The geography of Japanese development aid to China, 1978–98

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Abstract. Japan is the largest donor of development aid to China, and China is the largest recipient of international aid and arguably the most significant emergent transitional economy in the world. A survey of Japan's aid is helpful in any attempt to understand the impact of aid on China's national and regional development and on state strategies. Japan's aid is closely tied to the health of Japan's economy—the second largest economy in the world. Though certainly not unique in this regard, Japan's aid has a reputation for serving Japan's own national interests at the expense of the recipient nation's environmental and social conditions. The results of this survey reveal: (a) clearly defined and specific geographic patterns to Japan's aid to China; (b) changing sectoral patterns in Japan's aid to China; (c) important institutional changes underway in Japan's aid programs; and (d) a transfer of capital from Japan to China which serve the divergent goals of each state, though not necessarily in ways intended by each state.

Introduction
There is little academic work completed that documents and analyzes the geographic patterns of aid to China since the 'open-door' policy began in 1978. This is the case despite China being one of the largest recipients of international aid (World Bank, 1997a). In this paper I provide an empirically based analysis of the largest donor of aid to China—Japan. Japanese aid to China provides a unique window to examine the questions of the role of aid in regional development. Its size, breadth, and impact in China make necessary a clear understanding of the role of Japanese Official Development Assistance (ODA) in influencing China's development and, indirectly, development in Asia and the world.

The primary goal of this paper is to survey the spatial and sectoral patterns of Japanese aid to China over the period 1978–98. I contextualize this survey within the discourse on driving mechanisms behind Japanese ODA (Burnell, 1997; Okawa, 1996; Orr, 1989; Scheyvens, 1996; Tisch and Wallace, 1994). Thus a survey of geographic patterns of Japanese ODA to China allows a materially based analysis of the discursive strategies employed by Japan and China to explain and legitimize the gap between the rhetoric of ODA and its reality in practice (Muldavin, 1999).

Second, I address the theoretical debate concerning the role of Japanese bilateral aid in national development strategies and sectoral transformation (for examples of discussions of the role of ODA in determining a nation-state's development pattern, see Black, 1991; Blaikie et al, 1997; Escobar, 1996; Payer, 1991). The relationship between the Chinese state and Japan's state aid institutions is analyzed in the context of policy formation and implementation. The third goal is to identify how Japanese grant aid and concessional lending shape the business climate in ways that directly benefit particular Japanese corporations.

Last, these previous three goals collectively allow us to construct an alternative understanding of Japanese aid to China and to assess through empirical observations the extent to which donor needs and state objectives drive development assistance.
Japan's bilateral aid institutions focus their international discourse on their ability to serve the complex needs of a fifth of the world's people. By carefully looking specifically at Japanese aid to China, its patterns of spatial distribution and sectoral allocation, a more complete picture of the motives of Japanese aid organizations is revealed. This picture and its composite patterns can help illuminate the goals of the Chinese state in accepting this kind of development assistance. The goals of Japan and China are quite different, and yet it is important to point out the ways in which each finds benefit and value in the continuation of aid programs. Disparate goals can still lead to cooperative frameworks in the delivery of large amounts of capital and technology.

In addition, in this paper I use the regional classification designated by China's seventh five-year plan. It is important to view this regionalization as reflecting Chinese policy objectives rather than being defined by socioeconomic or biophysical geographic factors [Source 1 (S1)]. There are many intraregional disparities and anomalies in this scheme (Sichuan in the west being the most conspicuous because of its developed industry) but I have attempted to remedy part of this arbitrary regionalization by placing Jilin and Heilongjiang in the center, and Guanxi in the west, to reflect better their geographical levels of development. There exists a wide body of literature analyzing the important issue of regionalization (for example, Scott, 1998; Segal, 1994). However, as this paper is not centered on examining regionalization, I do not seek to address the obvious inadequacies of the official classification system.

The significance of Japanese Official Development Assistance to China
Japan's bilateral aid to China far surpasses that of other bilateral donors. This reality gives Japan an important role in determining not only the overall focus of aid to China but also its quality and impact. No other country has even a small fraction of Japan's economic leverage in this regard. Combined with Japan's contributions to the Asian Development Bank, World Bank, and United Nations organizations, Japan's ODA provides it with vast potential to influence overall aid to China as well as China's development pathway (figure 1).

Japan is the biggest aid donor in the world, eclipsing the United States for the first time in 1989, and maintaining that position continuously since 1991 with a rapid expansion in net disbursements (figure 2), surpassing $14.5 billion in 1995 (24.6% of the total Development Assistance Committee disbursements) (MOFA, 1998a, page 10). This was principally a result of the appreciation of the yen against the dollar (MOFA, 1997a). In 1996 Japanese ODA fell to $9.4 billion (17.1% of the total Development Assistance Committee disbursements), whereas the United States increased its ODA to $9.1 billion (16.4% of Development Assistance Committee disbursements), leaving Germany ($7.5 billion) and France ($7.4 billion) in third and fourth places, respectively (MOFA, 1998a, page 10). For 1997 Japanese ODA remained at $9.4 billion, whereas there was a significant drop in ODA from the United States ($6.3 billion),

(1) Details of sources (S1 – S5) are given at the end of this paper.
(2) Japan's bilateral ODA made up 60% of the total aid to China in 1993, 62% in 1994, and 55% in 1995 (MOFA, 1998a).
(3) The Development Assistance Committee is composed of 21 'industrial democracies', with the principal members being Japan, the European Union nation-states, and the United States. Established in 1961 by the Organization for Economic Cooperation and Development (OECD), its primary mission is to mediate between aid donors and recipients on the amounts and types of aid (see the explanatory notes in MOFA, 1997a).
(4) This apparent drop results primarily from the Development Assistance Committee's change in the way it calculates ODA. Since 1997, US aid to Israel is no longer considered ODA under Development Assistance Committee accounting rules. In addition, changes in exchange rates affect the relative ranking of aid donors year to year, making direct comparisons difficult if
(4) (continued) not problematic. For example, the recent strength of the yen has pushed Japan into the top ranks whereas Japan's ratio of ODA to GNP has actually fallen—currently 0.22%, nineteenth out of 21 Development Assistance Committee member countries (MOFA, 1998b, pages 4–5). Still, for ease of use I have converted most figures in this article to US dollars, except where obviously misleading or inappropriate.
France ($6.2 billion), and Germany ($5.9 billion). These drops correspond to an overall decline of 14.2% in total ODA disbursements from Development Assistance Committee countries in 1997, from $55.4 billion in 1996 to $47.6 billion in 1997 (MOFA, 1998b, pages 4–5). Japanese ODA in 1998 was budgeted to decline 10% from 1997 in yen terms (from ¥1168 billion to ¥1047 billion, a ¥121 billion decline), with the largest cut (¥71 billion, or 59%) made to the Overseas Economic Cooperation Fund (OECF) loans (an 18.0% rate of decline for this category of ODA). In 1997 Japan’s ODA of $9.4 billion was allocated primarily to bilateral aid ($6.5 billion) and secondarily as disbursements to multilateral institutions ($2.8 billion; MOFA, 1998b, page 4 and page 48, reference 1).

Japanese influence in regional policy formation is expanding in Asia (Rimmer, 1986). From being a country reluctant to engage in active diplomacy, let alone be influential in policy matters, it now plays a much more decisive role (for a discussion of Japan’s changing role in the Asia Pacific region, see Grant, 1999; see also Fujisaki et al., 1996). The rapid increase of Japan’s ODA in dollar terms (5) between 1990 and 1995 amplified its regional impact. As of 1994 Japan contributed 51.8% of ODA to Asia, with the next largest contributors being Germany (10.9%) and the United States (6.3%) (MOFA, 1997a, page 26). This overwhelming dominance in aid to the region gives Japan a powerful tool potentially to influence regional policy debates and the chosen development pathways of nearby nation-states (for a discussion of Japan as a great aid-power, see Yasutomo, 1989).

According to Terry (1997) Japan uses aid to shape economic development in its region, selecting industries from recipient states to accommodate a division of labor by country. It harmonizes aid with the needs of Japanese industry and produces an amiable investment environment for Japan’s transnational corporations. Wade (1996) argues further that through this process Japan also promotes the Japanese model of capitalism via state developmentalism. Zhao (1993) contends that Japan’s motives for providing China with ODA include helping Japan’s corporations compete for markets in Asia, securing raw materials and energy supplies, cultivating political interests, ensuring Japan’s security, and facilitating economic interdependence between China and itself.

Japanese ODA has significant implications for China, arguably the most important emerging economy in the world. Paradoxically, China’s growing importance in the world economy and increasing political power translate into significant effects on international development aid policy. As a prominent debtor ($147 billion in 1997), one of the largest recipients of foreign direct investment ($44 billion in 1997), and a powerful exporter ($183 billion in 1997) of principally manufactured goods ($142 billion in 1997), each shift in China’s economic policy has regional and global ramifications. The Asian financial crisis makes China’s increasing debt a concern, though it is still relatively small compared with total GDP (16.3% as of 1997). China’s foreign reserves ($146 billion as of 1997) (World Bank, 1998) are currently large enough to cover reported foreign debt completely, but the increasing problems of the financial sector threaten to undermine confidence in China’s ability to repay its debts in a timely manner. The recent crackdown by the state on financial irregularities is an attempt to reregulate somehow this aspect of the economy and prevent the kind of financial disaster that has struck much of the rest of Asia. The collapse of some of the largest governmental investment companies unable to repay their loans raises the specter of large-scale defaults multiplying through the Chinese economy and impacting the rest of Asia (Segal, 1999).

(5) In yen terms ODA remained fairly constant over the same six-year period (MOFA, 1998c).
Aid to China plays many roles. In terms of the interests of the Chinese state and those of aid donor countries, aid helps to maintain the state's legitimacy in the face of ongoing domestic political and economic problems. For example, China relies upon World-Bank-trained Chinese economists, among others, to help solve these looming crises. Perhaps just as importantly aid helps bilateral donors increase their leverage in China for political and economic ends—at least that is their perception [Zhao (1993), Terry (1997), Koppel and Orr (1993) all see direct political and economic interests as Japan's perception of the role of its ODA program with China].

Aid has significant impacts on economic policy and development practice within China. Additionally, aid often determines the flow of private commercial capital into China (both volume and type). For example, after the Tian'anmen Square incident in 1989, foreign capital investment in China stopped briefly, but started again after pressure from Japan and European donors. This, of course, raises the sometimes embarrassing reality that 'aid' is extremely important for the First World economies as well as for China, subsidizing First World transnational corporation's investments. Thus 'aid' is a misnomer as it not only subsidizes Chinese development but also First World economies. [Regarding other institutions set up to enable Japanese transnational corporations to benefit from ODA, see Soderberg (1996); Koppel and Orr (1993) also emphasize Japan's use of aid to promote bilateral relations.]

As such, we must reassess the question of the role aid plays in contributing to or ameliorating regional inequality (a significant issue in China) with a more complete set of interests incorporated into the analysis. If the primary goal of donors is to legitimate corporate welfare (secure ongoing market access, obtain contracts for First World goods, and generally subsidize transnational corporate activity in China) then 'aid' provides a useful and important tool for legitimating this policy to their citizenry. If, on the other hand, the primary goal of donors is humanitarian and social, a different analysis focused on the institutional failure to implement aid programs properly would be more appropriate to explain the gap between rhetoric and reality in practice. What these two contrasting analyses point out is the necessity first to survey aid to China, in this case Japanese aid, and to try to present a realistic picture of its spatial and sectoral distribution. This may then allow us to analyze more clearly the driving forces behind ODA and its role in regional development, a question of significant importance to geographers. Hence, in this paper I will highlight the insights a geographic analysis can provide.

Survey of aid: the geographic manifestations of Japanese aid to China in the reform era

In this survey I analyze the type, sectoral allocation, spatial distribution, and trends over time for both major Japanese aid organizations, the Japan International Cooperation Association (JICA) and the Overseas Economic Cooperation Fund (OECF), and for the major non-ODA Japanese government lender to China, The Export–Import Bank of Japan (JEXIM). JEXIM loans are classified as Other Official Financing (OOF), a nonaid category, but are increasingly converging with the ODA loans of OECF, both in focus and in administration. Moreover, the rather arbitrary cutoff of a 25% grant component to divide ODA and OOF serves primarily to hide the actual similarities between OECF and JEXIM development approaches. Although the goals of OECF are rhetorically development oriented to serve the needs of developing countries, and the goals of JEXIM are commercially oriented to serve the needs of Japan and Japanese corporations, these two organizations have much more in common.

than first meets the eye. Furthermore, even many of JICA's development (feasibility) studies are focused on paving the way for lending not only by OECF but also by JEXIM.\(^7\) The interrelatedness of all three of these organizations is one of the most interesting and revealing components of an analysis of Japan's development-aid policies and favored development strategies for China.

There are four main ministries involved in administering Japanese ODA and OOF programs for grants, technical assistance, and loans (figure 3). As Soderberg (1996) points out, there are different motives and considerations for each ministry. This results in a consensus on aid policy only after a period of intense pluralistic struggle.

Each of the agencies has multiple masters and therefore must balance the often competing demands and needs of various sectors of Japan's state apparatus. Foerster (1995, page 163) states that JICA, for example, "drafts requests based on meetings between the divisions of the Ministry of Foreign Affairs, the Ministry of International Trade and Industry, the Ministry of Agriculture, Forestry, and Fisheries, and the corresponding JICA departments, and agreement among these ministries is necessary". Although only the Ministry of Foreign Affairs allocates grant aid, the ODA budget for technical assistance is more flexible, with all ministries claiming portions of it (Foerster, 1995).

\(^7\) Development studies make up the largest portion of JICA's budget because they are mandated for all types of project aid—grant, technical assistance, and loan. For a comprehensive discussion of development studies, see Foerster (1995).
For these reasons and more, there is a fair amount of confusion and difficulty in trying to identify specific projects with individual ministries. For example, the OECF "is formally placed under the Economic Planning Agency but is actually governed by the 'four-ministry system' which in addition to the Economic Planning Agency, consists of the Ministry of Finance, the Ministry of International Trade and Industry, and the Ministry of Foreign Affairs" (Soderberg, 1996, pages 47-48). Multilateral aid is dispersed primarily through the budgets of the Ministry of Finance and the Ministry of Foreign Affairs. There is also a minor cooperative effort between JEXIM and the Asian Development bank. This said, in the following sections of this paper I provide a brief introduction to the three primary organizations and the geographic patterns of their programs in China.

**JICA: grants and technical cooperation**

JICA's ODA mission is to provide grants and technical assistance to support "socio-economic development of developing countries" (1996, page 4). JICA's programs include technical cooperation (training in Japan and the dispatch of experts abroad, provision of equipment, experts provided for OECF projects, and development studies); dispatch of Japan Overseas Cooperation Volunteers; training of Japanese experts; administration of grant-aid programs; development investment and financing; support for Japanese emigrants; and disaster relief. The two main components are technical cooperation and grant aid. JICA's funding comes primarily from Japan's Ministry of Foreign Affairs, with small additional funding coming through returns on investments and from the Ministry of International Trade and Industry (JICA, 1991; 1996).

Over the past twenty years, JICA has divided aid almost equally between technical cooperation (47.5%) and grants (52%) (see figure 4, over). Medical and health-care projects make up the largest category (26.5%). Urban services and infrastructure make up the next largest sector (15.7%) and are primarily training and equipment style projects with most of the funding going to Beijing (for example, a firefighting equipment project at the Beijing City Fire Station). Food and agriculture is the next largest sector (14.5%) and consists primarily of research and demonstration projects. Environmental projects compose 12.4% of the total and are an increasing percentage as JICA and OECF both consciously shift their funding towards projects identified as being primarily environmental in orientation. The largest project was construction of a Japan–China Friendship Environmental Conservation Center between 1991 and 1994, which in its last year of construction consumed half of JICA's total budget (JICA, 1995).

Educational books and equipment make up 10.1% of the projects, principally composed of textbook and audiovisual equipment provisioning. Water supply and

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*(8) The other primary form of Japanese ODA is via multilateral institutions, from the United Nations to the World Bank and the Asian Development Bank. There are various other government organizations for enhancing financial flows of ODA and OOF from Japan but they are extremely small in relative terms. The Asian Development Bank receives the majority of its funding from Japan and requires an analysis all of its own (see table A1 in the appendix to see Japan's relative multilateral contribution compared with the United States and European donors). Japan began to use ODA and JEXIM monies in support of World Bank and International Monetary Fund structural adjustment lending programs as of 1987. This began in July of 1987 with an ODA, $500 million, three-year 'non-project grant aid' disbursement to Africa. Japan later regionally diversified this program to incorporate Asia and Latin America. Simultaneously, JEXIM began providing structural adjustment support in 1987 in close coordination with the World Bank and International Monetary Fund (MOFA, 1997a, page 178).

*(9) As Foerster (1995) notes, there is often significant overlap between aid classified as technical cooperation and grant aid.*
Figure 4. Technical cooperation and grant aid, 1978–98 from Japan International Cooperation and Association (source: JICA, 1998; note: sources of information are official government statistics and information provided to the author in interviews with various Japanese government aid agencies).

quality (7.7%) is the last significant category, and has recently shrunk in size. (One might argue that this category belongs in 'urban services and infrastructure' or 'food and agriculture', but JICA maintains a separation based upon its own criteria.) The remaining five categories total just over 10% of the projects, with the largest being science and technology (5.1%). This sector is primarily composed of visiting Japanese technicians and experts who help train Chinese scientists and technicians in the use of Japanese technologies in research centers.
Since 1978 the geographic distribution of JICA’s funding shows a clear predominance of projects along the eastern seaboard, with a particular focus on urban areas, especially in north China. Since 1994 there has been an increase in projects allocated to China’s central region. Yet the largest number of projects are still allocated to institutions in Beijing (figure 4).

OECF: loans
OECF provides concessional loans to China—thirty-year terms, low interest, with a ten-year grace period for repayment (OECF, 1997a). To qualify as ODA, the grant element of the loans must exceed 25% (S2; S5). According to its own literature, “The Overseas Economic Cooperation Fund (OECF) is a development finance institution of the Japanese government, providing long-term, low-interest loans to assist the self-help efforts of such developing countries. Established in 1961, the OECF principally provides ODA Loans to developing countries, while providing Sector Investment Finance funds for corporations undertaking projects in developing countries, and conducting related research projects and other activities...OECF Loans account for 40% of Japan’s ODA (Official Development Assistance), which is the largest in the world. OECF has become one of the world’s major development finance institutions and is the principal executing agency of Japan’s ODA” (OECF, 1997b).

Since 1978, there have been four batches of OECF loans to China (figure 5). Since 1987, a ‘financial recycling scheme’ has allowed OECF immediately to reloan back to China funds repaid to Japan by China, adding to the overall loan amount while lessening the percentage of new allocations to ODA in Japan’s national budget (OECF, 1997a).

Figure 5. Lending by the Overseas Economic Cooperation Fund (OECF) to China, 1979–96 (source: OECF, 1997a).

(10) The term ‘grant element’ refers to the combined subsidy of direct grants, the difference between interest on ODA loans and the commercial rate for such loans, and other inkind contributions to the project. One of the reasons this term is a difficult one to apply in a strict way is the extremely low commercial interest rates in Japan. Currently, Japan’s real interest rate on interbank lending is virtually 0%. This means that it costs a Japanese company only $1.47 to borrow $1 million overnight.
In terms of the geographic distribution and sectoral allocation of OECF’s loans to China by region since 1978, the eastern and most developed portion of the country has received by far the greatest proportion of loans to date, ¥1028 billion accounting for 54.9% of the total. A substantial increase in funds allocated to central and western China since 1990 has served to improve the earlier imbalance and has resulted from a concerted effort on the part of OECF and the Chinese government to push more foreign funding into China’s hinterlands (figure 6).

According to OECF, the primary reason for this shift is the Chinese government’s stated concern of social discontent arising from the growing disparities between the rapidly developing coastal areas and urban cores and the distant inner hinterlands and border regions. This is, of course, tied to China’s long-standing policy of attempting, at least rhetorically, to redistribute the country’s wealth in such a way as to inhibit mass migration, social unrest, and rapid urbanization.

Growing criticism of rising regional inequalities during China’s reform period also played a part in convincing aid agencies to shift a portion of project funding towards the central and western regions (Austin and Harsip, 1998). Thus not only the Chinese state, but also OECF and other bilateral and multilateral aid agencies, have increasingly recognized the problem and striven to varying degrees to lessen the overwhelming predominance of aid going to the richest and most developed regions of the country.

As shown in figure 6, in terms of sectoral allocation by region, the vast majority of OECF’s loans have gone to transport projects (50.1%), constituting 65.4% in the eastern region, 44% in the central region, and 51.2% in the west. For all three regions, energy is the next largest sector, with the central region having the highest percentage (29.8%) of total project loans. Telecommunications is the next largest sector for the eastern region (7.7%), but it is agriculture that receives the third largest share in both the central (13.9%) and western (15.6%) regions. Urban water supply and sewage account for 6.7% in the east and 5.1% in the west, but only 2.9% in the central region. The much touted shift to environmental projects shows up as less than 1% of the projects in the east, but a slightly more significant 4.9% in the central region and 3.3% in the western region. Dam projects are significant in the eastern region only, comprising 1.1% of total loans disbursed (MRI, 1997; OECF, 1997a).

The transport projects are somewhat different in each region. In the east they are composed primarily of railway, port, and bridge construction. In the central region much of the transport sector lending has gone to energy transport projects. In the west, transport sector lending consists mostly of airports and highway construction projects. Energy projects consist primarily of hydroelectric and thermal power plants. Agriculture projects are focused almost exclusively on the construction of fertilizer plants. The new environmental projects consist usually of a number of components. These include the provision of equipment to shift urban energy supplies from coal to natural gas sources (despite China’s very limited domestic supplies of natural gas), and expanding wastewater and drinking-water treatment plants (MRI, 1997; OECF, 1997c).

JEXIM: export loans and credits
JEXIM loans money to foreign governments, banks, corporations, and other governmental institutions. The cumulative commitment to China as of June 1997 was $18.3 billion, making China the largest recipient of JEXIM loans. If the $7.5 billion of parallel financing provided by Japanese companies is included, the total commitment to China of $25.8 billion is surpassed only by Japan’s investments in the United States and Indonesia (JEXIM, 1997).
Figure 6. Comparison of Japan's Overseas Economic Cooperation Fund's (OECF) loan program to China by economic region (sources: interview, S2, S4; MOFA, 1998a; OECF, 1997a; 1997b; 1997c). Note: sources of information are official government statistics and information provided to the author in interviews with various Japanese government aid agencies. For example, projects classified as 'other social services' by OECF are not included in this figure because they mainly consist of price information systems and are not considered 'social services' by the author.
Kazuhisa Yumikura, the head of JEXIM's untied lending\(^{(1)}\) program with China, explained the origin of this largest of Japan's capital transfer programs to China (S6). His statement clearly demonstrates the primary goals of Japan's OOF:

“At the time when China's open-door policy began in 1978, there was a dramatic shift in Japan's business relationship with China. The heads of the China–Japan Friendship Association (Mr Liu in China, Mr Takanki in Japan) met and established a loan trade committee. This was the initial framework for trade and investment relations between China and Japan. The committee determined that given China's large capital needs, and Japan's need to secure energy supplies, particularly oil, that it would be beneficial for both sides if Japan provided capital to import Japanese capital goods into China for coal and oil projects, and that the products of these projects would be imported to Japan to help it secure its long-term energy needs. The consensus for a long-term trade relationship thus reached was signed by the Ministry of Finance for an initial eight-year term, from 1978 to 1985.”

There are four components to JEXIM's program in China: untied loans, export credits, overseas investment credits, and import credits. Untied loans make up the largest and most important portion by far (62.5%), followed by export credits (21.7%), overseas investment credits (13.1%), and a small import credit program (0.05%). The untied loan program is administered primarily through the Bank of China, currently under its fourth memorandum covering the period 1997–2001. Each memorandum is an agreement between the Japanese and Chinese governments to continue the loan program on specified terms. There is also a significant co-financing agreement with the Asian Development Bank for steel, oil, and gas projects that is administered through the Asian Development Bank's 'China window'—the People's Bank of China (JEXIM, 1997).

ODA (by JICA and OECF) is designated as such by the 25% or more grant element. OOF (provided by JEXIM) has a grant element of less than 25%. That is, the concessional lending rate provided to help Japanese companies sell products abroad translates into a grant to the buyer of less than 25% of the total cost. Additionally, there has been a recent shift in the nature of 'tied' aid so that non-Japanese companies can compete to be subcontractors on a project, but the primary contractor must still be a Japanese company. These non-Japanese companies are referred to as 'local untied' or 'third-country untied' (S5).

As JEXIM loans come under the heading of OOF, one might ask why I include them in this discussion of ODA to China. The answer to this comes from the organizations themselves. In meetings at both JEXIM and OECF in 1997 official representatives of both organizations discussed the growing coordination and cooperation between the agencies and a proposal to blend their loan programs and operations further in the future (S6). Given the vast size of JEXIM's program, and its concessionary lending principles, it would be inadequate to discuss overall Japanese aid to China without also discussing this avenue of official bilateral assistance. In 1997 the Ministry of Foreign Affairs representative suggested that JEXIM and OECF might completely merge in 1999 (S2). That proposal is now reality, with their integration into a new entity, the Japanese Bank for International Cooperation (JBIC), complete (JBIC, 1999).

An analysis of the sectoral, regional, and temporal trends of JEXIM's loans reveals that the eastern region has received by far the largest number of projects (45) and loans (¥990 billion), 60.7% of the total loan value. Some 86.2% of these loans went to the energy sector, with 63.4% going for oil and 22.8% for coal projects. The remaining

\(^{(1)}\) The term 'untied lending' refers to projects that are open to bids from non-Japanese entities and corporations.
Japanese development aid to China

Figure 7. Comparison of the loan program to China by economic region of The Export–Import Bank of Japan (source: JEXIM, 1997). Note: sources of information are official government statistics and information provided to the author in interviews with various Japanese government aid agencies.
13.6% went to primary (chemical and paper mill projects) and secondary industries (petrochemical plants) outside the energy sector. The central region received ¥486 billion, 29.8% of the total loan value, through 20 projects. 77.5% of the loans were allocated to the energy sector, equally divided between oil and coal projects. Secondary industry made up almost the entire remaining 22.6% of loans, again primarily for petrochemical and fiber plant projects (for example, the Jingmen Petrochemical Plant Project in Hubei Province). The 13 projects in the western region (¥156 billion, 9.5% of the total loan value) were similarly divided, with 76.5% going to energy projects, of which slightly more (40.5%) was allocated to oil than to coal projects (36%) (figure 7). This is a direct result of oil exploration in the potentially rich fields of the Tarim Basin in the Taklimakan Desert. Again, the remaining 23.5% was almost all allocated to secondary industrial projects such as lumber mills, petrochemical plants, and synthetic fiber plants. The exceptions in this region are two industrial projects in Chengdu, orientated towards the electronic and automobile industries.

Thus, the geographic distribution of JEXIM's projects mirrors to some extent that of JICA and OECF, with the vast majority going to the most developed eastern region. Most of these projects concern urban energy supplies. The remaining 40% of total funds have gone to the central and western regions, principally because of the large coal and oil deposits of those areas. This closely correlates with OECF's distribution of transport projects in China, many of which are orientated towards coal transport. Hence a rather cursory analysis based upon the distribution of energy resources in China could substantially explain JEXIM and OECF lending patterns for the central and western regions.

3 Present and future trends for Japanese official development assistance
In stark contrast to OECF and JEXIM, JICA has focused most of its funding on less commercial sectors of the economy, though not without significant ties to OECF's projects. Ongoing discussions between Japan's Ministry of Foreign Affairs and China shape JICA's current top three aid priorities: environment, agriculture, and regional unevenness. JICA gives comparatively less attention to other themes and sectors, such as 'basic human needs' (S3).

According to Sugura Miyazaki of JICA (S3), Japan's aid to China operates quite smoothly, unlike aid to Africa and some other Asian countries. He attributes this largely to the higher level of education and technical competence of individuals in the various recipient institutions in China. This also reflects the more technically oriented aspect of much of Japanese ODA. JICA considers its polio elimination program as a clear example of its success in China. This project closely ties grants and technical assistance, providing vaccines as well as funding their distribution and use. JICA provided equipment to provision clinics with the vaccine, which, along with training, it categorized as 'technical assistance', whereas vaccine purchase was categorized as 'grant'. The only serious problem in Japanese aid to China, according to Miyazaki in 1997, is China's inability to share the local cost of projects.

There are a number of contemplated changes in Japanese ODA. First, according to Miyazaki, is a move by JICA to create its own master plans independently, through project formulation studies driven by its own initiatives, rather than just responding to China's requirements. Currently, recipient countries normally initiate requests for aid (Soderberg, 1996). An important question is the extent to which JICA's own initiatives would conflict or concur with China's initiatives. The first such mission, orientated towards the environment, went to China in late 1997, closely followed by an agricultural mission. Both focused on the issue of regional disparities as their first priority. From its mission reports, JICA is making plans for subsequent projects. JICA
describes this as a move towards a more “integrated development approach”, though increasingly driven by Japan’s own priorities. (What Miyazaki and other Japanese ODA bureaucrats consider ‘integrated’ is an important issue of its own, but beyond the scope of this paper.)

Second, institutional change in the form of cooperation is highlighted by the integration of the largest executing agencies, OECF and JEXIM. The Ministry of Foreign Affairs has implemented their merger. This change institutionalizes a blurring of these agencies’ missions as previously defined. The argument is that there is little difference currently between ODA and OOF and that there is therefore a need for better cooperation amongst the Japanese institutions involved. The Ministry recognizes that there are a number of problems in this merger, namely that JEXIM has primarily industrialist goals, whereas OECF is still rhetorically developmentalist in orientation. It is optimistic to expect JEXIM to find a development focus in the future and become a positive part of ODA given the different goals of the two organizations. As the Ministry of International Trade and Industry and the Ministry of Finance control JEXIM, and as the Ministry of Foreign Affairs controls OECF and JICA, much of this is a political process, outside the realm of influence of bureaucratic administration. Furthermore, these changes appear to be driven by the political imperatives to justify aid to the Japanese public in times of financial crisis (S2). Thus, commercial goals will most likely take precedence over development ones in the combined new institution.

The third important change is the increasing cooperation of OECF and JICA. Indirectly, this leads to a closer linkage between the commercial focus of JEXIM and the development focus of JICA. In addition, a proposed further change is the integration of the now separate categories of grants and technical assistance. The Ministry of Foreign Affairs has begun an effort to link the two more closely under one heading—the norm for most bilateral lending agencies in the world (S3). Given the difficulty in differentiating many of the activities conducted under each heading, this would seem an appropriate step.

Further trends in JEXIM operations in China, according to their own documents, include two primary areas. First, there will be an expansion of funding for China’s ninth five-year plan under JEXIM’s Fund for Development Initiatives, begun in 1993 by former Japanese prime minister Miazawa (S6). In China this fund has focused on coal-fired thermal power, industrial projects, infrastructure, oil and coal development, and export-oriented small-to-medium-size enterprise development. (12) Second, there will be an increase in co-financing of these projects in cooperation with multilateral development banks—the Asian Development Bank and the World Bank (JEXIM, 1997).

As Japan’s economic crisis has deepened over the past eight years (1991 to 1999), the state increasingly advertises the role of aid to its citizenry as a means not only of achieving humanitarian and security goals but also as a means of bolstering Japan’s economic health through expanded exports. As such, Japan’s increasing share of ODA is partially an attempt to expand market opportunities for its own industrial products—a key determinant of the composition and quality of its aid programs (MOFA, 1996). This commercial focus of Japan’s ODA has been a consistent critique of outside observers for decades (Rix, 1989).

The impact of the Asian economic crisis on Japan’s worsening recession is an influential component of both the changing nature and the quantity of Japanese ODA to the region (also, see Asian Power 1998). Even before the onset of the Asian

(12) This might facilitate what Terry (1997) calls ‘flying geese’—referring to the new regional industrial division of labor. Japan sheds its industries with lower-level technology; for example, Japan sheds electronics to Thailand; and Thailand transfers textiles to Indonesia, and so on down.
economic crisis, Japan's recession led to a planned three-year cutback in ODA of 10% per year to begin in 1998 (MOFA, 1997b). The crisis solidified this decline in ODA, as well as precipitating a simultaneous shift to projects directly associated with economic stimulation packages, both in the region and in Japan (for a discussion of the change in focus of aid and cutbacks in Japanese ODA as a result of the Asian economic crisis, see MOFA, 1997b). By Japan's Economic Planning Agency's own estimates, the crisis cut real GDP growth in Japan by half a percentage point in 1998 (EPA, 1998). Japanese banks' financial exposure in the region is very high, exceeding $144 billion in December 1997, six months into the Asian economic crisis. Japanese foreign direct investment in the region is also very high, leaving Japanese companies and their local Asian subsidiaries exposed to ongoing economic difficulties in the aftermath of regional currency devaluations and the overall economic downturn (MOFA, 1998b).

This downturn also corresponds to a 26% overall decline in total financial flows reported (ODA, foreign direct investment, export credits, and other financing all combined) from the First World and multilateral development banks to the Third World, from $368 billion in 1996, to $272 billion in 1997. This was primarily a result of the Asian economic crisis that began in mid-1997 (EPA, 1998). The result of the crisis was a severe contraction in bank lending to Asia. Private-sector funds declined 28% to $206 billion in 1997, from $286 billion in 1996 (MOFA, 1998b; 1999). Segal (1999) in his article on Guandong International Trust and Investment Corporation's failure and China's reluctance to repay debts to foreign creditors, states that this has resulted in a significant decline in China's ability to obtain ongoing financing for its various parasatal and state corporations. Many of them have been relying on refinancing of their debts through ongoing borrowing through international credit lines. As a result, China's ability to hold off the Asian economic crisis is now being severely tested (Segal, 1999).

According to a recent report, the Japanese state will protect investor's interests in this period of economic instability, and ODA plays an important role in that protection. Despite declines in its lending portfolio, OECF characterizes this change as a shift to 'quality funding' (Asian Power 1998). Through more careful lending practices, OECF hopes its projects will help guide investors to the best regional possibilities for foreign direct investment.

4 Preliminary analysis and questions for future research
Development aid less geared to Japan's own economic needs and more clearly focused upon the needs of the most vulnerable in China would be difficult to legitimate in Japan's current domestic political-economic context of lingering recession, rising unemployment, and potentially declining standards of living. But I would argue that it is precisely this kind of aid that is most important for Japan's long-term security, for it has the best chance to transform China's political economy into a more democratic and participatory form of development.

It is possible that developmental projects promoted by international donors help reduce the Chinese state's burden to deliver capital and resources to particular sectors and regions, freeing capital for other kinds of investment and use, for example, military modernization. Japan's commercial and domestic-interest-centered aid therefore may unwittingly promote greater militarization of the Chinese state, should China seek to distract attention from internal unrest by becoming more aggressive in the East Asian region. Additionally, Japan's ODA fails to bring benefits to the majority of people in China's hinterlands-areas where it can best counter social stratification and regional disparity. Instead, Japan's present ODA—by concentrating the benefits in the eastern coastal region—may actually exacerbate such sources of social tension in China's near future. Thus, Japan's role as the largest donor and lender to China may be assisting
China in shifting capital investment in ways unforeseen by Japan itself. This would result in negative consequences for the entire East Asia region, let alone the bilateral relationship between Japan and China. [I discuss this further in detail elsewhere (Muldavin, 2000a).]

The development path now followed by Japan and China through Japanese ODA and OOF primarily serves corporate interests in Japan and short-term state interests in China. China, being one of the largest recipients of development aid in the world, is in a unique position to influence the international perception of aid as a success or failure. This feeds into the hunger of donors for successful ODA projects and the positive international public relations that accompany them. China's importance to donors also has immense impact on the evolving character of development aid projects, their focus, and perceived benefits—for example, the length of time each project is scheduled to last, the quantity and conditionality of capital invested, the sectoral foci, and the primary recipients of the project benefits.

China seems to be finding a way to make aid fit its own development models. Simultaneously, China's integration into the global economy is resulting in its own radical transformation in ways the state failed to predict. This transformation sometimes appears to be happening in a piecemeal, chaotic, and fragmented way via the market (Muldavin, 1997). There are many conflicting interpretations one might draw of the impact of aid in this highly contested vision of transformation. One could argue, for example, that the Chinese state has found a brilliant means of state planning via development aid. That is, China's participation in development aid could be coincident with a strengthening of central planning and the role of the state. Thus, in an age of neoliberalism, Japan's aid program to China provides some interesting counterpoints to the rhetoric of market-driven decisionmaking. But one could also argue that, on the contrary, aid facilitates the implementation of neoliberalism in China, through market reforms and the evolution of a progressively weaker state. This would be consistent with the earlier point that there are unexpected consequences of foreign aid for the state. As mentioned earlier in this paper, although the goals of the Japanese and Chinese states in cooperating on development aid projects may be quite different, it is nonetheless important to see the convergence of each state's interests in continuing these programs. As such, and contradictory interpretations and variation in discourse notwithstanding, the disparate goals of each nation-state still lead to joint promotion of large-scale projects for China's development.

One could make the argument for international aid agencies to concentrate aid on areas where market forces are less relevant. Thus agencies would deliver aid to communities, households, and individuals to support and sustain livelihoods outside of formal market activities (Muldavin, 2000b). The strategic advantage of such an approach would be the relief of tension for the state in areas of ongoing structural problems. The geographic pattern of Japanese ODA, however, is quite the opposite.

Although the eastern region of the country received the smallest number of OECF projects (26), these projects have on average been much larger (¥39.5 billion) than the 57 projects in the western region which on average are much smaller (¥7.16 billion) and make up just 21.8% of OECF's loans to China. On a national per capita basis, the distribution of OECF's loans is biased towards the eastern developed region as well. An analysis of per capita distribution reveals that the western region receives ¥1380 per person, the central region ¥1006 per person, and the east ¥2266 per person. But given the much higher incomes of the east over the hinterlands, this simple statistic does not address the immense regional disparities in income that already exist. The poorest areas of the country are principally in the central and western regions, thus aid aimed at the humanitarian goal of poverty alleviation would logically be focused on these areas.
Additionally, Japan's classification of China as a newly industrialized country (NIC), according to Pharr (1994), makes it ineligible for 'African-type' humanitarian aid. The fact that geographic inequalities are still not taken into account when classifying China as an NIC limits appropriate distribution of aid to the hinterlands of China. The NIC classification is purely a result of the rapid economic growth in the eastern region and has little to do with China's hinterlands. This classification prevents the distribution of more appropriate socially-orientated aid to address regional disparities. Thus, there is little Japanese ODA reaching the poorest and most vulnerable in China, a significant issue given the potential impacts on Japan of social unrest in rural hinterlands of China.

Furthermore, the location of aid projects may have little to do with regional development, as most projects are not locally articulated. For example, energy development in the far west of China primarily serves the interests of China's industrialized east coast, export agencies, state budget coffers, and potentially secures Japan's energy-reliant development. Thus, the location of these projects in one region should not be equated with improvements in that region's development. In fact, somewhat counter-intuitively, such locally disarticulated projects can have many unexpected negative consequences. The first, and most obvious, consequence is the drain of industrial resources from an undeveloped region—resources then unavailable for local industrial development. Second, such projects, though job producing, may require primarily immigrant technical labor, thus doing little to expand employment options for the local population. The focus on capital expenditure also limits local job creation. Third, by transferring resources to other regions of China and Asia these projects may contribute to the widening gap in development, income, and livelihood opportunities between this area and those regions receiving the resources—commonly referred to as underdevelopment. Fourth, environmental pollution and degradation, transformation of local ecosystems, and disruption of agriculture and animal husbandry may result in the local area. Last, the local state diverts resources to pay for necessary 'supportive infrastructure' (roads, buildings, electricity) for the ODA and OOF projects—referred to by ODA officials as local participation and shared financial responsibility. Although the idea of local investment sounds good in rhetoric, bringing a greater sense of commitment to proper implementation of the project, the less-publicized result is often a decline in capital available for investment in local productive infrastructure and social welfare services.

In sum, I argue that the primary beneficiaries of Japanese ODA are the Japanese state and its transnational corporations, as well as the Chinese state and its subsidiary organizations. Japanese ODA to China is not a simple commercial relationship but rather a complex blend of perceived bilateral historical responsibilities, strategic commercial planning, and contemporary geopolitical concerns. Multiple and fragmented domestic and international audiences require varied representation of these programs in public discourse both by the Chinese state and by the Japanese state. In addition, within China's and Japan's state bureaucracies the oft-competing factions of their respective state structures lead to a discourse on aid which is as fragmented as that for domestic and international audiences. Subsequent contradictions in stated goals might potentially be highlighted during implementation of projects and subsequent assessment in official and public discussion. But lack of access by independent analysts to project sites limits the impact of such contradictions in bringing change to Japanese ODA.

Aid in the rapidly changing macroeconomic context of China's reform era represents a particular kind of investment. For Japan, this aid helps to maintain its complex political ties to the Chinese state and to subsidize its quasi-governmental corporate sector. For China, aid not only helps legitimate its development policies but also allows the reallocation of large sums of capital to other sectors less attractive to foreign aid
organizations, such as the military, or controversial projects such as the Three Gorges Dam (JEXIM, 1996; Muldavin, 1999). The economic differentiation of the period 1978–98 in China, amplified socially and spatially, furthers the already extant divide between those who receive the benefits of such aid and those who pay the costs. Thus a sociospatial analysis of aid to China, and in this case of Japanese aid to China, helps us unravel a particular reality of who benefits and who suffers the costs of this important bilateral relationship as China's global articulation proceeds.

Hence, for geographers, there are significant questions concerning the spatially uneven impact of ODA and OOF in regional development that can help complete the complex puzzles of regionally specific development mosaics. (13) In this paper I have attempted to provide the basis to explore such questions in future research.

Acknowledgements. This paper is the first product of a long-term research project evaluating the patterns of international development aid in China. I began the initial research in China for this project in 1992, and it has continued since that time with eight trips to the field. I have since conducted interviews with nearly every major aid organization in China, Japan, and Europe. In China I interviewed officials at the World Bank (the largest multilateral aid organization in China), United Nations Development Program (UNDP), UNICEF, the ten largest bilateral aid organizations in China, and project officers at the most active nongovernmental organizations (such as The Ford Foundation). In addition to interviewing representatives in Beijing of Japan's major organizations in China (Overseas Economic Cooperation Fund and The Japan International Cooperation Association), I gathered extensive materials (unavailable in China) and conducted interviews at the organizations' headquarters in Tokyo in February of 1996 and July of 1997. I also conducted interviews in Tokyo with JEXIM, the Asian Development Bank, and all of the ministries involved in Japanese official development assistance (ODA) and other official financing (OOF).

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Sources
S1 T Cannon, 14 August 1998, Interview with author, University of Greenwich, London SE9 2PQ
S2 Akira Chiba, 14 August 1997, Interview with author, Ministry of Foreign Affairs, Economic Policy Division, Tokyo
S3 Suguru Miyazaki, 14 August 1997, Interview with author, Second Regional Division, Planning Department, Japan International Cooperation Association, Tokyo, Japan
S4 Tomanari Sudo, 11 August 1997, Interview with author, Overseas Economic Cooperation Fund, Tokyo

(13) Holdar (1993) provides a useful review of philosophies held by donors, and suggests how geographers might fruitfully engage in research on development aid. Holdar provides a literature review of the approach of political geography to these issues but overlooks the potential contributions of radical geography.
References

Asian Power 1998, “Quality funding”; www.icompub.co.uk/ap/Feb98/oecf.htm


Foerster A, 1995 Institutional Analysis of Development Administration: The Case of Japan’s Bilateral Grant Aid and Technical Assistance (Physica, Heidelberg)


Grant R, 1999, “Japan: a foreign aid superpower”, in Global Crisis in Foreign Aid Eds R Grant, J Nijman (Syracuse University Press, Syracuse, NY) pp 44–60


JBIC, 1996, “The results of research on the Three Gorges Dam Project”, The Export – Import Bank of Japan; now Japan Bank for International Cooperation, 4-1 Ohtmachi, 1-Chome Chiyoda-ku, Tokyo 100-8144


JICA, Japan International Cooperation Agency, Shinjuku Mines Tower, 2-1-1 Yoyogi, Shibuya-ku, Tokyo

1991, “Annual report”


MOFA, Ministry of Foreign Affairs, Tokyo
1996, “Japan’s ODA annual report 1995”
1997a, “Japan’s ODA annual report 1996”
1997b, “On the promotion of structural reform”, cabinet decision
1998a, “Japan’s ODA annual report 1997”
1998b, “Japan’s ODA summary 1998”

MRI, 1997, “The survey for the decision making of economic cooperation”, Mitsubishi Research Institute, Tokyo
Japanese development aid to China


Muldavin J, 2000a, "Japanese development aid to China and regional security", under final review at Geopolitics; copy available from author

Muldavin J, 2000b, "The paradoxes of environmental policy in reform era China", forthcoming in Economic Geography; copy available from author

NFJ, 1997, "Local areas of Japan globalize: JETRO program helps areas cope with competition" New Focus Japan 24 1 – 2


OECD, 1999 Development Co-operation Reviews: Japan 1999 number 34 (OECD, Paris)

OECF, Overseas Economic Cooperation Fund, 1-4-1 Otemachi, Chiyoda-ku, Tokyo 100-0004; http://www.oecf.go.jp/cgi-bin/search.cgi


Okawa M, 1996, "An inquiry into the philosophy of international development assistance and Japan's official development assistant charter: the case of Japan's (ODA) to China" Fuji Daigaku Kyou 28(2) 1 – 26 (in Japanese)


Rimmer P J, 1986, "'Look East!': The relevance of Japanese urban planning and technology to southeast Asian cities" Transportation Planning and Technology 11 47 – 67


Scheyvens H, 1996, "The external politics of ODA: a case study of Japan", DP-96/2, Institute of Development Studies, Massey University, Palmerston North


Segal P, 1999, "Bankruptcy of another firm deepens China fears" International Herald Tribune 4 January, page 7

Soderberg M, 1996 The Business of Japanese Foreign Aid (Routledge, New York)


Wade R, 1996, "Japan, the World Bank and the art of paradigm maintenance" New Left Review number 217, 3 – 37


APPENDIX

Table A1. A comparison of Japan's Official Development Assistance (ODA) with that of other Development Assistance Committee (DAC) countries (source: OECD, 1998)

<table>
<thead>
<tr>
<th>ODA Share in total OECD ODA 1995/96 (%)</th>
<th>ODA $million</th>
<th>Annual average % change in volume 1990/91-1995/96</th>
<th>Grant element % of ODA commitments</th>
<th>Multilateral Grants (% of ODA)</th>
<th>Grants by NGOs$% of GNP</th>
<th>Total resource flows (% of GNP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>0.28</td>
<td>2.0</td>
<td>1.3</td>
<td>100.0</td>
<td>20.7</td>
<td>0.02</td>
</tr>
<tr>
<td>Austria</td>
<td>0.24</td>
<td>1.2</td>
<td>1.5</td>
<td>97.5</td>
<td>26.0</td>
<td>0.02</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.34</td>
<td>1.7</td>
<td>-2.6</td>
<td>99.1</td>
<td>42.0</td>
<td>0.05</td>
</tr>
<tr>
<td>Canada</td>
<td>0.32</td>
<td>3.4</td>
<td>-3.3</td>
<td>100.0</td>
<td>24.5</td>
<td>0.02</td>
</tr>
<tr>
<td>Denmark</td>
<td>1.04</td>
<td>3.0</td>
<td>3.5</td>
<td>94.1</td>
<td>40.3</td>
<td>0.05</td>
</tr>
<tr>
<td>Finland</td>
<td>0.34</td>
<td>0.7</td>
<td>-14.2</td>
<td>97.3</td>
<td>47.4</td>
<td>0.01</td>
</tr>
<tr>
<td>France</td>
<td>0.48</td>
<td>13.9</td>
<td>-2.2</td>
<td>92.3</td>
<td>22.8</td>
<td>0.02</td>
</tr>
<tr>
<td>Germany</td>
<td>0.33</td>
<td>13.2</td>
<td>-2.2</td>
<td>91.7</td>
<td>40.3</td>
<td>0.05</td>
</tr>
<tr>
<td>Ireland</td>
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<td>0.3</td>
<td>18.8</td>
<td>100.0</td>
<td>36.3</td>
<td>0.09</td>
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<tr>
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<td>3.5</td>
<td>-9.4</td>
<td>99.5</td>
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<td>0.00</td>
</tr>
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<td>-3.6</td>
<td>78.2</td>
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<td>31.2</td>
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<td>99.3</td>
<td>28.0</td>
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</tr>
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<td>-0.2</td>
<td>100.0</td>
<td>27.9</td>
<td>na</td>
</tr>
<tr>
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<td>2.3</td>
<td>88.6</td>
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<td>100.0</td>
<td>30.2</td>
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<tr>
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<td>1.8</td>
<td>0.3</td>
<td>100.0</td>
<td>29.6</td>
<td>0.06</td>
</tr>
<tr>
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<td>0.27</td>
<td>5.6</td>
<td>1.1</td>
<td>96.4</td>
<td>44.0</td>
<td>0.04</td>
</tr>
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<td>-8.0</td>
<td>99.6</td>
<td>26.2</td>
<td>0.03</td>
</tr>
<tr>
<td>Total DAC</td>
<td>0.25</td>
<td>100.0</td>
<td>-3.2</td>
<td>91.8</td>
<td>29.6</td>
<td>0.03</td>
</tr>
</tbody>
</table>

* NGO, nongovernmental organization

na, not available