s, especially in 1990-1995, but the amount of decrease did not exceed 19.1% before 1970 s. This is not reason of blanking of the Yellow Rive for 22 years. Moreover, the beginning of the 1980 s was still wet years.

Contrary to this, as far back as 1991, in their book "Question and Countermeasure of the Water Resources in the Loess Plateau", Zhang You-shi etc of the Chinese Academy of Sciences (CAS) pointed out the sharp contradiction between the supply and demand of the water resources in various area. The Datong River, a tributary of the Yellow River, has only annual runoff of 2,826 million cubic meters, but the utilized water of itself and planned drawing are altogether 2,869 million - 3,330 million cubic meters, This is typical example on that income falling short of expenditure. The author investigated 9 provinces (autonomous regions), 36 prefectures (league, city) and 108 counties demanded a large number of water to planned drawing and rising from the Yellow River, and this amount can amount to 3.5 times of the total. Why the Yellow River is originally? The river deficient river in water resource, if this circumstances can not be prevented in time, the evil consequence will be certainly caused?

After the flood of the Huaihe River occurred in 1991 the author proposed the suggestion on transferring the water of the Huaihe River into the north and on tightly holding the work of the South-North Water Diversion of the east line ,these engineerings will solve the problem of the Huaihe River’s flood , the problem of the Yellow River’s blanking ,and the problem of the flood of the Lixiahe region in the north of the Yangtze River .But these engineerings only

solve the problem on the Huaihe River will resume to enter independently into sea, not to enter into the Yangtze river , meanwhile the water of Yangtze River and the Huaihe River cannot yet enter into the Yellow River and the Haihe River. At same time, the viewpoint on "the water of the Yellow River should be entirely employed" occupied the windward for a time. Just by 1997, the Yellow River blanking increasingly aggravated, it influenced the central zones of China with dense populations and developed communication, the whole society was shaken, therefore, it finally caused the attention.

Afterwards, a great part of the suggestions on the reason and the countermeasure of the Yellow River's blanking, including 151 academicians of CAS&CAE, the opinion of the Division of CAS, are similar to achievements in scientific research for previous more than 10 years. The final conclusion is that the excessive drawing of water is fundamental reason of the Yellow River's blanking..

1.3. The influence of the blanking in the Yellow River, the Tarim river and the Haihe River and its way of settlement.

The understanding on the reason of the Yellow River's blanking has been yet not unified, therefore the report on its endanger has only come from the respect of the economical and social influence, but not from one of ecological influence Comparatively speaking, the research on the ecological endangerment of the blanking in the Tarim river and the Haihe River was relatively abundant. In addition, the instance of the desertification process after the blanking of the Yellow River in history. Is convincing very much. Summing up above-mentioned research, we can find:

1) The blanking of the rivers has obviously influenced the use of drawing facilities in the industry and the agriculture, and directly caused the great economic losses. For example, annual economic losses of the oil field, power plant, water-supply system, irrigational system etc. in the lower reaches of the Yellow River amounted to several hundreds of millions of yuan RMB.

2) The river blanking made the ecology of the basin worsen, shown as follows:

(1) The river of the earth's surface shortened or became the seasonal river. The riverbed silted

up to be heightened and caused the hidden dangers of that "Little water caused great calamity" and river's breach etc.

(2) The water yield, entering into sea and lake, was heavily reduced. , this circumstance caused a crushing calamity to the ecology of marine area near river's mouth. For example, because the fresh water, entering into sea, has been sharply reduced in the Haihe River's mouth, the marine production obviously declined[11].

(3) The level of the ground water was reduced, The salinization of soil occurred.The insect pest appeared

(4) The natural vegetation on two sides of the rivers was reduced and declined (such as the forest of diversiform –leaved poplar on the two sides of the Tarim Basin); The meadow degraded and the livestock –bearing capacity dropped [12]

(5) The desertification of land and the invasion of the desert accelerated.

(6) The influence on the climate made the temperature rise, made the humidity to be reduced, made the windy and sandy weather to increase.

In sum, the blanking of the river causes adverse effects to the hydrosphere, the encirclement of soil enclose, the biosphere and the atmosphere.

3) If we do not control the blanking of the river in time, it will cause deadly endangerment to the industry, the agriculture and ecology along the river, even influence the stability of society. Now we give two examples of influence caused by the blanking of the Yellow River in history as follows:

In 1938, in order to preventing the Japanese aggressor troop from pursuing and attack, Chinese Government commanded to push the Yellow River embankment in the Huayuankou. At that time, that is, substituted soldier with water. As a result, not merely the land of 54,000 sq.km became a vast expanse of water, 12,5 million people was hit by floods, more than 3 million people left their native place, 890,000 people died an unnatural death, moreover the serious ecological disruption was caused. Although the Yellow River returned to the old course in 1947, but the flood, drought, plague of locusts occurring frequently, jointly with the bad local high-ranking official have been still called as "four major calamities" for many years.

In history, after the Yellow River entered the North China Plain, it changed its course many

times. In 1194 A.D (Mingchang 5th year of the Jin Dynasty's Zhangzong emperor) the Yellow River flowed southwards and into the Huaihe River. In 1855A.D (Xianfeng 5th years of Qing Dynasty's Wenzong emperor), the embankment near Tongwaxiang village, Lankao County, Henan Province breached and the Yellow River resumed to flow northeastwards, the section of the Yellow River from Tongwaxiang village through Xuzhou city to the Huaihe River was abandoned and was called as "abolishing Yellow River", which become a famous calamitous and barren area in the whole country because the river's blanking occurred.

The riverbed dried up, and the wind, sand, salt, alkali etc. Jointly wreaked havoc. Only because of the administration since 1960s, the ecology of that area has taken a turn for the better[13].

According to textual criticism, the ancient city of Loulan in the lower reaches of the Tarim River's hydrographic net was destroyed also because of lacking water more than 2,000 years ago. So, if the blanking of the Yellow River and the Tarim river is not controlled early, the "abolishing Yellow River" and the "ancient city of LouLan". Will be finally unavoidable.

When the blanking of the Tarim river, the Heihe River, the Yellow River, the Huaihe River, the Haihe River and other rivers took place in flake and flake, their influences were more difficult to expect. So, since 1998, the settlement of the problem on blanking of the northern China's rivers, such as the Yellow River, etc. Has become the focus paid close attention by Chinese society.

The settlement of the problem is not very difficult. After we correctly maintain that the fundamental reasons of the river's blanking is the artificial excessive drawing water, it is only necessary to unitedly dispatch the water yield of every rivers in the north of China .

.Just because taking this measure, since March 1, 1999, in the Yellow River, the achievement of resuming flow for continuous 5 years has been gradually obtained . In the Tarim Basin river, the Heihe River, etc. Same achievements have been made.

1.4, The lesson and the experience of solving problem on the water shorting and blanking of the northern China's rivers

Although China is a ancient civilized country with the history of 5000 years ,and was established with administration of water. Some earliest emperors are heroes, administering

water. In history of China ,there are abundant experiences on administering water, but the calamity of water was yet very serious, For 2540 years from 602 B.C. to 1938 A.D, the lower reaches of the Yellow River had more than 1500 overflow, 26 great change of course, 7 especially heavy change of course. These change brought the very grave disaster to China. So, "preventing the flood" becomes China's past dynasties and government's cardinal task. This task was accomplished very good after the foundation of new China in 1949, because millions of people were mobilized to actively participate in building of embankment along the Yellow River and construction of other engineerings. For 56 years the main stream of the Yellow River has not breached. This is unprecedented success in history.

But for 28 years from 1972 to 1999, the excessive drawing of water though increased the irrigated area and heightened the agricultural harvest, and solved some water-using problems of area lacking of water, but cause the Yellow River to produce rare phenomenon of blanking in 22 years. Meanwhile, in other river of the northern China, the phenomenon of lack water and blanking occurred successively too, caused the great economic losses and heavy social influences, and destroyed the ecology. These lessons is are also very deep.

It is gratifying to that after administration for 5 years in succession, China not merely has correctly realized the reason, danger of the blanking in the northern rivers, and has taken some key measures of united dispatching water yield etc.,and has obtained preliminary achievement of preventing blanking ,moreover has reach the common understanding in respect of that the protecting of ecology make the river to develop sustainably.

Academician, Qian Zhengying of Chinese Academy of Engineering, leader of the research project on the "Water resources of the northwestern China", pointed out that "in the landlocked river's basin, the social and economical consumption of water can only account for 50% of the total amount of the water resources (the remainder must be used to protect the ecology)".[14]

In the meeting of global water companion about harness of river, Li Guoying, director of the YRCC, proposed a suggestion on "the basic water yield , keeping the life of river"[15] These opinion are very good and completely correct. They are entirely different from the viewpoint on that "river's water yield should be all used" of several years ago. This is very great progress. Before the South-North Water Diversion was realized, the drawing engineering transferring

out water from the main stream, cannot yet be too many, because these many drawing engineering shall be difficultly endured by the rivers of the northern China which just resumed and is very fragile. The Weihe River, the greatest tributary of the Yellow River, has been closed to Xi'an city because of lacking of water. Its prospect has made people to be worried.

The opinion of the authors was yet proposed in 1997 and 1998, that is "the fundamental way to solving the problem on the blanking of the Yellow River lies in developing resources and reducing expenditures, giving consideration to the whole river" (16) (17).

2. Retrospect of the pollution in the river of the northern China and countermeasure to it

2.1, review

In 1982, had finished an expedition of the Yellow River in the whole journey, the author investigated on foot the Yangtze River from the source to the mouth for 750 days, and pointed out that the water quality of the Yangtze River and the Yellow River almost all section is fair. However In Shanghai, the industrial output of which amounts to 1/9 of ones of the whole country, the Suzhou River is seriously polluted, It is the blackest river of the whole country. On the basis of this fact, the authors sends out a prewarning, which must brought to attentions of other developing large and middle cities and the whole basin. The authors have thought that "the great rivers especially need unity, long-term work of preventing pollution and the power of the environmental protection department must be strengthened". This understanding is identical to the work of YRCC and other departments. And it is also identical to ones, which was obtained when author did second expedition of the upper reaches of the Yellow River in 1986 and 1987 and when author and his friends made the drifting on the whole journey of the Yellow River in 1987, which is the first at history. The work of YRCC concentrated on 26 appraisal sections of the main stream in 1979, and measured that the sewage on the basin was fewer than 1,800 million tons. In 1981-1983, the river sections with the water quality of I and grade amount to 49,031.5 km and account for 90.3% of the whole river, the river sections with the water quality of II and III grade no exist.[18]. While we investigated and drifted, we want to observe the river water on the whole journey, try drink, enter into water, row and go fishing. The much peasants of the basin can plant independently just now at this moment, the scale of

the village's and town's industries were not large, really have no pollution sources.

Following growth of population and economic development, not merely the question of lacking of water is outstanding on the Yellow River, but the pollution in it is aggravated to "direct ratio with the regional industry and agriculture development degree" [19]. Therefore in 1995, 1996, before the 30th International Geological Congress author third time went on expedition to the greater part of sections in the Yellow River and discovered that the few sections, such as below Qingtongxia Gorge, was very seriously polluted, so that author sent a famous sigh with regret: "Is this the Yellow River, or Black River?" [20] However, at that moment, the pollution of the Yellow River was yet no familiar with the public and no brought to a close attention like the water depletion.

In 2000, Shen Yun-fen academician of C. A. S, pointed out concretely that the industrial sewage and the sanitary sewage in the Yangtze River valley account for 75% and 25% respectively, In 21 cities of main stream, the sewage from Shanghai account for 30.7% of total amount of 21 cities, from Wuhan for 18.10%, from Nanjing for 15.8%, from Chongqing for 8.8%. The sewage from these four major cities account for 73.4% of total amount of 21 cities. Thus, these four cities are the largest sources of the pollution in Yangtze River"[21]. The Shen's opinion is identical to the conclusion published by the first author in 1985, that is "The pollution of the Yangtze River mainly appears in the sections below Yibin city, Sichuan Province" and "the degree of the pollution in the rivers is almost in direct ratio with the developments of the industry and agriculture in the area across which the river flows, "The water yield of the Yangtze River is 17 times of the Yellow River. Its self-purification ability is far better than the Yellow River, but the results examined from the Yangtze River have not still caused the persons to pay a sufficient attention, so the total amount of blowdown in the Yellow River Basin remains high and high, the water quality of the Yellow River has worsened sharply. And the serious pollution accidents have been more frequent, the main stream has been particularly outstanding.

Thereafter, in 2003, the national environmental protection department though issue the emergency preplan, which prevent the Yellow River strictly from polluting [22], but it had not merely no worked, moreover "the water quality of nearly 40% of the sections of main stream

was plus grade in 2004, and the Yellow River will be located in the serious situation of losing the river's function". In the same year, in the Huaihe River, harnessed for 10 year, the pollution has rebound not merely, but the 133 -km-long sewage groups with total amount of 400 million ton has surprisingly went downstream, and has shaken the whole country and cause great losses. Meanwhile, Haihe River and Liaohe River have been polluted seriously too. The serious pollution accidents have already added up to more than 20, Only in the Yellow River, the annual losses caused by pollution has already amounted to 11,500 million - 15,600 million yuan RMB. 20 years ago the author pointed out that the Shanghai section of the Suzhou River is the blackest river of the whole country. That section is only several kilometers long, Up to now each river all had the black and stench polluted sections, polluted length of which are far longer than one of the Suzhou River. Dozens billion yuan RMB can be cost for harnessing the polluted section with length of several kilometer in the Suzhou River, however the GDP of the valleys of the north China's rivers no more than hundreds of billion yuan RMB, the pollution replaced the lack of water and has become the first killer, influencing river's life. Above-mentioned historical facts show that in the Yellow River and other rivers of northern: China, the river pollution have been the river phenomenon, occurring for more than 10 years. Its reason is, similar to blanking of water, artificial. The difference between them is only: that because the whole society has paid a close attention to the blanking of water and has taken some measures, such as unified management, the problem of water blanking has already been solved tentatively, and because the public has badly understood and the policy has been incomplete, the problem of the pollution has not been solved not only, but has aggravated further instead, and form the trend of vicious circle with the lack of water. Go down so, the consequence is too ghastly to contemplate.(See Table 2-4, Fig.3)

Table2: The total amount of sewage discharge (10^6 tons) in the Yellow River Basin for 1979-2004 year and the forecast in 2010

Year	1979	1982	1990	1997	1998	1999	2000	2001	2002	2003	2004	2010
10^6 t	18	21.7	32.6	36	42.04	41.98	42.22	41.35	41.28	41.46	44	64

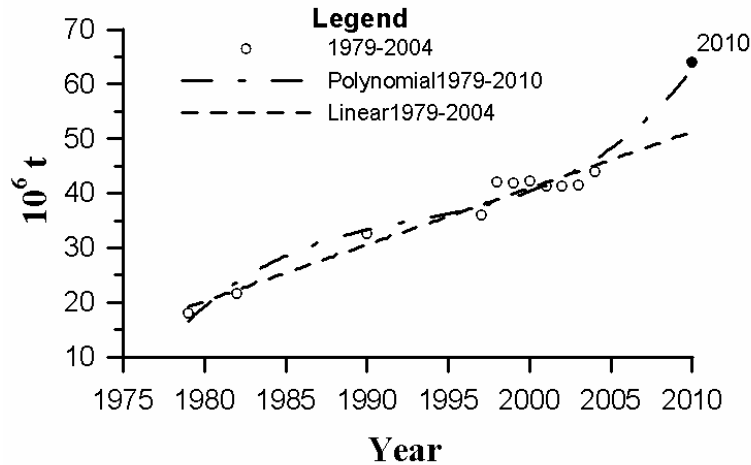


Fig.3 Total amount of sewage discharge in 1979-2004 and forecast in 2010

Table3: The water quality in the Yellow River Basin (the classification and rate)

Year	II□III		IV		V		>V	
	length(km)	percent(%)	length(km)	percent(%)	length(km)	percent(%)	length(km)	percent(%)
1994		68.8						
1997		80						
1998	2118	29.3	2676	36.9	2453	33.8		
1999	2864	39.5	1891	26.1	2492	34.4		
2000	2807	38.7	1456	20.1	2984	41.2		
2001	2380	31.7	1976	26.4	3141	41.9		
2002	1455	19.4	1318	17.6	4724	63		
2003	1606	21.4	1675	22.3	1024	13.7	3192	42.6

In

1998-2003 , the 69 representative section of 22 rivers ,including the main stream and important tributaries of the Yellow River, were chosen for the appraising the water quality. The appraised rivers are 7247km long (extend to 7497 km after the 2001), The water qualities examined are as follows (The number values of 1994 and 1997 are used for contrast).

2.2. Essential supplement countermeasure on controlling the pollution of the rivers in the northern China

Before and after the author investigated the whole journey of the Yellow River, the nation perfected the environmental protection organization, some enterprises have purchased, installed the blowdown facilities too, the YRCC with the State General Bureau of

Environmental Protection proposed a plan on "controlling the total amount of the pollutant, entering into river, and improving the water quality of the Yellow River "in recently years, but the implement of this plan has been extremely unsatisfactory, because the policy was incomplete, especially there is no effective measure to following three chronic illness: (1) there is facility without turning; (2)there is organization without conduction; (3)there is really problem and is no proper scheme of solution. Therefore, we need the following essential supplementary countermeasure:

Table 4: The water quality of the main stream of the Yellow River (the classification and rate)

Year	II□III		IV		V		>V	
	length(km)	percent(%)	length(km)	percent(%)	length(km)	percent(%)	length(km)	percent(%)
1990	2312+1273.1	42.3+23.3	1878.5	34.4				
1998	1205	33.3	1948	53.9	338	9.4	122	3.4
1999	1975	54.7	1314	36.4	324	9		
2000	1977	54.7	732	20.3	730	20.2	174	4.8
2001	1772	49.1	1269	35.1	572	15.8		
2002	736	20.4	1116	30.9	1761	48.7		
2003	792	21.9	1380	38.2	1441	39.9		

The sections appraised of the main stream of the Yellow River have a total length 3613km .The water qualities examined are as follows: (In the form, the number value of 1981-1983 and 1990 are used for contrast ,at that time, the Yellow River' s total length of 5464 km is used for appraise)

(The materials of tables 2-4 stem from the "The bulletin of water resources of the Yellow River",etc.) [23]

1) The nation implements reducing or remitting the taxes or financial subsidy to enterprise's blowdown of the river basin in the northern China.

The land of 13 provinces in the North of China accounts for 5/9 of total area of national land , but in this 13 provinces total runoff volume of rivers is fewer than 10% of one of whole country. "Abandoning the soil on the water" does not accord with the national benefit. So, the state basic policy should slope to some extent to solve the problem of the water quantity and the water quality of rivers in the north of China. The fact shows that a lot of enterprises purchased the equipment, installed the equipment, but does not operate the equipment, because

it is difficult to afford the expenses .of operation [24]

2) Implement the unified manage of river basin, give full play to the role of green environmental organization.

The river pollution mainly originates from the industrial and agricultural production correlating with the local finance, so for the water quality of the whole river, we need unified and long-term work to preventing pollution and we must strengthen the power of the environmental protection's department, as the unified dispatch of the water yield has solved the problem of the water blanking. This measure can prevent drawback that some local environmental protection's departments only charges the administrative expenses, but does not carry on the environmental protection.

The fact shows that the enthusiasm of environmental protection personage and green environmental group is high. They only need few funds, and often are real invincible opponent of blowdown in violation of rules and regulations, so we should give full play to the role of them.

3) Organizing the meeting of hearing the prove, do preparation to solve the difficult point 's problem of controlling pollution

According to the statistic data for many years, the industrial sewage in the Yellow River Basin often account for more than 70% total amount of sewage. Solving the problem of the industrial pollution is the first important task of managing pollution. However along the Yellow River, there are Baiyin Nonferrous Metals Company, Lanzhou Petroleum Chemical Engineering Company, etc. They are representative state-run large and medium-sized enterprises and were established in the basis of the local resources in the fifties of previous century and have had heavy pollution. These enterprises have run for decades, the prevention and control of pollution owes a debt more", and have not good countermeasure to the problem up to now. So at present we should at first probably hold the meeting of hearing the prove, and listen to each side's suggestion, absorb all useful ideas, do preparation to solve problem, but shouldn't assign in the pollution- controlling index that are difficult to achieve in fact. Because it is widely concern to solve this problem, moreover the necessary cost is great, so the answer has great uncertainty, it has extremely influenced the prospect of controlling pollution in the

Yellow River and other rivers of the northern China. Therefore, we must seriously notice, and should not fail to solve after a long delay and should not expect to get instant result and see the result either.

In sum, we can find out that though in order to improve the water quality of the Yellow River and other rivers in the northern China, we must take key measures, such as “implementing the control of the total amount of the pollutant, entering into river ”etc, but only after solving above-mentioned relevant problems, this measure can be expected to be successful, it is hopeful to alleviate to pollution of the Yellow River and the other rivers in the northern China. At present, we should first face the reality!

THE CONCLUSION

The Yellow River is originally the most famous river, in which the flood has frequently taken place, in the world. However after new China has controlled her flood and expanded irrigated area in order to agricultural production, for 22 years among 28years from 1972 to1999, the water blanking occurred because of excessively drawing water, for more than 10 year at recent, the development of the society and the economy has conducted to more and more serious pollution of the river. At same time the similar problems have also happened in the other rivers of the northern China and the heavy social economic losses have been caused, the ecological environment has been seriously influenced.

In 1981-1984, the author had investigated on the spot and pointed out the fact, the reason and the countermeasure of the blanking for the Yellow River, at first and indicated that the water qualities of a great part of the sections in the Yangtze River and the Yellow River were yet good, and proposed a suggestion about that in the situation of rapid development of the industry and the agriculture we must especially watch out for the repeat of the incident in the Suzhou River of Shanghai. It is really pity that this opinion did not caused enough attention. Just the development of the state of affair has made people invest strength to solve the problem.

Since 1999, because the nation has implemented the water yield of the river valley to dispatch unitedly, the Yellow River and other northern rivers have resumed pass and flow in whole

journey or a part of journey at the whole year already for 5 years from 2000 to the recent. The problem of the river's blanking has been tentatively solved. However, the problem of pollution has not merely any alleviated, but has had a tendency to aggravate instead. As to the last question, the authors have insisted the opinion that the rivers need "the unified and long-term work to prevent the pollution", and have supported the imagine about the "implement of controlling the total amount of the pollutant, entering into river, and improve the water quality of the Yellow River", and has proposed countermeasure against three chronic illness in controlling pollution, such as "there is facility without turning"; "there is organization without conduction" and "there is really problem and is no proper scheme of solution", has hoped to control really the total amount of the pollutant in the rivers of the northern China.

The authors do not dare to extravagantly hope that the water quality of the Yellow River will be good in the greater part of sections like that when the first author investigated on the spot more than 20 years ago, but we must contain the harmful phenomenon of the Yellow River, such as, annual blowdown amount to 4,400 million tons, the main stream's water quality are bad grade in nearly 40% of section ,the sections similar the to the black and smell ones of the Suzhou River before of administration , occur commonly, annual economical loses amount to 11,500 million - 15,600 million RMB, etc. We hope the whole situation will transform in better direction.

Though Chinese scientists through investigate on spot, have independently known ecological evolution of the northern China's rivers for more than 20 years, and has already obtained the common understanding, though their understanding can be provided for reference of the similar countries and areas, but if we observe from the whole world, it is not difficult to discover that the experience of the northern China's rivers for recent more than 20 years has been merely a recurrence of the history of some international rivers and the rivers in the developed countries of Europe and America. Therefore, the ecological administration of the northern China's rivers is still necessary to use successful experiences abroad for reference.

Whether and no matter from China or from abroad the summarized experiences and lessons should be :The Social and economic development must match with the water yield and water quality and in order to achieve this purpose, it is necessary to emphasize the united, scientific,

and democratic management of the whole river!

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