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Chapter Three

Resettlement Plans for China's Three Gorges Dam

by Philip M. Fearnside, Ph.D.

The Three Gorges Project would produce the world's largest dam-displaced population (500,000 – 1,200,000 people), even at the lowest reservoir operating level nominally under consideration. Other Chinese dams have forced major resettlements – for example, the Danjiangkou Dam on the Han River (380,000), and the Sanmenxia Dam on the Yellow River (320,000).[1] Outside China, the governments of Egypt and Sudan displaced 100,000 people to make way for the Aswan High Dam.

The Purpose of the CYJV Water Control Project Feasibility Study

The executive summary of the *Three Gorges Water Control Project Feasibility Study* describes the mandate of the CIPM Yangtze Joint Venture (CYJV), sponsored by the Canadian International Development Agency, as "to provide an impartial technical review to the Government of China, to assist it in reaching a decision, and to form the basis for securing funding from international institutions."[2] From reviewing the report, it appears that the factions within the government of China that commissioned the study had already reached the conclusion that they wanted the dam, and that the report was to satisfy the second objective: convincing international institutions to fund the project. This makes its mandate inaccurate and its description as "impartial" questionable. The CYJV report is remarkable in the way it strains to emphasize positive aspects of the scheme. Most incredibly, CYJV lists resettlement as a benefit: "resettlement construction

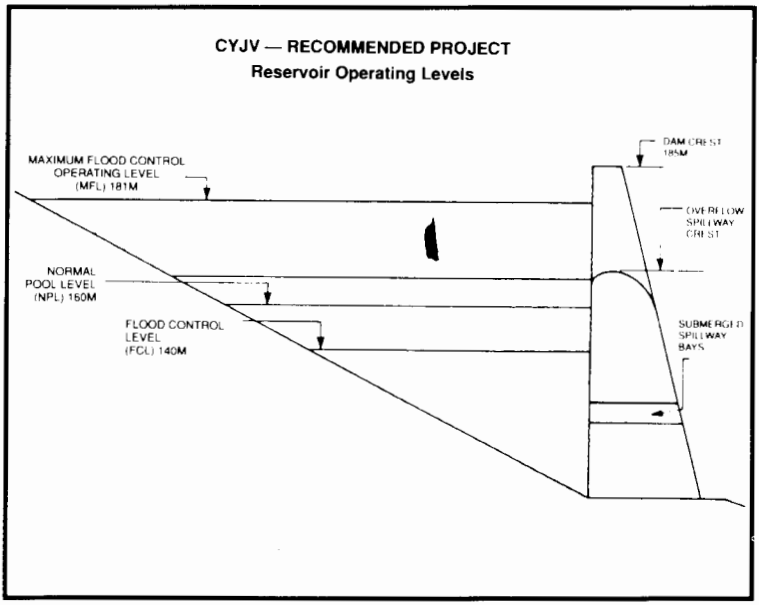

Figure 2

Dam

Dam height (crest)	185 metres (m)
Dam length	2,150 m
Overflow Spillways (26 units)	8 m wide x 20 m high
Submerged Spillways (27 units)	7 m wide x 9 m high

Reservoir

Normal Pool Level* (NPL)	160 m
Flood Control Level (FCL)	140 m
Maximum Flood Control Level (MFL)	181 m

Function

Flood Control Storage	31 x 10^9 cubic metres (m^3)
Installed Hydropower Generating Capacity	16,750 megawatts (MW)
Average Annual Output	68.8 terawatt-hours (TWh)
Navigation Locks	Twin 5-stage flight locks 20 m lift per stage

*Normal Pool Level is the maximum height of the reservoir during the dry season.

and development would spur growth in the area bordering the reservoir."[3] Among the benefits ascribed to the Three Gorges Project is: to "encourage development of the region with resettlement funds."[4] The CYJV steering committee* met six times over the course of the study schedule. At the fourth meeting, the international panel of experts decided that "due to data limitations on the question of land availability for resettlement, resettlement feasibility could not be fully demonstrated."[5] At the sixth and final meeting, the steering committee decided that the terms of reference had been satisfied, and concluded that from the point of view of resettlement the project is feasible – but CYJV does not explain what convinced the panel of experts to reverse their original conclusion. The following discussion refutes the final conclusion reached by CYJV and the panel of experts that resettlement is feasible.

Reservoir Operating Levels

The operating height of the reservoir largely determines the magnitude of impacts due to flooding. The higher the level, the greater the impacts, especially at Chongqing. CYJV recommends 160 metres above sea level as the maximum normal pool level (NPL) because operating levels higher than this would displace many more people: 465,000 if raised to 180 metres. Also, more of the city of Chongqing would be flooded. The report warns: "Neither the economics nor the social impacts of this situation would favour such a reservoir operating condition."[6] CYJV observes that higher operating levels, including a higher flood control level (FCL), would shift

*The steering committee is comprised of two representatives from China's Ministry of Water Resources and Electric Power (MWREP), one from the Canadian International Development Agency, and one from the World Bank. The international panel of experts were appointed by MWREP and the World Bank to advise the steering committee.

the fluctuating backwater reach* and its attendant sediment deposition** further upstream, thereby increasing the level of flooding at Chongqing. Because of this, CYJV endorses a normal pool level no higher than 160 metres and a flood control level of 140 metres. However, the Canadian International Development Agency's concluding statement with respect to the study leaves open the possibility of raising operating levels in the future:

> Continuing studies of changing economic factors in China and availability of new data could lead to consideration of slightly modified operating levels.[7]

Expected Flood Levels in the Reservoir

The total number of people to be resettled and compensated is related to the expected level and frequency of floods to be controlled by the dam.*** The CYJV-recommended project, with a normal pool level of 160 metres, would have a dam height of 185 metres. Flood waters would be stored in the reservoir by filling to levels above the flood control level (140 metres) and when the Yangtze's flow exceeds a 50-year flood – the maximum flood expected to occur once every 50 years – floodwaters would be stored above the normal pool level (160 metres). When even heavier floods occur, the reservoir would be allowed to rise up to the maximum flood control operating

*The backwater reach of the river is the length of the river upstream of the reservoir whose level fluctuates depending on operating levels of the dam.
**Sediment deposition (or sedimentation) is the process of sediment accumulation in the river. Over time, sediment deposition tends to form a delta in the upstream end of the reservoir which reduces the reservoir's storage capacity and also extends the fluctuating backwater further and further upstream.
***Some people that already live above the designated relocation level may lose farmland to the reservoir that would warrant compensation.

level (MFL) of 181 metres; this level is expected to be reached at a river discharge of 80,000 cubic metres per second (m^3/s), an event expected to occur once every thousand years (a 1000-year flood*). These flood probabilities, which are used to set the lower limit for resettlement sites, may well be overly optimistic.

The flood probability analysis is undoubtedly based on the very long series of historical records for the Yangtze River which China is fortunate to have. But the increase in flooding due to deforestation over the past several decades makes simple calculations from the historical record a poor guide to future flood probabilities. For example, a flood almost as "improbable" as the scenario for the maximum operating level at the Three Gorges Project was experienced in 1981, when the flow reached 72,000 m^3/s. In all likelihood, the probability of a disastrous flood has increased dramatically in recent years and may continue to increase due to deforestation in the upstream catchment area.[8]

The Yangtze Valley Planning Office (YVPO) designed much of the Chinese government's program for the Three Gorges area. The YVPO plans and the CYJV-recommended project differ in a number of ways, the main difference being that the YVPO plan is less generous in identifying people eligible for compensation and in providing for their livelihoods. It is important to keep both plans in mind, since, now that the project has been approved, events will likely evolve in the direction of the Chinese proposal.

*The flood of 1870, with a historical maximum flow of 110,000 m^3/s, exceeds the 1000-year flood used by CYJV. The 1870 flood swept away the Zhang Fei Temple (opposite Yunyang) that had been standing since the Three Kingdoms Period (AD 220 – 265). Deforestation since 1870 has undoubtedly increased the danger of major floods such as this one.

YVPO has defined the "relocation and requisition levels"* along the banks of the Yangtze River using a one-criterion scheme based on the 20-year flood probability. The river level corresponding to a 20-year flood is not a horizontal line at a fixed elevation along the proposed reservoir, but rather slopes upward from the dam to higher levels in the backwater reach and tributaries. For most of the reservoir the 20-year flood level is the same as the normal pool level (160 metres), but at the upstream end of the reservoir and in the backwater reach it is higher.

Both YVPO and CYJV have calculated this value using a Chinese method that considers a water flow of 56,700 m^3/s rather than using the international method, which would dictate using 72,000 m^3/s – the flow experienced during the flood of 1981. Using the former method means that floods can be expected to occur with greater frequencies than calculations for specific elevations indicate. Therefore more people deserve compensation than YVPO and CYJV have identified.

CYJV lists YVPO's definition of a requisition level as an issue that "can be raised with regard to the YVPO methodology."[9] YVPO's requisition levels are based on the 20-year flood level calculated with the reservoir starting out at the flood control level (thereby only taking into account flooding in the summer months). CYJV recommends instead a standard based on the 20-year flood level with the winter and fall flood probabilities calculated with the reservoir starting out at the normal pool level of 160 metres. This would extend the requisition zone 131 kilometres further upstream, thereby including more people in the compensation and requisition estimates.

*The Yangtze Valley Planning Office defines the relocation level as the elevation mark along the reservoir above which resettlement sites are located. Also, it defines the requisition level as the level below which various forms of compensation would be given.

The CYJV-recommended project sets "requisition levels" below which compensation would be paid for residences, farmland, factories, and the like. For houses, this level corresponds either to the normal pool level plus two metres[10] or to the 20-year flood level, whichever is higher. People living below these levels would be compensated and moved to the resettlement sites located above 182 metres.

Overall, CYJV praises the YVPO plans. However, closer scrutiny reveals that the plans are not as fair as CYJV leads one to believe. For example, "the loss of the use of land that is flooded in summer but dry in winter (below the natural 20-year flood line) is not included in the compensation criteria."[11] The zone in question is described by CYJV as:

> An unquantified but perhaps substantial area that will be permanently flooded with the reservoir but that is only seasonally or inter-annually flooded under present conditions. This permanent flooding will cause a permanent reduction in the economic activities carried out in this area that will not be compensated.[12]

Not only would the affected farmers be unjustly deprived of land, but the area as a whole would also lose a social function that would not be replaced: this wide strip of land in question is presently farmed during the winter when the river is low and when crops higher up are not producing harvests. It provides wheat, barley, pulses and vegetables for local consumption.

For the people living above the requisition level (those who would remain in the reservoir area), CYJV assumes that the risk of one flood in 20 years is acceptable for farms and houses, and the risk of one flood in 100 years is acceptable for large factories. CYJV claims that compensation would be

awarded if flood damage occurs above the requisition levels, but regardless of whether or not compensation would be forthcoming, CYJV is expecting local people to accept a heavy burden of risk. And, should the flood probability calculations prove wrong, the risks could be even more daunting.

CYJV believes that the benefits experienced by the portion of the population who are exposed to flood risk without the dam, and who would be resettled to higher grounds with the dam, counterbalances the added risk of flooding borne by people living between 162 and 182 metres when heavy floods are held back in the reservoir. In short, CYJV concludes that "the trade-off between the before and after situations is more or less even."[13]

YVPO's calculations have resulted in an arbitrarily designated requisition and compensation zone that not only fails to include all of the reservoir but also fails to include the surrounding land that would be subject to an increased risk of flooding. Sedimentation is expected to raise the channel bed in the 120-kilometre reach upstream of the official length of the reservoir. This would enlarge the area and number of people at risk of flooding in future years.[14] And even though YVPO estimates that a 3-metre rise in flood levels at Chongqing would force the relocation of some 90,000 people, it did not account for this in its resettlement estimates.

CYJV estimates the reservoir would extend 498.6 kilometres upstream for a normal pool level of 160 metres. CYJV's estimates of reservoir length result in requisition and compensation zones extended slightly further upstream of the YVPO plans. However, CYJV's zones are, like those defined by YVPO, arbitrarily defined and well downstream of Chongqing which would face increased flooding if the dam is built. For the 160-metre scheme calculated by YVPO, the 5-year flood levels would rise by approximately 7 metres in some places along the reservoir, and by roughly 4 metres near

Chongqing, after 30 years. To calculate this, CYJV inexplicably uses the 5-year flood levels scenario rather than the 20-year flood levels which are used for all other compensation and requisition calculations. Instead of quantifying the magnitude of these potentially enormous impacts to serve as an input for the decision on whether to build the dam, CYJV merely states that:

> Backwater levels affected by reservoir and backwater sedimentation were not included in the [YVPO] assessment. Additional compensation and resettlement resulting from higher sediment-caused backwater levels are deferred to operation of the Three Gorges Project rather than to its construction.[15]

In effect, CYJV has chosen to ignore the additional flooding due to sedimentation.

Furthermore, CYJV failed to quantify either the effects of backwater intrusion or sedimentation along the tributaries in the compensation and resettlement estimates. For the CYJV-recommended scheme of NPL 160 metres, one-third of the reservoir area would consist of flooded tributaries and their valleys. Sedimentation is expected at the confluence of the tributaries (the point where they meet the mainstem of the river) and within the backwater, and could have a particularly significant impact along the Jialing River where it meets the Yangtze River at Chongqing.

In addition to the restricted eligibility for compensation and relocation, and the likelihood that flood levels may be higher in reality than assumed (especially in the backwater reach of the reservoir and in the tributaries), the growth of the population in the reservoir area during construction may be

faster than YVPO assumed.* CYJV acknowledges that:

> Higher natural growth and migration rates, and a longer resettlement period [mean that] the CYJV Recommended Scheme population could be increased by an additional 100,000 persons.[16]

Governments Change Their Minds

Many precedents exist where internationally financed development infrastructure has been used for much more damaging ends than originally proposed to financing agencies and addressed in environmental impact studies.[17] The World Bank's internal policies (not any externally mandated restriction) limit the consequences of non-compliance with loan agreement clauses on the environment, resettlement and similar matters, to cutting off the remaining funds for the particular loan in question. Predictably, motivation to comply with such clauses decreases steadily as loan disbursements are received, and disappears completely when disbursements have ended.

In the case of the Three Gorges Project, the Chinese government could promise anything potential financiers might want to hear and then simply change its water management policies once it is no longer constrained by the need to gain approval for international financing. For example, promises could be made to operate the dam at a normal pool level of 160 metres, as recommended by CYJV, and to handsomely compensate all displaced persons. However, once the dam is complete, nothing prevents the Chinese government from changing its mind.

*YVPO assumes a 1%/year population growth, a migration rate to the cities of 1.5%/year and to the towns of 0.5%/year.

For example, if funds were to prove insufficient to meet cost overruns, which has traditionally been the case for Chinese dam construction projects such as the Gezhouba Dam, and which cost over twice the amount initially estimated, or even if funds were insufficient to meet the officially approved budget, the Chinese government could decide to discontinue the long-term programs of subsidies and assistance proposed for the reservoir region so that construction of the dam could proceed.*

If the Chinese government wanted to raise the dam's operating levels in order to generate more electricity, the same physical structure could technically be operated with a normal pool level up to 20 metres higher than proposed. Despite the fact that CYJV was unable to confirm the feasibility of resettlement at higher NPLs, one stroke of a pen and one turn of a valve could raise the normal pool level to 180 metres, and as a result, an additional 465,000 people would be displaced with little chance of receiving adequate assistance.

Raising the normal pool level from 160 to 170 metres (and the flood control level from 140 to 145 metres) would generate an additional 800 megawatts of firm energy; however, CYJV states that the value of the power is more than offset by the cost of resettling an additional 260,000 people. Unlike most of the costs of dam building, there are no economies of scale as the number of people displaced increases. CYJV observes that "in fact, experience shows that diseconomies are more likely to occur."[18] CYJV assumes that the additional displaced people would receive the relatively expensive benefits package they have proposed. But the Chinese government could easily raise the water level, thereby cashing in on the power benefits while essentially leaving the people to fend for themselves.

*CYJV estimates resettlement costs to be roughly one-third of the total budget for the CYJV-recommended project.

China's own feasibility study, submitted to the State Council on 7 March 1989, recommends a normal pool level of 175 metres.[19]* This level corresponds to a flood control operating level of 145 metres. CYJV warns that operating the dam at a "FCL greater than 145 m [metres] could raise the 100-year flood stage at Chongqing, after about 100 years of Three Gorges Project operation, to around 200 m;"[20] 42 metres higher than the natural water level in Chongqing.

There are a number of strong indications that the Chinese government has plans to fill the reservoir in two stages, going first to the CYJV-recommended normal pool level of 160 metres, followed by filling to either the normal pool level of 175 or 180 metres. A 1987 inundation survey was conducted for a normal pool level (NPL) of 175 metres that "envisages a two stage reservoir filling and related resettlement relocation schedule."[21] Surveys prior to 1987 included even higher NPLs of 180 and 220 metres. Should the Chinese government wish to raise operating levels beyond the limits of the presently proposed structure, it could add height to the dam, as is currently proposed for the Danjiangkou Dam on the Han River (a Yangtze tributary).[22]

"Draft" Plans

Considering plans as eternally in "draft" form is a common practice in many countries, such as Brazil, where the preliminary nature of plans can be used to justify secrecy, and to deflect criticism by alleging that whatever plan is being questioned has changed or is changing. For the Three Gorges

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Project, "draft" resettlement plans have been under preparation since 1985, with the most recent version prepared in 1987 "to accommodate the Chinese NPL 175 scheme."[23] CYJV states that these plans are "still under review by Chinese authorities and are considered working documents."[24] Such plans could quite easily remain in "draft" status while they are in fact carried out and the dam becomes a concrete and steel reality.

As for construction of the project, China has a tradition of changing plans as construction proceeds, despite efforts to curtail the practice. Major dams have been built using the traditional system of *san bian* (three sides); simultaneously surveying, designing, and building.[25] As examples, the Danjiangkou and Gezhouba dams were both built using this system: both projects had to be halted for two years during construction due to inadequate planning,[26] and their designs were frequently changed throughout the entire construction period.

In the case of the Three Gorges Project, if implementation were to proceed on the recommended scheme of NPL 160 metres, it would be quite a normal practice for plans to evolve toward the more grandiose "draft" proposals for a higher normal pool level or a larger dam. These draft plans would displace more people (especially in Chongqing) and cause even more disruption to local economies and the environment.

The Record of Resettlement

CYJV extols China's new "resettlement with development" policy as "among the best in the world."[27] However, China's record of resettlement is not good, and speaks far louder than a mere announcement of new government policy. Even state planning officials, Tian Fang and Lin Fatang, who tout the virtues of the dam and the possibility of "mobilizing the population" to turn the resettlement areas into regions of prosperity, admit that past resettlements have been plagued with "mistakes such as uncoordinated management, duplicate

development, wasteful use of volunteer labour, and limited funds."[28]

In the case of the Danjiangkou Dam, CYJV states that "funds were totally inadequate even for the reconstruction of infrastructure, including housing, at the time of removal. Significant funds for development purposes only became available to relocatees in Yunxian county in 1984, over ten years after resettlement had been completed and even these funds may still be inadequate."[29]

In general, official plans rarely correspond to reality. For example, in the reservoir region, government regulations have prohibited further development below 172 metres, but construction in the doomed cities (below 172 metres) proceeds as usual. CYJV refers to this as "uncontrolled building" and notes that "while the exercise of 'master planning' is taking place, land use planning controls are not very strong."[30]

From this, it is not unreasonable to surmise that the rosy assessment given in the resettlement master plans may never become reality. CYJV acknowledges these doubts in various sections of its study, but these doubts are not reflected in the feasibility study's overall conclusions, which underwrite the Chinese government's plans as adequate.

Land Availability and Quality

In densely populated countries, the most intractable problem associated with dam resettlement schemes has been that land of equivalent quality to the land lost is simply unavailable.* In the case of the Three Gorges Project, the idea

*In the case of the Narmada Project in India, which is widely viewed as one of the world's worst dam-building disasters, the lack of replacement land was cited by a World Bank-commissioned independent review, and supported its recommendation that the World Bank pull out of the project until comprehensive resettlement and environment studies could be completed.

that equivalent quality land should be offered to replace the land lost is not even raised as an issue.

The resettlement plans call for relocating people within the same townships (*xiangs*), plus a few additional townships adjacent to those on the reservoir shoreline. Within the 600-kilometre reservoir, many of the displaced rural people would be moved to the eastern end of the region, where YVPO identifies most of the "claimable land." (Claimable land is presently unoccupied land in the zones slated for resettlement that is considered by CYJV to be farmable.)

CYJV's conclusions that "the Chinese plans show that sufficient land resources have been identified to satisfy rural resettlement needs for all affected counties"[31] are doubtful for numerous reasons. With a farmland per capita of 0.067 hectares (less than one-fifth of an acre), there are already too many people farming in the area surrounding the reservoir; 30 percent are considered by the government to be "surplus" due to the contract responsibility system* and agricultural modernization.[32] To increase the amount of "claimable land," CYJV boosted the number of host townships originally proposed by YVPO,** as recommended by the CYJV feasibility study steering committee. But this does not solve the problem for one simple reason: the "claimable land" in the area is unoccupied because the local population has found it to be not worth farming – the soil is poor and the land is too steep to cultivate.

Incredibly, CYJV's analysis of land availability assumes that a hectare of inundated land can be replaced by a hectare of land elsewhere: "preliminary screening of land replacement

*The contract responsibility system was instituted in 1981 and motivated an increase in agricultural output by allowing farmers to market some of their produce.

**Host township is the term proponents use for those townships that would not be flooded by the reservoir but would receive an influx of displaced people.

potential was conducted assuming a 1:1 ratio of available to inundated land."[33] This "preliminary screening" was the only one done and is the basis for the CYJV conclusion that sufficient "claimable" land is available. In other words, replacement land is considered to be the same quality as the inundated land – a wholly indefensible premise. In addition to this, CYJV's acceptance of the Chinese expectations for land is unwarranted because:

- The Chinese government has not clearly defined basic characteristics such as altitude, slope and soil type which are necessary for identifying the agricultural potential of unused land.
- CYJV examined the "claimable" land within the 185 to 800 metre elevation band and found only 68 percent as much available land as the Chinese government had asserted.

Later on in the study, CYJV concludes that "taking into account qualitative factors that might increase or decrease the eventual claimable land resource, the [Chinese government's] Three Gorges Project survey results are seen to provide a conservative indication of resource potential."[34] CYJV does not specify what qualitative factors led to its remarkable conclusion. This author believes the quantitative results on land availability and quality support the opposite conclusion, namely that the Chinese government's expectations are overly optimistic.

CYJV only examined land below 800 metres elevation, but the Chinese proposals include plans for resettlement above this mark where over 50 percent of the total "claimable" land is located. Because the number of people to be resettled may be substantially more than officially expected, the Chinese are likely to turn to land above the 800-metre limit when resettlement is actually under way. Unfortunately for the

settlers assigned to this zone, the agricultural viability CYJV foresees for lower elevations would not apply.

According to CYJV, apples, pears, apricots, plums and potentially mandarins can be grown, and animal husbandry practised, up to 800 metres elevation. Citrus orchards, except for mandarins, are planned for below 600 metres elevation. Above 800 metres, agriculture is restricted to potatoes, some cereals, and mulberries for silkworm production.

For each crop, the land is considered to be suitable up to a fixed cutoff elevation, and for most citrus varieties this cutoff is at 600 metres because of risk of frost. However, climatic suitability does not, in reality, occur in an all-or-nothing fashion at a given elevation. Rather, production (or frost risk) becomes gradually worse over a wide range of elevations, including the zones defined as suitable. Because land availability increases with elevation, a disproportionate share of the land within each crop's defined zone of suitability would be located near the upper limit of the crop's elevation range. Because of this, the mean crop yields used in the CYJV calculations are likely to be overly optimistic for the land that would actually be planted by resettled farmers within each zone.

Citrus orchards are described by CYJV as the major component in Chinese agricultural plans for the resettlement areas. Plans envisage both intensifying production (by planting citrus) on already cultivated land and bringing uncultivated land into production. But since citrus cannot be grown within the top 200 metres of the elevation range considered by CYJV, as well as on all land above this zone, a large fraction of the farmers would not benefit from the economic potential of the citrus plans.

At the lowest elevations considered for citrus the risk of flooding is the key factor. Like risk of frost at the upper elevations, this can be expected to have a severe impact on the

orchards. CYJV considers flooding acceptable for orchards if it does not occur with a frequency greater than once every five years.[35] Under such a flooding regime, the citrus orchards would have to regrow at an unusual pace indeed if they were to remain profitable!

Within the 400 to 800-metre elevation range, the available parcels of land get smaller and smaller as the land improves at lower elevations. The average for the entire elevation range considered by CYJV (up to 800 metres) is a minuscule one hectare (two and a half acres). To farm these plots, villages would have to be divided and dispersed, which would essentially pulverize the existing social structure of villages.* Given this situation, it is difficult to imagine how CYJV intends to satisfy its 14 criteria (Appendix A), one of which states that "opportunities for resettling people in groups and communities should be provided."[36]

Minority Areas

In the semi-arid western regions near China's border with the Soviet Union, in Tibet, or in the tropical areas near the Burmese and Lao borders, settlement projects have been under way as part of the central government's effort to populate the areas with Hans, China's racial and cultural majority.[37] If the plans to reclaim the steep and relatively high-altitude land that makes up most of the claimable category, and to intensify production on already cultivated land, were to prove less successful or more expensive than expected, the temptation would be strong to look for alternative relocation sites further from the Three Gorges region.

*In India, where villagers threatened by displacement are permitted to express their views, one of their first demands is to prevent fragmentation of village units. This continues to be a major focus of resistance to the Narmada dams in India.

In this case, there is a possibility that displaced farmers (all of whom belong to the Han majority) could be deported to distant settlement areas presently populated by minority groups. CYJV does not mention this in its report, which is not surprising, because the expressed purpose of the report is to justify the project to international funding agencies. If CYJV were to mention such a scheme as a possibility, it would conflict with the World Bank's policy on tribal peoples[38] and jeopardize future World Bank involvement.

Nonpersons

CYJV fails to mention that the Chinese government apparently has no intention of providing resettlement benefits to "nonpersons." Of urban dwellers, 10 to 30 percent are illegal migrants to the cities (approximately 27,000 to 80,600 people) and therefore are "not officially registered as resident in an urban area."[39] The YVPO surveys of urban areas conducted to estimate resettlement costs did not include these people. CYJV includes this "floating population" in its estimates but uses the most conservative approximation of 10 percent of urban dwellers rather than the more logical midpoint of the range.

The fate of these nonpersons has been a point of contention in China's negotiations with the World Bank. The Chinese government has been averse to providing benefits to these people because it would reward illegal behaviour.[40] Recently, however, the government has softened its position somewhat. The Chinese panel of experts (under China's Leading Group for Three Gorges Project Studies), together with YVPO, now define the affected population as including "the portion of the floating population that has resided in county seats and towns for more than a year."[41] No housing is planned for these people, and, clearly, some of the "floating population" is still excluded from the plans. In addition to the illegal migrants,

the government does not officially recognize some whole towns as urban areas, meaning that the residents have no rights to relocation or to industrial jobs.

CYJV appears to endorse the Chinese government's policy of treating many migrants as nonpersons: "CYJV assumed that migrants would not be entitled to resettlement compensation and hence would be discouraged from the zone to be resettled" after resettlement begins.[42] Given that the Chinese government would prefer to provide no resettlement benefits to the floating population, and given that these nonpersons do not even officially exist, it would seem appropriate that some mechanism be identified to ensure that the true size and identity of the floating population is determined, and that these people would not simply be ignored in the resettlement plan.

Rural to Urban Migration Policy

Resettling farmers is much more difficult than moving city people because farming requires land – a finite resource that is fully utilized in the Three Gorges region, and cannot simply be created anew regardless of the amount of funds devoted to that purpose. Therefore, if rural resettlement were to prove unsuccessful, the government has the option of resettling more people in urban areas than originally planned.

In the 1950s and 1960s, millions of people were forcibly relocated from the cities to the countryside. Since that time, government restrictions on internal migration, with people legally tied to their work unit (*dan wei*), have prevented many rural people from responding to the lure of bright city lights. Were these restrictions lifted, some of the "surplus" rural population in the Three Gorges region might willingly move into cities if given the chance.

However, the problem with expanding urban resettlement is that creating factory jobs is about two to three times more

expensive per capita than rural resettlement.* Therefore, to allow a greater share of urban resettlement, the budget allocation to resettlement would have to be substantially augmented. But CYJV recommends the opposite: that "measures will have to be adopted and enforced to prevent migration to urban areas below the requisition line."[43] These measures seek to prevent migration within the project area from the countryside to the cities, where new arrivals to the project area would acquire rights to resettlement with urban jobs.

Development Proposals for the Reservoir Region

The Chinese "resettlement with development" policy, as stated by CYJV, includes development assistance to the resettlement areas and favourable prices for power (not necessarily from the Three Gorges Project) to factories in the area. Official policy[44] declares that the Three Gorges region would receive priority for both mining and industrial investments. However, CYJV states that "all large-scale mining projects are controlled entirely by the State, therefore, future development must take into account alternative investments elsewhere in the country. In this regard, the reservoir region is unlikely to receive special attention in the foreseeable future unless special efforts are made to promote these resources."[45] Apparently, the authors of the CYJV study are hinting that official rhetoric on diverting investments from more promising sites is not likely to be translated into tangible benefits for the displaced population. This suspicion is reinforced by a caveat in the official policy decision of the

*For example, for the NPL 160 metre scenario, CYJV calculates that agricultural jobs on new land will cost 6,491 yuan/job while jobs in new factories will cost 16,400 yuan/job.

Central Committee of the Communist Party that identified Three Gorges as a special priority:

> Normal expenditures from other channels should not decrease due to the occurrence of resettlement investment. Instead, funds should be raised from all possible means to bring into being a set of industrial and mining enterprises.[46]

Consultation of the Local Population

CYJV refers to public consultation in various sections of the feasibility study. For example, one of CYJV's 14 criteria for "successful resettlement" (Appendix A) states that:

> The resettlement plans should have broad-based popular acceptance and the affected population should be consulted.[47]

In addition, the international panel of experts lists as a "factor to be considered" that:

> It is especially important for the success of the Three Gorges Project resettlement program that not only the population to be resettled but also the host population are convinced that they will benefit from the Project.[48]

CYJV provides no evidence that the local populations have had any legitimate input to the project planning and decision making, much less that they are "convinced" of the benefits. Moreover, CYJV's statement that "the expectations and concerns of the host population are not so well known"[49] suggests that the host population may not have been consulted at all.

The reservoir area as surveyed is made up of 610 townships (*xiangs*). Approximately 500 townships, all but a few of which are in the surveyed area, would receive displaced farmers according to plans for the CYJV-recommended scheme. The CYJV team visited China in March and April 1988 for an unspecified length of time, during which 43 townships (*xiangs*), a mere 10 percent of the townships which would receive displaced farmers, were subjected to "an independent check, using aerial photo interpretation techniques supported by field verification."[50] The study does not indicate how many of the 43 townships they visited nor how much time was devoted to their visits. This 10 percent sample is described by CYJV as "representing typical conditions throughout the reservoir area."[51] While this may be true for physical factors, which can be checked from maps and aerial photos, these methods cannot guarantee representativeness from the standpoint of local consultation and support for the project. Almost universally, governments requesting international financing for projects tend to show visiting delegations carefully selected "success stories." Nothing is said of what steps might have been taken to avoid this problem.

CYJV states that "at all the sites visited, the local people were aware of the pending decision concerning the Three Gorges Project" and "the local leaders have been and will continue to be involved in the planning of resettlement within their own communities."[52] The "local leaders" CYJV claims are involved in the resettlement planning probably refer to Communist Party cadres (*ganbus*). Cadres are not elected representatives – they represent the interests of the central government rather than the local people. Under the repressive political regime in China, any local people critical of the Three Gorges Project could hardly be expected to voice their opinions. There are no nongovernmental organizations or grassroots movements, such as the committees of "oustees" threatened

by India's planned Narmada dams, who would be in a position to question official decisions.

The author's personal impressions from an eight-day visit to the reservoir region in 1987 do not confirm CYJV's assertion that the local population has been widely consulted. Those people this author met who were aware of the proposed dam certainly did not share CYJV's view that resettlement "offers an opportunity for planned regional development that can add to the benefits of the Three Gorges Project."[53]

Secrecy, Irreversibility, and Bias

The inadequacy of the CYJV feasibility study demonstrates the need for public scrutiny and debate about not only the Three Gorges Project, but all development projects. The secrecy that has surrounded both China's drafting of the Three Gorges proposal and Canada's feasibility study has denied these efforts much valuable (and free) input from people beyond the confines of the institutions entrusted with the studies.[54]

Secrecy results in important factors being overlooked in the various planning and decision-making stages, and also prevents correction of omissions or distortions before the project becomes "irreversible." In fact, the presentation of development plans as "irreversible" is often a deliberate strategy to avert more rigorous discussions of projects which, in cases such as the Three Gorges Project, would likely be rejected if the true costs and benefits were brought to light.* The CYJV feasibility study's language indicates that the

*This is the case for Brazil's infamous Balbina Dam, which was built on the Uatumã River in 1987. Before construction began, the government continually referred to the project as "irreversible," yet the costs of the dam so greatly exceeded its benefits that money could have been saved by abandoning the scheme even after the river had been blocked and the reservoir was partially full.

authors accept as a foregone conclusion that the Three Gorges Dam will be built along with other grandiose megaprojects affecting the Yangtze River, such as China's interbasin water transfer schemes. Specifically referring to these developments, CYJV states flatly that "the Yangtze watershed *will be* [author's emphasis] subjected to many human interventions over the next several decades."[55]

The CYJV study team appears not to have fulfilled its role, at least theoretically included in its mandate, which was to provide input to the decision on whether or not to build the Three Gorges Dam.