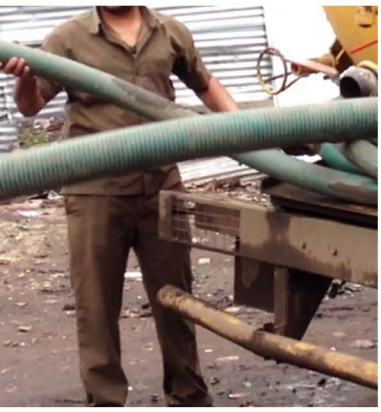

Faecal Sludge and Sullage Management in Urban Maharashtra

Policy brief

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Acknowledgments

This paper has been prepared as a part of the Performance Assessment System (PAS) Project, funded by the Bill and Melinda Gates Foundation, at the CEPT University in Ahmedabad. Performance Assessment System (PAS) Project has developed systems for measurement, monitoring and improvement of urban water supply and sanitation (UWSS) performance in Gujarat and Maharashtra. Since 2011, the PAS Project has focused on urban sanitation.

This paper is based on a major study titled, “Faecal Sludge and Sullage Management in Urban Maharashtra: Analysis of Institutional Arrangements and Regulations”. The study was conducted by J V R Murty for the PAS project of CEPT University.

This paper presents a review of existing policies and institutional framework for Faecal Sludge Management in urban Maharashtra. It also reviews the current regulatory framework of FSM in the cities in Maharashtra. Drawing on the Asian experience, it concludes with suggestions on ways to strengthen it.

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Overview

Sustainable Sanitation is not only about providing toilets. The full cycle of sanitation management consists of providing access to toilets, collection/ containment of black and grey water, conveyance and treatment of this waste and final disposal and reuse through appropriate means. "The judiciary has declared sanitation as a part of fundamental right to life under Article 21 of the Constitution of India. However, the legal framework governing sanitation remains underdeveloped in India; there is no specific law on sanitation. The regulatory framework relating to sanitation comprises laws, and different national and state-level policies and programmes, which are not legally binding and susceptible to modification/ withdrawal"

Current regulations for toilet construction are a part of building bye-laws. The specifications for toilet and septic tanks are well laid out in these building bye-laws.. However, they are not effectively implemented on the ground at the local level. This is due to multiple factors, such as weak institutional capacity to oversee designs and construction, weak public interest in following regulations and perverse government incentives in the form of regularising 'illegal buildings' through special ordinances at regular intervals. Norms for septic tanks specify technical aspects of construction, but do not provide for inspection during construction. Also there is no periodic monitoring of when the septic tanks are emptied.

The Maharashtra Municipal Councils, Nagar Panchayat and Industrial Townships Act, 1965 mentions municipal role in providing water supply, drainage, sewerage and sanitation. It prescribes the powers of the Chief officer to (i) inspect sanitary arrangements within buildings and make owners to undertake repairs, (ii) fine owners if found to be causing nuisance by discharging waste into streets, (iii) ensure that no one practices manual scavenging, and (iv) specify routes and times for desludging and carrying septage in vacuum trucks. It also mentions that municipalities are required to ensure connection of private drains to the drainage network and to provide places for disposal of sewage. While these laws do not address all aspects of urban sanitation, even the existing provisions are not often implemented. Non-availability of funds, prioritization of other public services, lack of awareness about the importance of sanitation, absence of public demand, etc. are some of the reasons for this state of affairs

Under municipal laws, owners/occupiers of buildings are also required to comply with a number of provisions, such as ensuring that no building is constructed without drainage and separation of rainwater and wastewater should be ensured. Penalties can be levied if the owner/occupier of a property is found negligent in appropriate maintenance and cleaning of septic tank and proper removal of the faecal sludge. However there is no clarity on the role of Urban Local Body (ULB) for providing sanitation services. The Municipal Act places waste treatment as a discretionary responsibility of ULB. There is no other public agency responsible for liquid waste collection, treatment and disposal in municipal areas. There is thus a need to define roles of various agencies working at municipal level. This may require amendments in existing institutional and legal framework.

This study suggests that there is an urgent need to develop appropriate guidelines for Septage management in Maharashtra. The guidelines should include provisions for regular desludging and construction of adequate septage treatment facilities. The Septage Management Advisory of the Ministry of Urban Development, Government of India can be adapted to suit the local context in Maharashtra. State government needs to allocate funds to ULBs for setting up septage treatment facilities. ULBs need to treat septage management as a service (just as it treats solid waste management as a service to be provided to all ULB properties). ULBs should develop monitoring systems for scheduled desludging, and levy appropriate sanitation tax to partially recover costs of service provision.

Key Messages

Sanitation is not only about providing toilets. Collection/containment of faecal matter, conveyance of faecal matter and treatment and safe disposal of faecal matter are equally important. A holistic Faecal Sludge Management (FSM) system needs to consider all these elements while planning cycle.

Rationale for fecal sludge management:

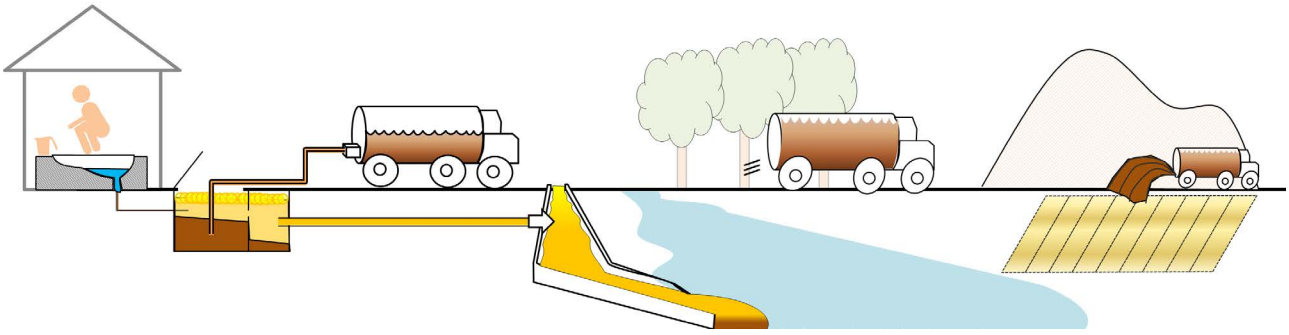
- Only 33 cities in Maharashtra have a sewerage network and coverage is only 42% of the population. Only 22 of these cities have sewage treatment facilities, which treat 35 percent of collected sewage. Most cities do not have adequate septage management system.
- Twenty two percent of urban households live in slums and nearly half depend on inadequate and badly maintained public infrastructure. This is a major obstacle in the path of realizing the aim of 'open defecation free' Maharashtra.

Lack of policies and regulations for onsite wastewater management

- Current policies and programs largely enable improved access but do not recognize the FSM cycle in its totality.
- Current Municipal Acts place treatment and disposal of faecal sludge only as a discretionary service.
- Overall weak enforcement of municipal bye-laws and regulation of service management

Way forward:

- Maharashtra needs a septage management strategy. The state needs to refine its existing institutional and legal frameworks to bridge gaps in legislation, regulation, roles and capacities.
- ULB capacity for septage management needs to be strengthened.



Current policies and programs enable improved access but do not recognize the FSM cycle in its totality

Urban Sanitation Context in Maharashtra

Maharashtra is a highly urbanised state, with nearly 50 percent of its population living in urban centres. In economic terms, Maharashtra is one of the leading states in India and contributes about 13% to the national GDP with a per capita income of US$ 1600 in 2014. With higher economic performance, better levels of water and sanitation services are expected. However in Maharashtra, this is not the case. Nearly 36 percent of urban population lives in slums, and nearly one-fourth of urban population depend on public or community shared toilets. The full sanitation service chain that consists of five key activities, viz appropriate user interface, safe collection/ containment of faecal matter, safe conveyance, safe treatment and disposal and/or reuse, is not given due attention.

As per the Census 2011 69% of households in urban Maharashtra have access to improved household latrines, about 21% use public latrines, and about 8% resort to open defecation. The situation in slum areas is worse. Only 39% of slum residents have access to improved latrines, while 49% population use public shared sanitary facilities, and 10% resort to open defecation.

Only 33 cities in Maharashtra have underground sewerage network and even in these cities sewerage coverage is only 42%, and only about 35% of sewage is treated. Of these cities, only 22 have functioning sewage treatment facilities and these treat 35% of the collected sewage.

Onsite sanitation is the predominant mode with 32% of households using such options including septic tanks. Most public facilities, which serve nearly 22% of households, are also connected to septic tanks. Most cities do provide septic tank emptying service but treat this as consumer grievance redressal, rather than as a regular service by the local government. None of the cities have a functioning septage treatment facility, and hence dump the collected septage in open dumpyards, along with the municipal solid waste.

- Maharashtra is rapidly urbanizing and there are serious challenges in providing access to water and sanitation to all.
- Only 69% of urban households have access to improved latrines at home.
- 22% of urban households depend on shared public sanitary facilities, which are often inadequate and not well maintained.
- Only 33 of the 254 ULBs in Maharashtra have underground sewerage network often covering only a part of the city. But only 24 ULBs have a sewage treatment facility. In all other ULBs, untreated waste water is discharged in water bodies.
- On-site sanitation (toilets with septic tanks) is the predominant mode of sanitation in cities in Maharashtra. However, very little attention is paid to regulate its construction and monitor its functioning.
- While most cities have a septic tank emptying service, its frequency does not meet the norms, and the collected waste is not treated before disposal or reuse.

Policy and Regulatory Framework

"A comprehensive legal framework to regulate wastewater disposal is absent in India. At the Union level, the Water (Prevention and Control of Pollution) Act, 1974 and the Environment (Protection) Act, 1986 include provisions concerning wastewater disposal. State Pollution Control Boards are responsible for their implementation. These laws also prescribe remedies for non-compliance. However, monitoring and implementation have been extremely poor."[1] . The National Urban Sanitation Policy (NUSP) of Government of India (GoI), 2008 was the first comprehensive policy statement on urban sanitation in India. While the NUSP recognised the entire sanitation cycle and need for addressing faecal sludge management, this message did not percolate down to state and local governments. This is evident from the fact that there was no proposal for septage management to the central government for funding under the JNNURM programme during 2008-12.

The Government of Maharashtra adopted the guiding principles of NUSP in their Sujal Nirmal Abhiyan (SNA), a vision statement for the Urban

[1] Bhullar Loveleen, (2013), "Ensuring Safe Municipal Wastewater Disposal in Urban India: Is There a Legal Basis?" Journal of Environmental Law 25:2 pp 235-260

Water Supply and Sanitation Sector. SNA prescribes measures that address provision of community/ public latrines but falls short of addressing septage management related issues.

Under municipal laws, owners/occupiers of buildings are also required to comply with a number of provisions, such as ensuring that no building is constructed without drainage and separation of rainwater and wastewater should be ensured. Penalties can be levied if the owner/occupier of a property is found negligent in appropriate maintenance and cleaning of septic tank and proper removal of the faecal sludge. The Municipal act also has provisions to levy penalty for various cases such as: a) the Chief officer can levy a penalty on person for spilling offensive matter on ground while removal, for carrying night soil as head load for removal from premise, b) Levy of penalty if the owner neglects to employ proper means to remove filth from the property, or c) if someone removes night soil and does not follow routes and timings that are fixed by chief officer can be penalized. Specific monetary values of such fines and penalties are also listed.

The regulatory framework for on-site sanitation comes from the Municipal Act and Bye-laws. There are also legal instruments, related to environment pollution, that provide for safe collection and discharge of waste water. The ULBs are responsible to enforce these regulations. However, they are not effective due to multiple factors like; weak institutional capacity to oversee designs and construction, weak public interest in following regulations.

Slum sanitation, is governed by the regulations provided in the Maharashtra Slum Areas (Improvement, Clearance and Redevelopment) Act, 1971. The rules do not encourage building of household latrines and thus force them to depend on community toilets. This is despite the fact that community toilets (or shared toilets) are not considered as "improved sanitation" by the UN agencies monitoring the progress on MDGs.[2]

Policies and regulations related to 'conveyance' part of the FSM cycle are also listed in the Municipal Acts but are not clearly defined. For example, the Maharashtra Municipal Councils, Nagar Panchayats and Industrial Townships Act, 1965, sec 200 states that, "all drains, sewers, privies, water closets, house gallies, gutters, cesspools within municipal areas shall be under the survey and control of the council". However, the responsibility of the ULB to provide for wastewater conveyance and/or disposal is not very clear. Sec 204 states that, "the owner or occupier of any building or land within the municipal area shall be entitled to cause his drain to empty into a municipal drain". Implicit in this is the fact that ULBs should construct drains and also provide for cleaning/emptying septic tanks.

Treatment and disposal of waste water, the last segment of the FSM cycle, are not 'mandatory functions' of ULBs in Maharashtra. They fall under 'discretionary functions' of ULB. . As of date only 31 of the 254 cities in the State have partial sewerage systems. Of these, only 15 cities have secondary treatment capacity.

- Policy and regulation framework is reasonably well established for user interface and collection parts of the FSM cycle but implementation is weak on ground
- Special concessions that allow regularization of illegal buildings hamper effective regulation by ULBs
- Slum sanitation is governed by Slum Act and does not encourage access to individual household latrines. Hence, sanitation in slums is mainly through shared facilities.

Institutional Framework and Capacity

At the state level, three departments/agencies play crucial role related to policy making and oversight of septage management in ULBs. The Urban Development Department (UDD) and its unit the Directorate of Municipal Administration (DMA) look after the overall urban development policy, staffing, budgets and monitoring of ULB's performance. Policies regarding sanitation/septage management are also formed by this department.

The Water Supply and Sanitation Department (WSSD) formulates polices and guidelines for water supply and sanitation in rural and urban areas. There is thus, some overlap in this function with UDD. The Maharashtra Water Supply and Sewerage Board (MWSSB) was established as per MWSSB Act 1976 for Rapid development and proper regularization

[2] The Joint Monitoring Programme (JMP) of UNICEF and WHO was established to monitor the water and sanitation target of MDG. Shared sanitation is not considered as adequate or improved sanitation by the JMP.

of water supply and sewerage services in the State. MWSSB was subsequently named as Maharashtra Jeevan Pradhikaran (MJP) in 1997. MJP is responsible for Planning, designing and implementation of water supply and sewerage schemes in rural and urban areas of the state, including facilitation for necessary financial provisions.

The Maharashtra Pollution Control Board (MPCB), a state level environmental regulator is limited to monitoring of pollution of surface water bodies. ULBs are informed about the quality of water in lakes and rivers and asked to take appropriate actions. MPCB does not have any role in regulating fecal sluddge management in cities.

ULBs are required to play a dual role of service provider (providing drains, cleaning drains, constructing and maintaining public toilets and community toilets, etc) and of regulator (ensuring compliance to building bye-laws, ensuring proper discharge of waste water to drains etc.). In larger cities, there are separate departments that perform these dual roles – the Town Planning Department, Drainage Department and Public Health Department

However, in performing these dual roles, ULBs are constrained by limited staff and technical capacity. For example, in Wardha, there are 18 technical staff positions, but only 5 are filled. Recruitment of sanitary workers (Safai Karmacharis) in the ULBs is guided by rules framed by state government and ULBs do not have much flexibility. Given these limitations, septage management is not well understood in ULBs. Septic tank/pit emptying is done only when it is full, and that is once in seven to ten years. ULBs do provide the emptying service, but dump the sludge at some distance from city as they do not have facility to treat the septage.

- ULBs are mandated with both service delivery and regulatory functions but are constrained by weak capacities and lack of human resources
- No institution in the State is clearly charged with regulating all aspects of FSM.
- ULBs do not have adequate staff to handle FSM.
- Very little information is available with ULBs on septic tanks/pits. Without such information, it is difficult for ULBs to develop septage management plan.

Lessons from other Asian Countries [3]

Three countries in Asia, Philippines, Malaysia and Vietnam have adopted innovative policies and institutional mechanisms to address the issue of septage management.

In the Philippines nearly 80 percent of urban population has access to improved sanitation facilities, 17% use shared facilities, 1% use unimproved facilities and 3% defecate in open. The national Clean Water Act (CWA), 2004, of the Philippines obligates national agencies, local government units (LGUs) and other service providers (like water districts) to provide either septage management or sewerage services for all consumers. Since sewerage services are very limited and expensive to construct and operate, septage management is a first practical step for most utilities or LGUs. Early adopting cities, such as Marikina and Dumaguete, have developed local ordinances requiring regular desludging and have constructed new septage treatment facilities. The Philippines has also developed a National Sewerage and Septage Management Program (NSSMP) in 2011. While the CWA mandates cities and service providers for septage management, funding is made available through the NSSMP.

In Malaysia nearly 95 percent of urban population has access to improved sanitation. Malaysia enacted the Sewerage Services Act (SSA) in 1993 that nationalised sanitation facilities owned by local governments. It then transferred the operations, maintenance, and development responsibilities to a private concessionaire, Indah Water Konsortium (IWK). In 2000 the federal government nationalized IWK and turned it into a publicly owned company to increase government control. In order to standardize the service rules and regulations for both water services and sewerage services, the federal government enacted the Water Service Industry Act (WSIA) on 1st January 2008.

[3]Sources: a) AECOM Inc and SANDEC (2010), "A Rapid Assessment of Septage Management in Asia: Policies and Practices in India, Indonesia, Philippines, Sri Lanka, Thailand and Vietnam', Report for USAID, b) Indah Water Konsortium, Malaysia (2011), "Sustainability Report 2011", author, c) Nguyen Viet-Anh (2015)," Efforts in FSM and Sanitation Improvement in Vietnam", presented at FSM3 conference, Hanoi, Vietnam, mimeo, and d) Nguyen Minh Tuan (2015)," FSM in Hai Phong city, lessons learnt", presented at FSM3 conference, Hanoi, Vietnam, mimeo.

Septage Management in Metro Manila

Metro Manila, with a population of 12 million population is comparable to that of Kolkatta. Manila has two water utilities. These utilities also provide sanitation related services. In the city's East Zone, Manila Water Company, Inc. (MWCI) provides water and sanitation services for 5.6 million people. It has initiated septage management projects to provide regular septic tank desludging services. Although the original MWCI concession planned to phase out the use of septic tanks in favor of centralized sewerage systems, this plan proved too difficult due to low willingness of consumer to pay for sewerage services and lack of available land for treatment facilities. Instead, MWCI has shifted its emphasis towards septage management and smaller, localized treatment plants. At present, MWCI maintains a fleet of over 90 vacuum trucks. Since 2005, MWCI has desludged more than 400,000 septic tanks and aims to desludge all tanks in its service area on a rotating, five-to-seven-year cycle. MWCI has three dedicated septage treatment facilities with a total treatment capacity of over 1,540 cubic meters per day. Though a good start, the current total treatment volume provides for only five percent of the capacity required if all household tanks in Metro Manila were to be regularly desludged.

The IWK, in its concession agreement in 1993, had agreed to expand sewerage coverage to 85 percent in major cities, and 30 percent in smaller cities. It agreed to provide septage management in non-networked areas. In order to achieve these targets, IWK first undertook a 3 stage strategy.

- Locate and rehabilitate old sewerage treatment plants and develop their septage treatment capacity,
- Use available oxidation ponds, as an interim arrangement for septage disposal, while developing new sites, and
- After the year 2000, build centralised and mechanised septage and sewage treatment plants for more densely populated areas.

Through these measures, Malaysia has increased the number of households with sewerage connections from five percent in 1993 to 73 percent in 2009. Most households with septic tanks now participate in scheduled desludging.

In another country in the region, Vietnam, also 90% of urban population uses septic tanks. Though sewerage systems have been introduced in some cities, in many cases households have not taken connection to these. Major challenges were that FSM was not included in most Wastewater and Drainage Projects and not even in Sanitation Planning. For FSM improvement a new Government Decree 80/ND-2014 on Drainage, Sewerage and Wastewater Treatment was introduced with special articles on sludge management, FSM resource recovery and household connections. Policies and legal framework were introduced to encourage private sector participation. The emphasis was on scheduled cleaning along with payments for services based on local taxes rather than user charges as described in the box on Haiphong City.

Septage Management in Haiphong City, Vietnam

Haiphong city is the 3rd largest city in Vietnam located 200 km from Hanoi City. The Haiphong Sanitation and Sewerage Company (SADCo) operates the sewer network, drainage channels, regulating lakes and tidal gates in the urban centre of Haiphong. Septage management has been the responsibility of Haiphong SADCo since July 1998. The septic tanks are emptied on a scheduled basis at an interval of three years. For such type of schedule emptying they have divided the cities into regions, where one region is emptied in a year and then they move to the next region in next year. For faster emptying of septic tanks special type of access covers are provided or else they use a special drill so that they do not have to break the septic tank top. For emergency cleaning of septic tanks in other regions help of external agencies is sought for providing. One cycle of emptying has been completed for the entire city. The collected septage is treated at Trang Cat septage treatment facility, where sludge drying bed and composting technology are used for treatment of fecal sludge and the treated compost is used in industrial plants. The citizens are provided free septic tank emptying service once every three years and in lieu of this a tax of around 15% of the water bill (as a part of water bill) is levied on the properties.

- Malaysia, Philippines and Vietnam have adopted national legislations that recognize the full service chain of sanitation
- All three countries have adopted a scheduled septic tank cleaning cycle
- Efforts were made to capacitate national/ local organizations to develop strategies, operational plans and execute the same.
- Long term plans for sanitation at local and national level were developed
- Private sector plays an important role in septage management

22% of Urban households in Maharashtra live in slums and depend on badly maintained infrastructure

On site sanitation (toilets with septic tanks- requiring suction emptier trucks) is the predominant mode of sanitation. However very little attention is paid to

While most cities have a septic tank emptying service, its frequency does not meet the norms, and the collected waste is not treated before disposal or reuse

Policy and regulation framework is reasonably well established for user interface and collection parts of the FSM cycle but implementation is weak on ground

What can Maharashtra do?

The current situation with respect to FSM in urban Maharashtra needs considerable improvement. The state needs to adopt a sanitation policy that takes into account the full service chain. Current focus on toilet provision under the Swachh Maharashtra Abhiyan needs to be supplemented with septage management. The Ministry of Urban Development (MoUD), Government of India's Advisory on Septage Management provides useful guidance in this regard[4] . Using the framework of Government of India's Advisory on Septage Management, draft septage management guidelines have been prepared by the CEPT University.[5] This requires adoption by the state government.

Short Term Actions (3-6 months)	Medium Term Actions (1-2 years)
State Level Actions	
Develop a shared understanding of the definition/ scope of sanitation as the entire FSM cycle, across all the key actors in the state.	Strengthen ULB capacity –more staff, funds, facilities (septic tank empting trucks, sludge treatment etc).
Publish guidelines on septage management processes. Establish regulatory mechanisms for FSM activities along with appropriate IEC activities	Incentivize ULBs for introducing sanitation tax through matching grants for a year
Develop guidelines for covering residents of slums with improved sanitation facilities.	Guidelines and tools for private sector engagement for FSM
City Level Actions	
Build a data base on properties with septic tanks, link with building permissions and property tax database to ensure monitoring and regular updates	Implement a scheduled desludging program and monitor through GIS based monitoring systems.
Develop holistic FSM plans, expanding the current City Sanitation Plans	Develop adequate septage treatment facilities, if needed through appropriate private sector participation.
Adopt policies for scheduled cleaning of septic tank, impose sanitation tax	Universal coverage of scheduled septage management services for all properties

[4]Ministry of Urban Development (2013), Advisory on septage management in Indian cities, available at http://moud.gov.in/advisory

[5]PAS project, "Draft Policy Guidelines for Septage Management in Maharashtra", February 2015, mimeo available from pas@cept.ac.in

The Performance Assessment System (PAS) Project

The Performance Assessment System – (PAS) is an action research programme,iniated by the CEPT University, Ahmedabad, with funding from the Bill and Melinda Gates Foundation. Since 2009, PAS has supported developmentof tools, methods and processes for performance assessment and improvement in delivery of urban water and sanitation services. It works with all levels of government: national, state and local. Since 2009, the PAS online performance assessment system has been implemented in the states of Gujarat and Maharashtra covering more than 400 cities. Other states in India have also begun to implement this system. The PAS programme has developed performance improvement tools to assist urban local governments in planning, target setting and tariff determination.

In recent years PAS programme has focused its work on urban sanitation. It has developed indicators for measuring on-site sanitation, developed framework for citywide sanitation planning considering the full value chain, and supported cities in implementing city sanitation plans that focus on making cities open defecation free (ODF). In support of these efforts, PAS team is working with various agencies on developing innovative sanitation financing mechanisms.

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