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Support for Capacity Development in Developing Countries

Dissecting Technical Cooperation in Solid Waste Management from a Capacity Development Perspective

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Introduction

Waste generation is an inevitable consequence of human existence as long as humans engage in economic activities centering on production and consumption. The release of generated waste into the environment is material transfer from human society to the natural world, which can cause environmental pollution, while material transfer in the opposite direction is the exploitation of natural resources, which can lead to the degradation of nature. The material transfers in both directions can be collectively recognized as metabolism of human society with surrounding environment (Yoshida 1998). For this reason, waste management for protection of the environment is an issue that no society can avoid.

Developing countries, which currently account for more than 70% of the world's population, face a dire waste management situation, particularly in large cities. The challenge is two-fold. First, these countries are going through rapid urbanization and population concentration — phenomena inextricably linked to waste management issues, which are occurring at an even greater pace than what industrialized countries have experienced — and this has resulted in an acute waste problem characterized by a rapid increase in the amount of waste generated and its diversity. Second, these countries are deficient in an adequate infrastructure and resources to independently deal with the waste problem, encompassing a regulatory system, implementation bodies, human resources, etc. at both national and local government levels, leading to an inability to effectively respond to new waste-related challenges.

Developing countries are not unaware of environmental pollution and waste problems that industrialized countries have experienced. As with industrialized countries, therefore, public interest in the quality of the environment is increasing in developing countries, along with the recognition of the importance of solid waste management (SWM). In response to the heightened awareness of waste management in developing countries, many multilateral and bilateral assistance projects relating to SWM have been undertaken since the 1970s. However, the issue of waste management varies from country to country, as it is closely linked to the overall state and character of the society, which reflects the country's economy, institutions, history, culture and natural conditions. For this reason, any attempt to transplant another (industrialized) country's waste management technology or waste management system is almost meaningless (Sakurai 2000 and Flintoff 1984). This is where the difficulties and challenges of technical cooperation in the waste management sector lie.

This paper analyzes the lessons learned from the successes and failures of solid waste-related projects in developing countries implemented by various international donors including JICA over the past three decades and recent trends in international cooperation in the SWM sector that have emerged from those lessons from the viewpoint of Capacity Development (CD).

I. Progress of Assistance Approach in Solid Waste Management Sector

Developing countries' requests for assistance and cooperation in the SWM sector mostly focused on waste collection, transportation and treatment services in national capitals and other metropolitan areas, which are experiencing rapid population concentration and urbanization, and many projects have been undertaken by various donors on both grant-aid and loan bases. In terms of the approach used, such projects can roughly be classified into three types: (a) hardware-input type, (b) software-input type and (c)

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CD-support type. These approaches have by and large emerged successively in an evolutionary fashion.

1. Hardware-input approach (1970s-)

The first approach is the hardware-input approach, which centers on the provision of machinery and equipment, including waste collection vehicles, collection equipment and treatment facilities, aimed at bolstering the existing waste management infrastructure as part of urban environmental improvement. This approach has been frequently used over the years dating back to the 1970s, the earliest period of international assistance and cooperation in the SWM sector. A typical example is the Urban Development Program implemented by the World Bank in Cairo, Alexandria, Manila, Jakarta, Singapore and other large cities from 40 countries across the world starting in 1976 (Cointreau 1982). The program envisaged SWM as a mere element of overall urban management involving municipal water supply, sewerage, road transportation and other urban infrastructure. Despite the injection of more than $500 million of funds in the waste management sector alone, waste management itself was often incorporated into an urban infrastructure development project through the supply of waste collection machinery and waste disposal facilities, rather than being tackled under an independent project (Bartone 1990).

In some cases, such hardware-based projects did contribute to ongoing improvement of urban SWM services by raising urban waste collection rates and advancing final disposal. A well-known good practice model is a World Bank project implemented in Singapore (Leitmann 1999). In Singapore, the waste situation had already reached a critical stage as a result of the concentration of population within a small territory. As a result, the Singaporean Government selectively injected World Bank funds into waste management improvement projects in an effort to overhaul the country's waste management system through the construction of new incineration plants, and the like. The project proved to be a resounding success as it was able to lay a foundation for the future establishment of a modern SWM system in the country.

However, in cases where the recipient country lacks a master plan (M/P) or medium to long-term plan for SWM, lacks adequate expertise in utilizing and maintaining equipment and facilities, is stuck with an outdated management system, or lacks a financial management system, the supply of hardware, no matter how extensive, will only provide a band-aid solution, failing to achieve sustainability. An assessment of project outcomes has revealed that the hardware-input approach has not produced a significant effect in most developing countries, and even presents a problem in terms of sustainability (Bartone 1990). The Bantar Gebang landfill site in Jakarta mentioned in a World Bank report (Johannessen 1999) may be considered as an example. Although the facility was a modern sanitary landfill site with a proper lining and leachate treatment facility designed and constructed with Japanese assistance, much of the landfill machinery and equipment such as bulldozers and compactors have since become inoperable due to deterioration in the fiscal position and an inadequate operation and management structure. The site is said to have turned into something akin to an open dump by the time of the survey (1999).[1] The route cause can be traced to an inadequate assessment of the recipient's 'software'-side capacity in relation to financial planning and the operation and management structure and resulting failure to take adequate precautionary measures.

Incidentally, the time around which an attempt to compile manuals on techniques of technical cooperation and assistance, including equipment supply, and appropriate technologies by drawing on an extensive experience gained through the implementation of assistance and cooperation projects in the waste management sector since the early 1970s coincided with the beginning of a critical reassessment of the hardware-input approach (Cointreau 1982; Flintoff 1984).

2. Software-input approach (1980s-)

From a critical reassessment of the first approach described above emerged a new approach that focused on software-input encompassing planning, operation, maintenance, management and finance. Although the term 'software' can mean many things, this paper uses the term to denote planning for rational hardware input and system development, the development of organizations and systems in the narrow sense and strengthening of technical capacity through technology transfer, etc. This second approach attaches enormous importance to the proper implementation of preliminary studies and preparation of an integrated SWM plan prior to the input of hardware as occurs with the first approach, leading to the introduction of surveys, M/P formulation, management & financial analysis, implementation of a feasibility study (F/S), design and other activities as essential components of assistance and cooperation (Bartone 1990). Many development studies and

grant aid projects undertaken by JICA in the waste management sector from the late 1980s to the early 1990s (JICA 1993) are essentially based on this approach.

The main focus of this approach is overall system planning and the preparation of an M/P, encompassing all SWM components, rather than the simple input of hardware. The provision of vehicles, equipment and other hardware only occurs under a SWM system based on an M/P planned by a development study, with necessary technology transfer. Whether the formulation of an M/P based on the results of preparatory studies leads to the successful development of a sustainable SWM system — that is to say, whether software-oriented assistance and cooperation can be made effective use of — largely depends on whether a receptive environment for SWM has been established in the recipient country in terms of human resources, organizations, systems and institutions - in other words, whether there is both the ability to implement (capacity) and independent initiative (ownership). For this reason, some recipients are able to successfully establish a SWM system with this type of assistance and become self-reliant despite facing problems. Examples include Thailand, Brazil and Mexico, countries which all already had relatively high-quality human resources and a relatively well-developed organizational structure from the start and shared a sense of urgency regarding waste problems against a background of rapid economic growth.

However, where capacity or ownership is insufficient, an M/P is bound to end up being a mere plan, and the newly-constructed SWM system cannot be operated on a sustainable basis.

Among critical analyses of the software-input approach written from the standpoint of developing countries is one on unsuccessful project implemented in Katmandu, Nepal (Thapa 1998). For more than 12 years from the early 1980s, the city received ongoing development assistance from a certain bilateral donor through a technical cooperation scheme. Under the project, all forms of assistance that were conceivable at the time, ranging from plan formulation, organizational development and machinery and equipment supply to technology transfer, personnel training and pilot project implementation, were systematically provided. Nevertheless, almost as soon as the project was concluded in 1993, the city's waste management system become dysfunctional, and the waste situation deteriorated rapidly, to a level worse than it was before the implementation of the project due to continued progress in urbanization over the intervening period. Identified contributing factors include the organizational shortcomings of the administrative system and implementing organization, underdeveloped managerial capacity for operation and finance, and weak community participation (Thapa 1998). The underlying cause of the project's failure despite generous software as well as hardware input was an inadequacy of the organizational, institutional and structural capacity, which stemmed from a weak sense of ownership.

Namely, even if a donor, who is after all an outsider, carries out software input in combination with hardware input, it will not automatically lead to sustainable local efforts unless the recipient has the ability to implement (capacity) and independent initiative (ownership). This is vividly illustrated by the Katmandu example, in which the system became dysfunctional immediately after the conclusion of the project.

3. CD-support approach (1990s-)

The third approach represents a new direction in development assistance which puts capacity development (CD)[2] for SWM in developing countries at the forefront based on a critical reassessment of the second approach. With its emphasis on independent initiative, this approach aims to help improve the SWM by providing support for indigenous capacity improvement efforts (capacity development), instead of simple external hardware or software input. 'Capacity for Solid Waste Management' here ranges from individual skills to organizational and institutional/societal capacities (Fukuda-Parr et al. 2002), and encompasses software and hardware assets and capabilities.

Capacity can be broken down into three levels: individual, organizational, and institutional/societal (see Table1). However, for individuals to make the best use of their knowledge and skills, their relationships with their organizations, waste regulations and social customs cannot be ignored, while for a specific SWM system to function properly, the ability of individuals and organizations to fully understand it and operate it is essential. In this sense, the capacities at the three levels are interrelated.

1) Narrowly-defined 'institution building'

In the early days, the 'actors' who play the main role in capacity development were thought to be local governments as implementing organizations of waste management, and emphasis was placed on the development and improvement of the human resources, organization and management of administrative bodies responsible for SWM services (conventional

Table 1 Overview of capacity for solid waste management

Level	Definition of capacity	Capacity for solid waste management
Individual	Individual knowledge and skills. The will and ability to set activity goals and achieve them using one's own knowledge and skills.	・Knowledge, linguistic competence, skills, expertise, wisdom, will and a sense of responsibility on the part of the individuals involved in SWM
Organizational	Physical, human and intellectual assets, leadership, organizational management systems and organizational culture required to achieve objectives given to (or set by) the organization.	・Human assets (human resources in the engineering, management, and planning sections of SWM and human resource development) ・Physical assets (facilities, equipment, land, funds and capital needed to implement SWM) ・Intellectual assets (expertise in waste management systems, statistical information on waste flows, etc., literature, manuals, and research data) ・An organizational form, management, leadership, decision-making system and ownership that can put these assets to good use ・A shared awareness of issues throughout the organization
Institutional/societal	The environment and conditions necessary for the realization of capabilities at individual and organizational levels, and policies, frameworks, systems, economic structure and social norms that apply beyond the organizational level.	・A formal legal framework (laws, government decrees, bylaws, and local ordinances that define solid wastes and specify where the responsibility for SWM lies) ・Formal regulations and standards (standards for the management, processing and disposal of solid wastes, pollutant discharge standards, guidelines for solid waste treatment methods, environmental quality standards, and binding power) ・Policies and politics (clear SWM policies, policy objectives and political considerations at national and local government levels) ・Social infrastructure for SWM services such as roads, telecommunication, electricity, etc. ・Informal institutions (customs, historical institutions, taboos, norms concerning solid waste and other social capitals) ・Specific social class involved in SWM (waste pickers, a caste system, etc.) ・Social organizations involved in waste management [community-based organizations (CBOs), NGOs and other citizen groups] ・Formal and informal recycling markets and industries ・Environmental/waste education ・Systems and partnerships designed to ensure the incorporation of the opinions of local residents and communities in the decision making process (good governance) ・Social ownership for the implementation of solid waste management (public opinion, consensus and willingness to work together)

Note:
The definition of capacity for each level is based on JICA (2004a).
Source:
JICA (2004b, 2005), Chapter 4.

'institution building'[3], i.e. in the narrow sense of the term) (Browne 2002). In terms of the strengthening of the implementing organizations, for example, the assistance technique incorporating SWM into comprehensive urban improvement projects that were typical of World Bank projects implemented in the 1970s and 1980s was passed on to Healthy City Projects (HCPs) implemented by WHO/UNDP in cities in Asia, Africa and Latin America during the 1990s (Harpham et al. 2001). Those projects were intended to reorganize and revitalize SWM and other urban environmental management services through a cross-sectoral approach centering on public hygiene and public health sectors and improve the institution, organization and management of local administrative bodies in that process. In this sense, they can be regarded as narrowly-defined 'institution building' support projects.

2) Issues relating to solid waste management actors and responsibility

The capacity development (narrowly defined 'institutional building') of waste management agencies, which are generally local governments, is in itself an important issue. However, waste problems cannot, in reality, be solved by just improving the capacity of administrative bodies, for they are closely linked to the state and character of the society in which they arise. For this reason, studies pointing to the need for a new approach that emphasizes the social perspective and attaches greater importance to community participation, consensus building and partnerships between stakeholders have begun to emerge (Van de Klundert and Lardinois 1995; Van de Klundert and Anshutz 2000; and Moningka 2000). These references to social partnerships have stemmed from the following circumstances in 1990s: First, local governments are unable to adequately deal with environmental deterioration resulting from rapid population growth, urbanization and development. Second, this has forced communities to involve community-based organizations (CBOs) and NGOs in their efforts to solve the waste problems. Thirdly, as a result, the relationship between the administrative authorities and local communities has changed, so that there is now widespread recognition of the essential role that communities play in urban environmental management, leading to the proposal of the concepts of community participation in solid waste management and community-based solid waste management (CBSWM) (Moningka 2000). This marks an increase in the breadth and depth of urban solid waste management actors (Jutting 2003).

As a result, the targets for capacity development (CD) have expanded to all stakeholders (local government organization, residents, communities, NGOs, CBOs and private enterprises).[4] In addition, the recognition of the need to strengthen the partnerships between stakeholders and comprehensive capacity development that encompasses all sectors of the society has become widespread (Schubeler et al. 1996; Campbell 1999; and Van de Klundert and Anshutz 2000).

Since the CD-support approach seeks to provide indirect support as an outsider while relying on indigenous processes, the levels of initiative, commitment, determination and willingness to cooperate on the part of the recipient are always at issue. From the standpoint of the donor as an outsider, therefore, key questions regarding the practical implementation of technical cooperation relate to how to assess the recipient's commitment and willingness at individual, organizational and institutional/societal levels, and how to bring them out as a motivating force for action or help the recipients bring them out themselves. Regarding techniques to address these so called educational tasks, however, there has been little accumulation of good practices in the form of empirical cases in SWM sector.

3) Partnership

In the CD-support approach, 'partnership' is a keyword. This is because partnerships between different stakeholders (e.g. the community and private sector, the administrative sector and private sector, and the political sector and administrative sector) act as a real driving force behind capacity development, rather than remaining cooperative arrangements that only affect the partners (Browne 2002: p.6). In SWM, a partnership between the community and local government as described in the previous section is an essential element for the primary collection of waste, while that between the local government and private sector have been actively pursued through the contracting out of services and privatization under public-private partnerships (PPPs). PPPs have been embraced by developing countries, and are rapidly spreading through their cities (Cointreau-Levine 1994 and Cointreau-Levine and Coad 2000). This is because they promise to bring a range of benefits, including improvements in SWM services via an improved quality of operation and maintenance (O/M), cost reductions, better environmental protection via improved technology, and infrastructure investment via private-sector funding. PPPs take various forms, ranging from partial contracting to total

privatization, and like industrialized countries, waste industries are emerging in developing countries, in addition to traditional NGOs and CBOs. Under PPPs, free waste collection and disposal services have more or less been replaced with paid services, and such services have become quite common in many developing countries today. However, private-sector participation can give rise to corruption and social problems over vested interests or even penetration by the 'waste mafia', which routinely commits illegal dumping to dodge landfill fees, unless sufficient transparency is ensured. Indeed, the maturity of private enterprises (free competition), proper planning, and work environments, and monitoring and control of services are the keys to successful PPPs (Massoud and El-Fadel 2002 and Massoud et al. 2003). In this sense, private-sector contracting in solid waste management, no matter how it may be pursued, will always require the improvement of the administrative authorities' guidance and control capabilities. In the case of private-sector participation in Accra, Ghana, and Hyderabad, India, full privatization was introduced at the insistence of the donor despite the inadequacy of the capacity of the administrative authorities. As a result, although solid waste collection was by and large improved, negative impacts such as regional disparity within one city, deteriorated work environments and increased environmental pollution were also reported (Post et al. 2003).

When looking at the social aspects of SWM in developing countries, the issue of people at the bottom of the social hierarchy, such as slum dwellers, waste pickers (used to be called 'scavengers') and the sweeper caste, cannot be avoided. From the viewpoint of CD, efforts are being made to define the role of the lowest social class in waste management by viewing its existence in the context of the capacity of the society as a whole (Medina 1997 and Wegelin and Borgman 1995). For example, in Manila, the Philippines, a missionary NGO has helped waste pickers who lived in and around a waste dump set up micro enterprises, thus contributing to the development of a waste management system in Manila by strengthening the existing waste recycling system (Vincentian Missionaries 1998).

Another recent trend is the introduction of the gender perspective. A study has found that women play a crucial role in solid waste management, especially in developing countries, and that household waste management in these countries is basically women's responsibility (Scheinberg et al. 1999). Another study points out that many solid waste management CBOs have been organized by women (e.g. Karachi, Chennai, Dhaka and Hanoi) and that the majority of waste pickers are women and children with serious risk to their health (e.g. India)(Hunt 1996). Besides, most of the detailed sorting work is said to be done by low-wage female workers (Bangladesh). For these reasons, the gender aspect needs to be recognized as an essential element of the social approach in the future.

II. Spread of 'Capacity Development' Concept and its Incorporation into Development Assistance in Solid Waste Management

The CD support approach in the SWM sector described above echoes the 'capacity development' concept that has been widely advocated as the basic direction of assistance and cooperation for developing countries since the mid-1990s (UNDP 1997).

The idea of capacity development emerged from a critical evaluation process undertaken by the UNDP and other international aid organizations with respect to the preceding four decades of technical cooperation and development assistance for developing countries. They concluded that technical cooperation projects implemented up to that point were not always successful in light of sustainability, national ownership, appropriateness of the technology and other criteria. Namely, those projects, though designed to assist developing countries, were donor-driven, input-oriented, cost-benefit-focused and expert-led practices, with priority rarely given to the initiative of the recipient country. The hardware-input and software-input approaches in the waste management sector more or less had this intrinsically donor-centered structure. Although project objectives relating to narrowly-defined 'institution building' were sometimes set, they were narrowly targeted at implementing organizations (administrative bodies in charge of SWM such as local government) only. In this regard, it should be noted that although the strengthening of administrative bodies is a component of CD, CD in SWM as a whole must also encompass a diverse array of other actors, including individuals, groups and communities.

In the CD-support approach, it is necessary to comprehensively assess the recipient's capacity for solid waste management, including the social side, and then identify a target area for assistance from the viewpoint of maximizing the overall SWM capacity by taking into consideration the capacity observed at each level, while giving due regard to the recipient's initiative.

III. Budding CD-Support Approach in JICA Technical Cooperation in Solid Waste Management Sector

The CD-support approach described above is in overall agreement with the direction that JICA has been pursuing in its practical implementation of technical cooperation in recent years. Namely, the CD-support approach's emphasis on indigenous initiative and indigenous capacity development based on it is in the same vein as the respect for ownership and support for self-help and self-reliance that are considered two of the characteristics of Japan's technical cooperation (JICA 2003).

In the last 10 years, JICA has undertaken the following technical cooperation projects in the SWM sector: 36 development studies, 29 grant aid projects, 75 expert dispatches (including 28 involving short-term assignments with specific objectives lasting up to 15 days) and 27 volunteer dispatches (including 15 JOCV dispatches). In addition, JICA hosted 13 in-country training courses (2002-03) and three third-country training courses. A notable recent trend in JICA's technical cooperation projects (including development studies) in the solid waste management sector is greater emphasis on collaboration with counterparts in study and planning processes, counterpart-led pilot projects and social aspects, and this represents an approach that has much in common with CD support. Also notable is a shift in the role assigned to pilot projects from a development tool, e.g. 'verification of the M/P' or 'data collection,' as observed in traditional development studies to a more or less CD support tool, e.g. 'fostering of counterpart initiative' or 'provision of motivation for sustainable efforts.' An approach similar to CD support can also be seen in grant aid projects. Examples include the introduction of a 'software' component at the beginning of the implementation stage and program-oriented incorporation of expert dispatch, volunteer dispatch, etc. designed to give greater consideration to self-sustainability on the part of the recipients (e.g. Vientiane, Laos) (JICA 2005b).

One aspect of technical cooperation in the SWM sector over the last 10 years that deserves special mention in relation to CD support is the evolution of the Fukuoka landfill method (Matsufuji 1997) as an appropriate technology. Launched in the 1970s, the Fukuoka landfill method was originally a semi-aerobic sanitary landfill structure jointly developed by the Faculty of Engineering, Fukuoka University, and the Fukuoka City. The structure is simple and can be built from a range of low-cost materials available in developing countries (e.g. bamboo, oil drums and coconut leaves), thus allowing an optimum choice to be explored according to given local conditions. For this reason, it has become a popular appropriate technology in solid waste final disposal, known as the 'Fukuoka Method.' The method was extensively used in a technical cooperation project aimed at improving a landfill site in Malaysia with considerable success. This was followed by reports of other successful applications in Iran, China, Mexico and the Asia-Pacific region. The concept behind the Fukuoka landfill method is very similar to CD support in that it gives due regard to local unique conditions and the initiative of the implementing actors in the designing of a solid waste landfill.

As can be seen from the above, JICA's technical cooperation in the SWM sector in recent years shows a similar direction to the CD-support approach. In that sense, it reflects the current dominant international trend in development assistance. Nevertheless, this new approach remains a product of trial and error experienced at individual sites and in individual projects at this stage and as such is yet to be generalized and standardized. For this reason, its effectiveness has so far been limited.

IV. Conclusions

Three general directions can be observed in international assistance and cooperation in solid waste management. These are: (a) ‘hardware’ input focusing on the supply of waste management equipment and other 'hardware' resources as a part of urban environmental improvement, (b) assistance in the planning of a solid waste management system and emphasis on 'software' input, and (c) fostering of actors of solid waste management through the provision of comprehensive support for human resources, organizations, systems and institutions from a CD perspective and emphasis on social aspects. These three directions have more or less successively emerged from trial and error. In the last 10 years, CD support and emphasis on social aspects in (c) have been the international trend. This third direction, however, allows a huge variety of approaches to be devised according to the target city, society and culture, so it may best be described as an ensemble of local efforts.

The sustainable operation of a solid waste management service requires the recipient country's own efforts in improving the system and implementing capacity development, and this is where the true

meaning of capacity development lies. In other words, 'support' or 'assistance' could turn out to be a double edged sword for the progress of CD. It must always be borne in mind that the donor is an outsider, who is no more than a facilitator in the CD process. Indeed, the donor is expected to play only a catalytic role whereby it provides the recipient with the opportunity, medium and tools and resources to kick-start CD.

Postscript

This paper has been prepared by editing and adding new materials to a report submitted at the 2nd meeting of the CD Study Task Force (May 31, 2004) of the JICA Institute for International Cooperation. The content of the report is based on the research conducted by the author as a member of the Study Group on the Directions of Assistance for Developing Countries in the Solid Waste Management Sector, which was put in place by the JICA Institute for International Cooperation for about a year starting in October 2003. Parties interested in this topic are advised to refer to the report of the study group titled 'Supporting Capacity Development in Solid Waste Management in Developing Countries — Towards Improving Solid Waste Management Capacity of Entire Society' (published by the JICA Institute for International Cooperation; JICA 2004b, 2005). Taking this opportunity, the author would like to thank Mr. Taisuke Watanabe, Mr. Sei Kondo and Ms. Noriko Otsuki, as well as the members of the CD Study Task Force, for making the time to discuss the topic of this paper whenever possible.

Notes

1. However, this project has the hallmark of the software-input type as well as the hardware-input type because of its incorporation of planning and designing.
2. The UNDP 1997 defines capacity in development as follows: 'the ability of individuals, organizations and societies to perform functions, solve problems, and set and achieve goals'.
3. Or 'Institution Development.'
4. While Eade 1997 of Oxfam called such a community-centered or people-centered approach "Capacity Building", the term is sometimes used with a connotation close to human resource development centering on training and technology transfer or software input as mentioned earlier. For this reason, it was not used in this paper.

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