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Resettlement Programmes and Environmental Capacity in the Three Gorges Dam Project

By Gørild Heggelund

ABSTRACT

This contribution looks at the Three Gorges dam project, and specifically at the resettlement programme, focusing on two major aspects. It examines the resettlement programme in relation to the environmental capacity in the reservoir area; and it assesses the existence of a risk consciousness and a reconstruction strategy, seen in terms of the 'impoverishment risks and reconstruction' (IRR) model. The author argues that issues related to the environment and natural resources are highly significant and have led to changes in the resettlement programme, including a change in policy towards moving rural people out of the reservoir area, as well as the issuing of new resettlement regulations. The IRR model is a useful tool to identify risks and can serve as a guide to the reconstruction of livelihoods for the resettled people. The limitations of using the model in the Three Gorges project concern specific Chinese environmental, social, economic and political conditions that influence efficient resettlement implementation. The Chinese authorities' emphasis in resettlement has been on rebuilding relocatees' livelihoods: it focuses less — if at all — on the social aspects and the social trauma of broken networks. The IRR model could therefore be useful in the context of focusing more on the social costs of resettlement.

INTRODUCTION

The Three Gorges Dam is currently being constructed on the Yangtze River in China and will be completed in 2009.[1] It is a controversial project with a long history of debate and with

[1] The purpose of the dam is flood control, electricity production and improvement of navigational facilities on the Yangtze River. Construction began officially in 1994. The dam itself stretches 1,983 metres across the river; upon completion it will be 185 metres high, with a normal water storage level that will reach 175 metres. The reservoir will be 600 km long, stretching from Chongqing municipality to Yichang in Hubei province. The

many actors involved. The National People's Congress approved the dam in 1992 after decades of debate among bureaucrats, scientists and journalists. Attempts were made to lobby against the dam by academics and journalists (Dai, 1989). Recently, in response to proposals to build thirteen dams on one of China's last wild rivers, Chinese NGOs, news journalists and researchers supported by the State Environmental Protection Administration (SEPA) launched an anti-dam campaign that led Premier Wen Jiabao to call a temporary halt to dam building (Calhoun and Yang, 2005; Litzinger, 2004; Yardley, 2004a, 2004b).[2] With the support of Premier Wen Jiabao and based on the Environmental Impact Assessment Law of 2003, SEPA also temporarily halted thirty other construction projects, including many related to the Three Gorges dam (CEN, 2005). The majority of these projects have now resumed construction, although a few remain suspended because of serious environmental impact problems (Shi, 2005).

Table 1. Population to be Resettled from Chongqing and Hubei

	Total *dongtai* figure*	**Total *jingtai* figure****	**Non-agricultural population**	**Agricultural population**
Reservoir area	1,2 million	846,200	484,700	361,500
Chongqing municipality		719,398	418,133	301,265
Hubei province		126,802	66,567	60,235
Wanxian municipality***		570,874	315,118	255,756

* including the estimated population increase to take place before 2009 when the dam is completed

** not including the population increase

*** Wanxian municipality, part of Chongqing, is one of the municipalities with the heaviest resettlement loads; the rural population constitutes over 90 per cent.

Sources: Zhu and Zhao (1996); *Wanxianshi Sanxia gongcheng yimin bangongshi* (1996)

The official figure for the number of people to be resettled as a result of the Three Gorges dam is 1.2 million (see Table 1), although other sources believe that the figure will be higher — 1.4 to almost 2 million (Dai, 1998). This large-scale resettlement is undoubtedly one of the biggest challenges facing the Chinese authorities, and one of the main questions is whether there is sufficient environmental capacity in the reservoir area. This contribution looks at the concepts of environmental capacity and carrying capacity, and then examines how the question of environmental capacity in the Three Gorges reservoir area has influenced the resettlement policy making for the dam. It argues that environmental and natural resource issues have led to changes in the resettlement programme, such as the policy change to move rural populations away from the reservoir area, as well as the issuing of new resettlement

planned electricity production is 84 TWh annually. The cost of the project is estimated by Chinese authorities to reach 204 billion yuan (US$ 25 billion). See Heggelund (2004) for more information on the dam.

[2] See also www.irn.org/ regarding the United Nations Symposium on Hydropower and Sustainable Development, held in Beijing 27–29 October 2004, for inputs from Chinese and international NGOs.

regulations. Despite China's improved resettlement performance, the Three Gorges resettlement process has encountered a number of problems, many of which are related to the environment, the resource situation and the insufficient farming potential in the area. Examples from the resettlement implementation process are given to illustrate these problems. They are structured in accordance with selected points in the IRR model. The contribution also discusses whether and to what extent resettlement planning in China includes a reconstruction element. The potential benefits, as well as the limitations of the IRR model, are discussed in relation to resettlement in China.

Environmental and Carrying Capacity in the Three Gorges Area

The main environmental problems facing the Three Gorges area are erosion[3] and water pollution (CAS and YRVWRPB, 1996; Deng, 1997).[4] Before going into the issues of the Three Gorges dam resettlement, a clarification and brief discussion of the concepts of environmental capacity and carrying capacity is necessary. Both terms are used in Chinese texts utilized for this study and are also applied in the following discussion.

The concept of carrying capacity in social science has developed from the natural sciences and is a contentious issue among academics. Social scientists began using the term in the mid-1940s to assess human impact on the environment (Cliggett, 2001). A frequently cited reference defines carrying capacity as 'the maximum number of people that a given land area will maintain in perpetuity under a given system of usage without land degradation setting in' (Allan, 1949, cited in Cliggett, 2001).[5] A larger or richer area would have a higher carrying capacity, depending on the energy requirements of any given species (Daily and Ehrlich, 1992). The concept of carrying capacity has been criticized for applying conclusions made from studying species such as deer to human problems, as humans can import whatever they need (McKibben, 1998). A key problem concerns the difficulty in measuring a specific area's carrying capacity, as it is not a closed, static ecosystem and capacity would vary with culture and the level of economic development and technological improvements (Cliggett, 2001; Daily and Ehrlich, 1992; Hardin, 1977). In some ways it seems pointless to even discuss the concept in relation to human beings, as we can figure out new ways to do things:

[3] An international 'upstream–downstream' debate exists about whether or not upstream resource practice has serious consequences for downstream areas. According to Blaikie and Muldavin (2004), there has been a retreat among academics from the Theory of Himalayan Environmental Degradation (THED). The Chinese discourse and domestic policy agenda regarding the Three Gorges dam do not reflect this discussion, and instead often emphasize that upstream resource use may have detrimental consequences for people downstream. Maintaining the upstream–downstream argument may be a way to further political interests in order to either stop or promote a dam project. For opponents of a dam, upstream environmental degradation is major argument for not constructing the dam, while for proponents of a dam, upstream environmental degradation is perceived as a threat to the project (Blaikie and Muldavin, 2004). The scope of this contribution does not allow for further discussion of this interesting topic.

[4] For more information on the Chinese discussion about the environmental situation in the Three Gorges area see Heggelund (2004).

[5] Cliggett (2001) lists eight problems most often cited in relation to carrying capacity: an assumption of equilibrium; difficulty in measuring food resources; inability to account for human preference in taste and labour expenditure; assumption of full use of food resources; assumption of homogeneity across the landscape; assumption of an isolated group/region; an ahistorical view of a process that in fact fluctuates in short- and long-term time frames; and the fact that the concept does not address the issue of standard of living.

'The variables are so enormous that professional demographers barely bother even trying to figure out carrying capacity' (McKibben, 1998: 73). The critique of the concept has resulted in scholars in social sciences and natural sciences increasingly dispensing with the concept as a measurement tool, since human beings have been able to adapt, and to actually increase carrying capacity through social and technological change (Cliggett, 2001).

Increasing carrying capacity leads us to the core of the Chinese discussion over the Three Gorges resettlement, because one of the key issues concerns the potential for displacing a large number of people into already densely populated areas. Chinese official and academic literature related to the Three Gorges dam applies several concepts that relate to the resettled population and the resources available in the reservoir area. Environmental capacity (*huanjing rongliang*) is a term often used about a number of aspects such as erosion problems, water pollution, loss of species and so on (Gao, 2000; Lu and Jiang, 1999). It is also used in the context of available farmland and the possibility of sustaining livelihoods in a specific area. Environmental capacity also relates to climate change (warmer climate) and ecological changes (loss of species, such as the threatened Yangtze dolphin and sturgeon).

Chinese authorities apply the following definition of environmental capacity: 'The environmental assimilative capacity for resettlement means the maximum number of relocatees which can be borne or accepted by a given region, in the precondition of assuring the normal circulation of nature ecosystem and maintaining certain production ability, living standard and environmental quality' (YVWRPB et al., 1999). This quote is rather vague and does not specify what 'normal' means,[6] but may be seen in the context of Chinese authorities' statements regarding environmental capacity being the key to successful resettlement of the rural population. Environmental capacity is defined as linking together several issues, such as resettlement, economic development and ecological and environmental protection of a fixed area (Chen et al., 1995). Another version of the environmental capacity concept used in Chinese is environment and population capacity (*huanjing renkou rongliang*), which points to obtaining full use of a specific region as well as maintaining the natural ecological system, and at the same time sustaining living standards for a fixed number of people (Zhu and Zhao, 1996). Finally, in relation to the rural population, two terms are frequently used: *tudi chengzai nengli* or land carrying capacity (CAS and YRVWRPB, 1996) and *tudi rongliang* or land capacity (Wu and Liao, 1999). These concepts relate to cultivation of farmland and grain production and the potential to live off the land after the reservoir inundates farmland. Thus, environmental capacity and carrying capacity in this contribution are defined as ranging from environmental conditions, including farming, to socio-economic livelihood issues.

THE THREE GORGES RESETTLEMENT PROCESS AND IMPOVERISHMENT RISKS

There is a growing consensus among scholars that people displaced due to construction projects face long-term risks of becoming poorer (Cernea, 1997; Cernea and McDowell, 2000; Koenig, 2001; Muggah, 2000; Robinson, 2003; WCD, 2000). There is nevertheless considerable tension among the existing standpoints on how the problem of development-induced resettlement (in this case, reservoir resettlement) should be conceived and addressed. Some describe this as a divide between the managerial and movementist standpoints, where

[6] Thanks to an anonymous reviewer for pointing this out.

the first focuses on the inadequacy and failures of resettlement while the latter focuses on displacement manifesting a developmental crisis (Dwivedi, 2002). The report by the World Commission on Dams (WCD, 2000) is regarded as an attempt (albeit not very successful) to bridge the ideological gap between the managerial and movementist approaches, and proposes an approach based on 'recognition of rights' and 'assessment of risks' (WCD, 2000). There is large body of literature about risk in society that seeks the root causes of environmental crisis (Beck, 1992) and disaster related risks (Wisner et al., 2004). There is also a large and growing body of literature on risk related to development-induced displacement of people (Cernea, 1997; Cernea and McDowell, 2000; Robinson, 2003), and an increasing awareness of the rights of the displaced people (WCD, 2000).

The 'impoverishment risks and reconstruction' (IRR) model developed by Michael Cernea (see Cernea, 1997; Cernea and McDowell, 2000) has been one of the more influential.[7] The IRR model presents operational tools and has identified key risks in resettlement. The basic idea is to build key risks into planning processes and then to reverse those risks; the model is frequently used for organizing risk patterns in World Bank projects. The IRR model has been elaborated on, tested, discussed and criticized in the literature (Downing, 2002; Dwivedi, 2002; Mahapatra, 1999; Mehta, 2002; Muggah, 2000; WCD, 2000). In applying a selection of the points from the IRR model to the Three Gorges resettlement discussion, one objective of this contribution is to demonstrate empirically that the model is relevant for identifying risks in this project. A second objective is to discuss limitations of the model. A detailed developmental resettlement scheme (*kaifaxing yimin fangzhen*) has been developed, which incorporates economic development in the resettlement plan (Heggelund, 2004). Nevertheless, actual implementation of resettlement has proved difficult.

The IRR model consists of eight impoverishment and reconstruction trajectories.[8] The model performs four distinct but interlinked functions (Cernea and McDowell, 2000): 1) a predictive (warning and planning) function which results from the knowledge of past processes — these are predictions of likely problems in the resettlement process, manifested in the eight impoverishment risks; 2) a diagnostic (explanatory and assessment) function; 3) a problem-resolution function, in guiding and measuring the re-establishment of resettlers — the model moves from prediction and diagnosis to prescription for action; and 4) a research function for social researchers in formulating hypotheses and conducting theory-led field investigations. The first three are relevant for this discussion.

Relating the above to China and the developmental resettlement scheme of the Three Gorges project, it seems at first sight that the points in the model should not be as relevant today as they once were: China has in many ways succeeded in pre-empting the potential risks of the model by greatly improving its resettlement programmes since the 1980s through new

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[7] Other models relevant for resettlement discussions include the 'pressure and release' (PAR) model, which has a similar function to the IRR model. The principle behind the PAR model is that in order to relieve the pressure, vulnerability must be reduced (Wisner et al., 2004). This model, and the Access model, seem to go beyond the mere diagnostic and reconstruction functions of the IRR model and to identify root causes for vulnerability such as limited access to power, economic situation and environmental conditions. The scope of this contribution does not allow for further analysis and comparison of the models.

[8] These are: from landlessness to land-based resettlement; from joblessness to reemployment; from homelessness to house reconstruction; from marginalization to social inclusion; from increased morbidity to improved health care; from food insecurity to adequate nutrition; from loss of access to restoration of community assets and services; and from social disarticulation to networks and community rebuilding.

regulations (Jing, 1999; World Bank, 1996, 1998). However, the issues that have emerged in the resettlement process for the Three Gorges dam illustrate that the process is not going as smoothly as Chinese authorities like to portray. The following selected points of the IRR model are discussed below: landlessness, food insecurity, joblessness, and marginalization and social disarticulation. These dimensions of the impoverishment risks model illustrate that the model has a diagnostic function; it also categorizes the Chinese discussion. Some of the points have been merged into one section, because the issues discussed under these points are interlinked to such an extent that this seemed natural and more practical.

Landlessness and Food Insecurity[9]

Lack of available farmland in the Three Gorges area is one of the biggest challenges for successful rural resettlement (Zhu and Zhao, 1996). As Table 2 shows, a large percentage of the population is rural, with 87.3 per cent belonging to the category 'peasants'. In Chongqing municipality, eight counties have a rural population of 90 per cent or above.

Table 2. Active Working Population in the Three Gorges Reservoir Area (%)

	Technical	**Cadres**	**Office workers**	**Commerce and trade**	**Service**	**Peasants**	**Workers**
Reservoir area	2.9	0.7	0.8	1.4	1.1	87.3	5.8
Sichuan province (now Chonging Municipality)							
Changshou	3.9	0.7	1.3	1.6	1.9	78.7	11.9
Baxian	3.0	0.7	1.0	1.6	1.4	83.8	8.5
Jiangbei	2.6	0.6	0.7	1.5	1.2	86.9	6.4
Wanxian city	9.6	2.9	3.8	6.5	4.9	44.0	28.0
Wanxian	1.9	0.3	0.6	0.8	0.6	**92.5**	3.3
Kaixian	2.2	0.4	0.5	1.2	0.6	**92.0**	3.2
Zhongxian	2.3	0.7	0.6	1.0	0.8	89.6	4.9
Yunyang	2.1	0.4	0.5	1.0	0.6	**92.7**	2.7
Fengjie	2.5	0.5	0.7	1.3	0.7	**90.6**	3.6
Wushan	2.2	0.5	0.7	1.1	0.7	**91.7**	3.2
Wuxi	2.5	0.5	0.7	1.0	0.7	**91.0**	3.6
Fuling town	3.6	1.4	1.3	2.0	1.7	81.8	8.2
Fengdu	2.4	0.7	0.6	1.3	0.9	**90.6**	3.6
Wulong	2.5	1.0	0.6	1.0	0.8	89.5	4.6
Shizhu	2.5	0.6	0.9	1.2	0.9	**90.2**	3.6
Hubei province							
Yichang	4.2	1.2	1.1	1.7	1.8	80.8	9.2
Xingshan	5.0	1.6	1.4	1.8	1.8	80.0	8.5
Zigui	3.3	1.1	0.8	1.2	1.0	88.1	4.4

[9] Landlessness does not necessarily mean that peasants will lose all land. However, with little average land at present, loss of any land through reduction of plot-size may have a serious impact on people's lives.

	Technical	Cadres	Office workers	Commerce and trade	Service	Peasants	Workers
Badong	3.2	0.8	0.9	1.0	0.9	**90.0**	3.2

Source: Zhu and Zhao (1996: 120). Zhu and Zhao's source is the population census from 1990 in Sichuan and Hubei provinces.

The reservoir will inundate 513,000 *mu* (34,217 ha) of different types of land (see Table 3). This includes everything from cultivated land, flood land, garden plots, forest, fish ponds and firewood hills. Most of the land in the area (78 per cent) is mountainous (Dai, 1998), and about 40 per cent is already under cultivation. A third of the land is on mountain slopes with gradients of 25 degrees or greater, where development is prohibited according to China's Water and Soil Protection Law. Population density in the reservoir area is high, at an average of 296 persons per km^2 (the national average is 130 people per km^2, with 1000–1200 people per km^2 in the areas below 300 meters). In Yunyang county in Chongqing municipality, for instance, the average amount of land per capita is 0.87 *mu*; a quarter of the rural population there only have 0.5 *mu* on which to farm (Wei, 1999). A statistical sample survey from Fengjie county showed that some peasants lacked contracted farmland, and the number of people without farmland was increasing steadily (Zhu and Zhao, 1996). Even *before* resettling people, adequate farmland is a problem in the Chongqing area of the Three Gorges reservoir area.

Table 3. Land to be Inundated (mu)

	Reservoir area	Sichuan (now Chongqing municipality)	Hubei province
Cultivated land (*gengdi*)*	257,000 (17,142 ha)	229,000 (15,274 ha)	28,000 (1,868 ha)
Flood land/riverside land (*hetandi*)	58,000 (3,868 ha)	57,000 (3,802 ha)	1,000 (68 ha)
Garden plot (*yuandi*)**	110,000 (7,337 ha)	74,000 (4,936 ha)	36,000 (2,401 ha)
Forest land (*lindi*)	49,000 (3,268 ha)	37,000 (2,468 ha)	12,000 (800 ha)
Fish ponds (*yutang*)	5,000 (333 ha)	5,000 (333 ha)	0
Firewood hills (*chaicao shan*)	34,000 (2,268 ha)	19,000 (1,267 ha)	15,000 (1,000 ha)
Total	513,000 (34,217 ha)	421,000 (28,081 ha)	92,000 (6,136 ha)

* This figure includes non-irrigated land (109,000 *mu*/7,270 ha), paddy fields (126,000 *mu*/8,404 ha) and vegetable plots (23,000 *mu*/1,534 ha). There may be a mistake in the figures in the table, as the sum of these three figures amounts to 258,000 *mu* instead of 257,000 mu.

** This figure includes citrus land (96,000 *mu*/6,403 ha) and other (14,000 *mu*/934 ha).

Source: Zhu and Zhao (1996: 2).

A natural consequence of loss of land is food insecurity: when the area of cultivated land decreases, local food production becomes insufficient. In the Three Gorges area the current lack of farmland already poses a threat to local food production. With the inundation of fertile farmland it is expected that the problem will be aggravated. More land would be needed in the hilly areas to achieve the same economic result as before; 1 *mu* by the river must be compensated with 5 *mu* of land in the mountainous areas in order to achieve the same results (Ding, 1998).

Joblessness

Some peasants will have to leave the rural areas altogether and become town and township citizens, with no land at all. As described in the Developmental Resettlement Scheme, a number of farmers will have to change occupation. It may be difficult to find work, and with no land to farm on, their ability to meet their daily subsistence needs is questionable. It is estimated that 40 per cent of the rural relocatees, or 144,600 people (the *jingtai* figure, that is, not allowing for the expected population increase), will be transferred from the farming sector to the second and tertiary industry sectors (YVWRPB et al., 1999; Zhu and Zhao, 1996). There will be vocational training for former farmers. There is some cause for optimism regarding employment for this group: according to the plan, 1600 factories will be relocated,[10] and many of these will undergo an expansion, creating the need for additional workers. However, the ability of these factories to compete in a market economy is open to question. In order to accommodate more former peasants as workers, enterprises purchase old-fashioned, labour-intensive equipment (Wei, 1999), which then makes it difficult for them to survive in a fiercely competitive market. The prospects for the rural population to move into urban areas and engage in non-farm jobs are expected to be poor due to current overstaffing and unemployment in urban industrial sectors (Li, Heming, 2000). Low educational levels aggravate the situation. About 75 per cent of the total number of people to be resettled come from the counties of Wanxian, Kaixian, Zhongxian, Yunyang, Fengjie, Wushan and Fengdu in Chongqing, and Zigui and Badong in Hubei province; their educational level is among the lowest in the reservoir area (Zhu and Zhao, 1996). A survey by the Labour Department in Yunyang county showed that 60 per cent of the peasants-turned-workers did not have a position to go to in the factory where they were promised work (Wei, 1999).

A number of enterprises in the Three Gorges area will not be able to continue to operate and will close down for economic and/or environmental reasons, which will reduce the potential for jobs. Polluting factories will not be allowed to continue their production unless the enterprise buys modern equipment and reaches a certain standard. The transition to a market economy may also prove a challenge to the resettlement process. The role of the government has diminished, and the reform of the state-owned enterprises (SOEs) has resulted in their losing benefits. Increased economic efficiency of SOEs and town and village enterprises (TVEs) may also contribute to unemployment, because lack of skills among the rural population does not make them attractive as a labour force. The government's

[10] According to Chinese authorities, 657 factories will be inundated (Li, Boning, 1992), but 1600 will be relocated above the inundation line (Li, Peng, 2000).

diminished responsibility for TVEs makes it more difficult to guarantee employment for the resettled rural population (Meikle and Zhu, 2000).

Marginalization and Social Disarticulation

If the Three Gorges reservoir relocatees are unable to regain their full economic strength, they are likely to face some form of marginalization. The rural population will not be able to use their skills and farm the land as they did earlier; even if they do not become entirely landless, their piece of land may have shrunk so much that they fall below the poverty line.

A phenomenon called *erci yimin* ('secondary migrants/relocatees') appears to be a serious problem in the Three Gorges area (Gu and Huang, 1999; Wei, 1999). Secondary migrants are peasants who do not live below the inundation line, but in areas which are used for the reconstruction of towns that will be inundated by the reservoir; they lose their homes and farmland to the reconstruction. There are basically three ways to resettle these peasants: they are given work in a factory; they arrange for a position themselves; or they receive funds for living expenses. These former peasants become part of the non-agricultural population; they have to change their occupation and try somehow to maintain their income when they move into an urban setting. Having lost their land and housing to city and town construction, they become marginalized. In addition to farming the land, many of the peasants carried out sideline occupations (such as selling vegetables from local stalls) which they also lose. They are moved into high-rise buildings constructed for relocatees, and many find it hard to obtain new occupations or steady employment. They live on funds that the authorities provide each month, and on ad hoc construction work in the area. Their average income is 30–40 yuan per month (Gu and Huang, 1999),[11] which is half the amount regarded as the standard, basic cost of living, not including fees for school, doctor or other expenses. Their income is based on a rural standard of living, while their living environment has become urban.

Cernea points to China as being unique in fostering community solidarity such as sharing of losses (particularly land) and redistribution of non-affected village lands between the non-displaced farmers and their community neighbours (Cernea, 1997). In the Three Gorges resettlement this appears not to be the case, as conflicts between the host population and the relocatees are common. The resettled population will receive new farmland that is taken from the peasants who formerly lived there, that is, the land is divided between the host population and new population. When the migrants are resettled into host areas, there is an increase of pressure on resources and social services, which results in economic losses for the host population. This creates hostility between the two groups (Qiu et al., 2000). Furthermore, the relocatees receive preferential treatment, such as lower income tax and living subsidies for the first few years after resettlement. This again can cause resentment among the host population, and conflicts may arise. One measure suggested to avoid such conflicts is to establish a favourable policy for the host areas, and not merely focus on the reservoir area and the resettled population (Qiu et al., 2000).

Moving out from the reservoir area has negative effects for the relocatees in several

[11] 80 yuan per month is the lowest standard existence for a rural family that has lost its farmland, excluding school and medical fees (Gu and Huang, 1999: 357). From 1994–2005, the yuan was pegged to the US dollar at 8:2770. Since 21 July 2005 the yuan is linked to several currencies including the dollar, euro and yen at 8.11 against the dollar. The yuan can now fluctuate within a bandwidth of 0.3 per cent upwards or downwards.

ways, as networks are disturbed or disintegrate. In the Chinese culture, family ties and community are important. The official policy recommends that people should be relocated in groups and social units (Lu and Jiang, 1999), but the number of people who stay together or separate is not known. When interaction between families is reduced, resettlers' obligations towards non-displaced kinsmen are eroded. When people live among strangers, communication is difficult, favours are not returned, and conflicts arise easily. There is a danger that the resettled peasants may be discriminated against in the host areas. Chinese villagers put significant emphasis on being of one clan (*shi*), bearing the same surname: the relocatees are thus regarded as strangers, a situation which could last for one to two generations, making the resettlement in new areas even more difficult (author's interview with CAS academic, Beijing, August 1999).

Limitations of the IRR Model in the Three Gorges Resettlement

The IRR model is intended as a tool for decision makers to anticipate risks and as a guide to reconstruction of livelihoods for the resettled people. The above points have served to identify problems and assess some of the risks in the Three Gorges resettlement. One advantage to having such a model is its general applicability; it can in principle be used for any project in the world. Nevertheless, since political, economic and social situations vary in different countries, the national condition will always play an important role for the application of such a model. In China for instance, even though there is an awareness regarding the needs of the resettled people, there are certain problems typical to Chinese society that the model does not consider. There are thus a number of limitations to the IRR model in China.

- *Rule of law*. Strengthening of the Chinese legal system is gradually taking place, and new laws appear constantly. The Chinese say that *renzhi* (rule by man) often still prevails over *fazhi* (rule by law) (see Dai, 1989: 64.), and one may add that rule by law and the comprehension of the existing laws in China are still in their early stages. Legal issues are important in the Three Gorges project, as they relate to freedom of speech, a more open and free press, supervision by the public, and stakeholders' participation in the policy process. In the case of the Three Gorges, public participation in the decision-making process has been almost non-existent, and at the provincial level the possibility for relocatee participation is low. Moreover, arrests and humiliation of protesting relocatees occur frequently. This relates to the broader consequences of displacement including human rights, which the IRR model does not encompass.
- *Natural resources and environmental pollution.* Population pressure, diminishing natural resources and environmental pollution all need to be taken into consideration when resettlement is planned. The scarce natural resources in China become even more evident under resettlement circumstances. Accoring to Cernea (1997: 1578), 'The risk of landlessness is prevented through landbased relocation strategies'. This may be true, but in the case of the Three Gorges project there is little available land left to satisfy the needs of the rural population. In the future, environmental migrants may be the result.
- *Corruption and embezzlement* of resettlement funds has emerged as one of the main threats to the implementation of the resettlement policy, as it reduces the amount of money for resettlement. In the context of resettlement in China, the decentralization of authority is viewed as positive, increasing the chance for success as resettlement solutions are developed locally (World Bank, 1996, 1998). Nonetheless, decentralized implementation may also be problematic, as it provides an opportunity for local

officials to engage in mismanagement and corruption of resettlement funds.

- *The socio-economic environment*. China is now in transition from a planned economy to a socialist market economy and this poses challenges. With the market economy, organizational structures such as those related to providing work for former peasants have become weaker. Moreover, social and economic circumstances are important for the resettlement outcome, as marginalization is often rooted in other socio-economic factors as well. Additionally, the Chinese emphasis in resettlement is put on rebuilding relocatees' livelihoods. There is less of a focus, if any, on the social aspects and the social trauma of broken networks. The Chinese authorities need to *acknowledge* that resettlement has social costs, that it is problematic for the relocatees when families and friends are split up and when the ancestral land has to be abandoned.

THE CHINESE AUTHORITIES' RESPONSE TO THE RESETTLEMENT PROBLEMS

In the introduction we asked to what extent there is a risk consciousness in the resettlement policy for this project, and in how far there is a positive reconstruction aspect. As problems have emerged in the resettlement process, Chinese authorities have reacted by initiating two steps: by deciding to move 125,000 people out of the reservoir area; and by issuing new resettlement regulations. These initiatives are described and discussed below, and the reasoning behind these decisions will be examined, together with the potential benefits or disadvantages of these measures.

Outmoving (*Waiqian*)

On 19–20 May 1999, Premier Zhu Rongji was present at a Three Gorges project resettlement working meeting that was organized by the State Council (Lu and Jiang, 1999). Zhu emphasized the importance of the second phase of the construction during which 550,000 people would be resettled (before 2003). At the meeting two 'adjustments' (*tiaozheng*) were announced. One was an adjustment and improvement (*wanshan*) of the resettlement plan, which involved resettling a large number of the rural population outside the reservoir area. The second adjustment was in relation to moving enterprises, which is not the focus of this contribution. The main change involved shifting from a policy whereby the rural population was to be resettled in the vicinity of their former homes (*jiujin houkao anzhi*) — literally pushed up the hills along the river — to resettlement out (*waiqian*)[12] of the reservoir area, mainly (for a large portion of the relocatees) to other provinces. The main reason for this change, as stated by Zhu, was the lack of environmental capacity and lack of farmland in the Three Gorges area (Lu and Jiang, 1999). Thus, the environmental capacity in the area was given as the direct cause of the policy change.

Even though *waiqian* is included as an alternative in the resettlement regulations (Decree of the PRC, 1993: Article 10), the *jiujin houkao anzhi* has always been stressed as the favoured alternative for the majority of the rural population. Therefore, the policy adjustment

[12] The term *waiqian* should be interpreted as moving out of the reservoir area; *waiqian* implies both moving within the same province or to other provinces (Lu and Jiang, 1999).

introduced in May 1999 must be regarded as an important change and a deviation from the original plan. Moving the rural population away has been an unpopular choice, and not an official alternative. Possible outmoving in the Three Gorges project has always been a very sensitive issue: in the unsuccessful resettlement related to earlier dam projects in China, moving people out of their counties and provinces was the common way of resettling the rural population (Heggelund, 2004).

Table 4. Total Number of People to Move Out (waiqian)

Moving out from Chongqing municipality to other provinces	70,000
Moving out of the Chongqing reservoir area but within Chongqing municipality	20,000
Relying on relatives and friends to move out from the Chongqing reservoir area	10,000
Moving out of Hubei reservoir area within the Hubei borders	25,000
Total number of people to move out of the reservoir area	125,000

Source: Dong (18 November 1999).

The decision to move 125,000 of the rural population out of the reservoir area (see Table 4) is also related to the floods in 1998 that brought increased attention to the erosion problems along the Yangtze River. The reason for out-moving is therefore twofold: an urgent need for environmental protection as well as the need to reconstruct livelihoods for the resettled population. Less pressure on the environment will improve their chances of recovering or improving their living standards. The resettlement policy change was an attempt to improve the resettlement and environmental conditions.

Ultimately, however, moving people out of the area may not be the solution to the livelihood problem. There are different views on this in China: some believe that moving people out of the reservoir area may be an improvement. In interviews with academics from the Chinese Academy of Sciences, who are involved in the resettlement work of the 846,200 (static figure) to be resettled, there is serious doubt as to whether the 721,000 people remaining in the reservoir area can be resettled properly due to the scarcity of farmland and the limited potential for making a living. On the other hand, there is some optimism about the possibility of restoring livelihoods for the 125,000 people moving away. The fact that the majority of these people will be moved to provinces that are situated in the eastern coastal provinces or along or close to the Yangtze River (in the Jianghan plains) is one reason for the optimism.[13] Moving to these provinces is expected to increase the chances of successful resettlement, as the farming methods would be similar, which would simplify recovery of livelihoods. Compared to Xinjiang or Hainan Island, which have been tried out earlier as possible relocation areas, the distance from original home areas would be shorter, making it possible to go home to visit relatives and friends. Furthermore, according to a survey, the resettlers are also more willing to be resettled in the flatlands of the Yangtze and Han rivers

[13] These are the plains surrounding the Changjiang (Yangtze River) and Hanshui (Han River), one of the major tributaries to the Yangtze River.

(Xia, 1999), which may also indicate an increased emphasis on the opinions of the relocatees. These provinces have much in common with the Three Gorges area and the culture and customs would be relatively similar. The choice of these host areas might thus indicate that the authorities are paying greater attention to the livelihood issue, as well as placing more emphasis on the wishes of the resettled rural population.

By contrast, some academics feel that problems will not be solved by moving out, as distant removal is one of the factors that maintained impoverishment among earlier groups of relocatees (Wei, 1999). More resettlement funds will be needed to pay for the out-moving, and it is uncertain whether the resettlement budget will increase (Qiu et al., 2000). Moving people out to other places, away from their safe environments, will always be difficult, as communities are dispersed and networks are broken. There are also reports of unsuccessful resettlement in the provinces mentioned above (Macleod, 2001). It is difficult to rebuild the lost networks and several generations often pass before the relocatees become assimilated into their new communities.

New Version of the Resettlement Regulations

The second initiative to try to solve problems in the resettlement process is the new and revised version of the resettlement regulations. The regulations were approved by the State Council on 15 February 2001 and came into effect on 1 March 2001 (Decree of the PRC, 2001), replacing the regulations of 1993. The revised regulations contain important changes that reflect some of the resettlement problems that have been described in the previous sections.

One major change in the resettlement regulations is the increased emphasis on *environmental protection*. All sections of the regulations have articles that include instructions regarding the rational use of natural resources, environmental protection, and water and soil conservation. Article 13 stresses the need for ecological agriculture; Article 21 focuses on the need to close down polluting enterprises in the reservoir area; Article 62 (in the penalty section) details penalties for the destruction of the environment, according to the environmental and water and soil erosion laws. The focus on the environment is reflected in the regulation regarding the prohibition on farming land with a gradient of more than 25 degrees (Article 26, under relocation and resettlement), which also stresses the need to make terraced fields on farmed hill slopes of less than 25 degrees. This was not mentioned in the 1993 regulations. The regulations also give directions regarding tree felling (Article 27), which is related to the flood and erosion problems in the area.

A second major difference between the two sets of regulations is that the deletion in the 2001 version of the earlier principle of taking *agriculture* as a basis (*yi nongye wei jichu*) for settling the rural population. The reason for this shift in focus must be seen in relation to the lack of available and arable farmland in the Three Gorges area. Also, China's rural population is increasingly mobile and moving into urban areas to find work. The decreased profitability of farming may also have influenced the change, but a discussion of that is beyond the scope of this contribution.[14]

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[14] In 1998, 1999 and 2000, per capita net income from crop cultivation declined by 16, 45 and 98 yuan respectively. Prices have fallen since 1997 and continue to fall (State Statistical Bureau, 2001). I am grateful to Dr Eduard Vermeer, Leiden University, for this information.

A third major change in the 2001 regulations is a new section of eleven articles regarding the supervision and management of the resettlement funds (*yimin zijin shiyong de guanli he jiandu*). Some of the articles in this section were also in the 1993 version, but making a separate section stresses the increased importance paid to this issue. This section is very concrete, and emphasizes that the authorities will not increase the resettlement funding. It lists six points on which the resettlement funding should be spent: compensation for rural resettlement; moving and reconstruction of towns and cities; compensation for moving and reconstruction of industrial enterprises; reconstruction of infrastructure projects; environmental protection; and other resettlement projects that are initiated by the responsible resettlement management organizations under the TGPCC (Three Dams Project Co-ordinating Committee). Another related revision can be found in the penalty section: it contains instructions saying that the funds should not be spent on non-resettlement projects, investment projects, or purchase of bonds and stocks. It is reasonable to conclude that the problem of corruption — which may seriously threaten successful resettlement implementation — is the reason for this revision. The penalty section also stresses that people will be punished for refusal to move or for delaying resettlement, returning to home areas after having received compensation, and for attempts to obtain compensation a second time.

RECONSTRUCTION AND THE IRR MODEL IN CHINA

The fact that Chinese authorities have an awareness of the need to reconstruct relocatees' lives is reflected in the language describing resettlement in China (*anzhi hao yimin* — 'to settle the displaced people well'), and also in the resettlement policy for the Three Gorges project. This awareness is based upon many years of resettlement experience in China as well as on interaction with multinational agencies such as the World Bank. The World Bank praises China's resettlement programme for its thorough planning, and for viewing resettlement as a development opportunity. China already carries out many of the measures suggested in the IRR model reconstruction aspect

- *Trial resettlement*. In the planning process for the dam project, trial resettlement (*shidian yimin*) was initiated in 1985, several years before the project actually was approved (1992). Trial resettlement included preparation of new land and planting of orchards in advance of resettling the rural population. Although this trial resettlement was on a small scale, it may have provided important information about the farming possibilities in the area.
- *Training of peasants*. There are two categories of training for peasants. The first concerns the training of peasants who continue to farm the land, and involves learning about new and more efficient agricultural methods. This group may be trained by researchers from, for instance, the Chinese Academy of Sciences at training/research stations that are situated in the vicinities of Wanxian in Chongqing and Zigui in Hubei. The second category concerns training for peasants who lose their land and become part of the non-agricultural population; they are trained in skills which enable them to work in secondary and tertiary occupations. Both training and jobs are provided in factories.
- *Later Stage Support Fund (Yimin houqi fuchi jijin)*. In 1996, the State Planning Commission (now State Development Planning Commission) issued a circular that all

projects must establish a 'later stage support fund', which was based on the post-resettlement fund set up in the 1980s. 'Later stage' refers to the period after the resettlement budget has been spent and resettlement work is completed for the project.[15] The fund will collect annual revenues from power generation that will be turned over to provincial governments for 'operation, maintenance, and further development of resettlement schemes behind large- and medium-size hydroelectric dams'.[16] Article 45 in the 2001 regulations states that a later stage support fund is to be established for the Three Gorges project. The fund will be divided between Chongqing municipality, Hubei province and the provinces and cities that receive the out-moving rural population.

Although there is already a reconstruction aspect in Chinese resettlement policy making, and despite the limitations of the IRR model noted above, the model can still provide a useful planning tool for Chinese authorities. The Chinese emphasis in resettlement is put on rebuilding relocatees' livelihoods. It pays little, if any, attention to the social aspects and the trauma of relocation and dislocation. The main relevance of the IRR model for China is thus to highlight the social costs of resettlement, and show ways that they can be diminished or avoided. There is now a Chinese language version of the IRR model (Cernea, 1998). Since both the Asian Development Bank and the World Bank require risk analysis in projects which they fund, and apply the IRR model as a tool to carry out that analysis, China — a major borrower — will be exposed to this model. The generality of the IRR model both requires and allows that China develop it further, according to the needs and conditions of the country, in order to provide the most efficient resettlement method.

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[15] I am grateful for information on the 1980s post-resettlement fund and the Later Stage Support Fund provided by Dr Zhu Youxuan, resettlement expert and World Bank consultant, April 2001.

[16] The rate is 0.005 yuan per kWh. In the Shuikou project the World Bank expected an income of about US$ 2.5 million annually (World Bank, 1998).

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