जर्मन सहयोग
DEUTSCHE ZUSAMMENARBEIT

Implemented by:

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

In cooperation with:

NO TIME TO WASTE

Transforming healthcare waste management for a healthier, more sustainable Nepal

Content

Photo cover:
→ Shree Maya Tamang, the autoclave operator at Dhading District Hospital

FOREWORD
HONORABLE BHANU BHAKTA DHAKAL
Minister of Health and Population, Government of Nepal

Environmental Health and Healthcare Waste Management is one of the priority areas for the Government of Nepal. The Ministry of Health and Population, from its dedicated section — the Environmental Health and Healthcare Waste Management, Department of Health Services — is working to reduce the potentially harmful effects of healthcare waste on public health and the environment.

This first national workshop on Integrated Healthcare Waste Management and Water, Sanitation and Hygiene (WASH) in Healthcare Facilities, held in last December, was a major step forward in addressing technical, legislative and managerial issues. I am more than happy to know that the workshop adopted the 12 commitments as a guiding framework for improving healthcare waste management and WASH in healthcare facilities across the nation in the days to come.

I would like to thank all the participants/representatives of local, provincial and central government, international experts from Asia and beyond, private sector companies, activists, non-governmental organizations, elected representatives, social entrepreneurs, healthcare workers and waste workers who shared recent developments in the field of healthcare waste management and WASH, and also provided the way forward for healthcare waste management at different levels.

The Ministry is committed for a strong leadership, sustainable financing and capacity development measures as part of this effort, and believe that this will contribute to achieving the 2030 Agenda for Sustainable Development. The Ministry of Health and Population, Nepal also extends its sincere thanks to the German government, the World Health Organization, WaterAid, the United Nations Development Programme, UNICEF, SNV Netherlands and all other partners for making the workshop a grand success.

Mr. Bhanu Bhakta Dhakal
Honorable Minister

Government of Nepal
Ministry of Health and Population
Ramshah Path, Kathmandu

Waste management is intertwined with many global challenges — and key to achieving the Sustainable Development Goals.

IMPROVING HEALTHCARE WASTE MANAGEMENT...

SDG 3 / Lowers the risk of infections and reduces environmental health risks

SDG 6 / Improves water quality by reducing pollution, eliminating dumping and minimising the release of hazardous chemicals and materials

SDG 8 / Enhances opportunities for recycling, thereby contributing to decent work and economic growth

SDG 11 / Makes life in urban areas safer and more sustainable

SDG 12 / Contributes to responsible consumption and production patterns through the environmentally sound management of chemicals and waste

SDG 13 / Reduces the health sector's large climate footprint

SDG 14 / Limits marine pollution by ensuring that waste generated on land does not reach the oceans

SDG 15 / Promotes the sustainability of land-based ecosystems such as forests and wetlands

→ An informal waste worker pauses atop a landfill in Nepal.

FOREWORD
HIS EXCELLENCY ROLAND SCHÄFER
Ambassador of Germany to Nepal

Germany has been engaged in partnering with Nepal's healthcare system for many years. As in all development cooperation, we care about an important and universal principle: to make sure that in our enthusiasm to build a stronger and more resilient health system for all, we 'do no harm.' Yet when healthcare facilities lack basic systems for water, sanitation, hygiene and the management of healthcare waste, the chances are greatly increased that healthcare workers inadvertently do harm — to themselves or others — by spreading infections.

Safe, sustainable healthcare waste management practices and access to WASH services are prerequisites for quality health services and good health outcomes. While Nepal faces significant challenges in this regard, the Government of Nepal has demonstrated its commitment to improve cleanliness in healthcare facilities and has made great progress in expanding access to water and sanitation in recent years. I am particularly happy to see that the national workshop on healthcare waste management and WASH, which was held in December 2019, has triggered even more attention to this important issue.

The COVID-19 pandemic has shown us all how critical it is to address the basics of hygiene and other infection prevention measures. I have been impressed to see how seriously the Government of Nepal is taking up this challenge, and how safe healthcare waste management practices are being applied in the fight against the spread of coronavirus. Against the backdrop of this pandemic, we see that access to WASH services in healthcare facilities is of fundamental importance. Regular handwashing with soap is the most important measure one can take to stop the spread of the coronavirus, yet 40 per cent of health facilities in Nepal have no access to running water. This underscores how essential it is that Nepal continue to invest in developing a resilient health system — a goal which lies at the heart of Nepali-German development cooperation in the health sector. Through technical and financial cooperation measures, implemented by GIZ and KfW respectively, Germany supports the efforts of the Ministry of Health and Population to ensure access to basic health services for all Nepalis and to guarantee the constitutional right to live in a clean and healthy environment.

Finally, just because certain categories of healthcare waste pose heightened risks to human and planetary health does not mean that we can forget about the rest of it. Non-hazardous healthcare waste poses risks of its own when it is incinerated, dumped in open areas, or piled up in landfills. Good healthcare waste management is about more than simply limiting infections: it is also about maximising opportunities to reuse and recycle in order to reduce overall volumes of waste. Waste management is central to the achievement of many of the Sustainable Development Goals — from health and water, to sustainable cities and responsible consumption — and one of the fundamental challenges of our time.

→ Safely segregating healthcare waste at the Budhanilkantha Health Post

Introduction

This publication describes the beginnings of a movement to address the adverse effects of healthcare waste on both people and the environment in Nepal. Healthcare waste refers to all waste generated in healthcare facilities, research centers and laboratories. It includes a broad range of materials, from potentially hazardous items, such as used needles and syringes, soiled dressings, body parts and blood, diagnostic samples, chemicals, pharmaceuticals and medical devices, to general waste, such as kitchen scraps and packaging.

The safe treatment and disposal of healthcare waste is rising on the agenda in Nepal as the country works towards the achievement of Sustainable Development Goal (SDG) targets related to health (SDG 3) and water and sanitation (SDG 6). Improvements in healthcare waste management are also relevant for the attainment of other goals, including sustainable cities and communities (SDG 11), responsible consumption and production (SDG 12), and climate action (SDG 13).

Nepal faces significant challenges in its quest to ensure that all public and private healthcare facilities adopt safe waste management practices. However, a number of factors work in its favour. First, low-cost, appropriate and environmentally friendly technologies are available which can help healthcare facilities and service providers safely segregate waste at source and transport, treat and dispose of infectious waste. These are being successfully employed in Nepal in a small, but growing number of healthcare institutions. Second, there are some dynamic pockets of innovation in Nepal in the fields of healthcare waste management, municipal solid waste management, commercial recycling and waste minimisation. New models for managing healthcare waste are being tested, some of which bring together municipalities, healthcare institutions and private companies in mutually beneficial partnerships.

Third, there is growing political will to tackle environmental health risks, such as those posed by poor healthcare waste management, and a policy and legislative framework in which to do so. Among the important recent developments, the country's Healthcare Waste Management Guidelines have been revised to bring provisions in line with Nepal's new federal structure and a policy on pharmaceutical waste is being formulated for the first time. And finally, people across Nepal increasingly expect that something be done to improve healthcare waste management — and many are ready to be part of finding solutions. The conditions are therefore ripe for major progress in this field.

In December 2019 a national workshop was convened to discuss, for the first time, what an integrated model of healthcare waste management at the local level could and should look like in Nepal, and how to foster effective partnerships towards this end. The gathering brought together hundreds of actors from across the country to share their experiences and to learn from others about waste management initiatives underway within the health sector and beyond it. The event generated enormous interest — not only among those who attended in person, but also among thousands of members of the public who followed it online and through the media — and has helped to catalyse a broader movement on healthcare waste in Nepal.

This publication offers a snapshot of the challenges, as well as the progress being made in healthcare waste management in Nepal at the current moment in time. It distils some of the key themes and learnings from the national workshop, provides examples of diverse healthcare waste management initiatives, and presents the views of some of the healthcare workers, government officials, entrepreneurs and activists who are testing out ways to transform waste from a problem into an opportunity.

The Problem

→ Hazardous healthcare waste

→ Untreated healthcare waste is sometimes mixed into municipal waste streams.

→ Hazardous healthcare waste poses risks for informal waste workers at landfills.

HEALTHCARE INSTITUTIONS AND THE GLOBAL WASTE CRISIS

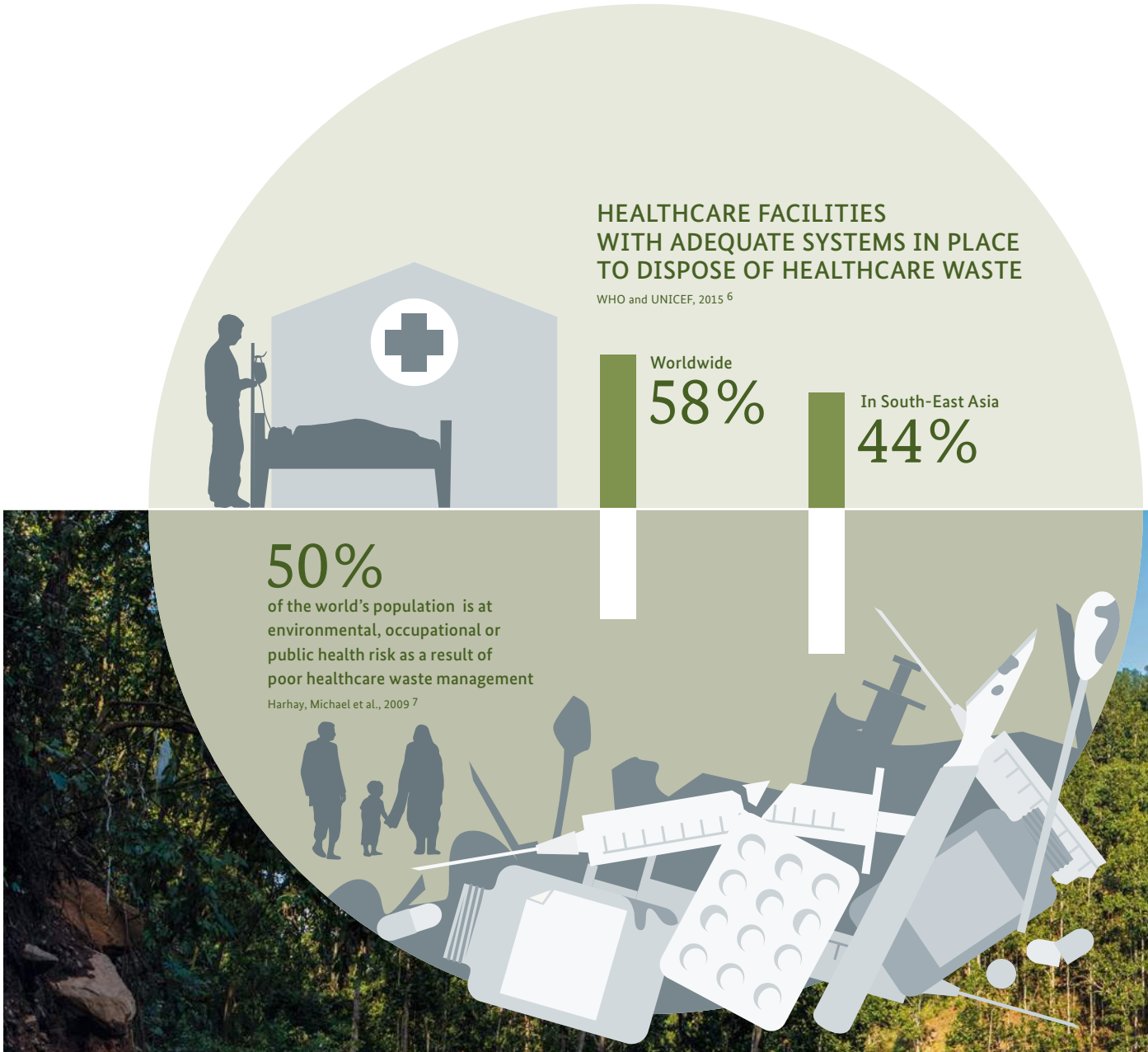
Our world is awash in waste. More than two billion tons of it are generated every year,[1] the discarded remains of resources we have extracted from nature and turned into products to fulfil our needs and wants. In our present 'take-make-waste' economy, only a fraction of these resources is recovered and cycled back into use.[2] The rest ends up in landfills, in uncontrolled dumping sites, in incinerators, and in rivers and oceans, where it contaminates water and soil, enters the food chain, emits greenhouse gases, pollutes the air, fills the stomachs of marine animals and potentially transmits disease.

Healthcare workers around the world see the consequences of these environmental health risks every day in the patients they treat and counsel. Rates of non-communicable diseases, including strokes, heart disease, respiratory illnesses and cancer, are on the rise. Vector-borne diseases are spreading as a result of the climate crisis, and diarrhoeal diseases thrive in places where water sources are polluted. According to the World Health Organization (WHO), some 12.6 million deaths per year are now attributable to environmental causes, 3.8 million of them in South-East Asia.[3]

Healthcare institutions are on the forefront of efforts to turn this rising tide. Paradoxically, however, they are also part of the problem. In the course of diagnosing and treating patients, hospitals and other healthcare facilities generate huge volumes of waste — syringes, rubber tubing, sterile packaging, plastic bottles, ampules, blister packs, bandages, test kits, electronic equipment and more — most of which also makes its way into incinerators, landfills or dumping sites. Some of this waste is infectious, chemically hazardous or radioactive, and needs to be treated and disposed of in a special manner to protect both health providers and members of the public. Unfortunately, this does not always happen. Only 58% of healthcare facilities worldwide, and 44% in South-East Asia, have adequate systems in place to dispose of health-care waste.[4] By some estimates, half the world's population is at environmental, occupational or public health risk as a result of poor healthcare waste management.[5]

It does not need to be this way. Basic waste management services can be achieved in healthcare facilities in any setting: the key elements are the systematic segregation of waste at source, the sterilisation of infectious items, and the safe disposal of hazardous waste, such as sharps. When healthcare facilities introduce these practices, they not only limit the risk of infections among patients and staff, they also help to roll back some of the health sector's other contributions to the global waste crisis.

Segregating at source unlocks opportunities to reuse and recycle large proportions of the waste stream, thereby reducing both the quantity of what is ultimately dumped or incinerated and the volume of resulting greenhouse gas emissions. Recycling also generates revenue for healthcare facilities, creates jobs, and promotes local economic growth. Perhaps most importantly: when people pay more attention to the types of waste they produce, they can think strategically about ways to minimise it and eliminate it altogether. This shift away from a linear economy towards a circular one, less dependent on the extraction of new resources, is essential if our vision of a sustainable future is to be realised. The health sector, guided by the principle of 'do no harm', can lead by example. When healthcare facilities model good waste management practices, they can inspire the communities around them to do the same.



HEALTHCARE FACILITIES WITH ADEQUATE SYSTEMS IN PLACE TO DISPOSE OF HEALTHCARE WASTE

WHO and UNICEF, 2015 [6]

Worldwide
58%

In South-East Asia
44%

50%
of the world's population is at environmental, occupational or public health risk as a result of poor healthcare waste management

Harhay, Michael et al., 2009 [7]

→ An unmanaged dumping site in Nepal

HEALTHCARE WASTE MANAGEMENT IN HEALTHCARE FACILITIES IN NEPAL

WHO and UNICEF, 2019 [8]

Only **1%** provide
BASIC WASTE MANAGEMENT:
> Separating waste into at least three bins
> Safely treating and disposing of sharps and infectious waste

62% provide
LIMITED WASTE MANAGEMENT:
> Limited separation and/or treatment and disposal of sharps and infectious waste
> Not all requirements for basic waste management are met

36% have
NO WASTE MANAGEMENT:
> No separate bins for sharps or infectious waste
> Sharps and/or infectious waste are not treated/disposed of safely.

→ Clearly-marked waste transport routes inside the Tribhuvan University Teaching Hospital

→ Sterilised healthcare waste, ready to be weighed and sold to recyclers

HEALTHCARE WASTE MANAGEMENT IN NEPAL

Over the past two decades, Nepal has achieved some important public health gains. Investments in maternal and child health services have led to significant reductions in mortality. New HIV infections have dropped sharply, malaria incidence has fallen, and treatment success rates for tuberculosis have risen. In addition, private healthcare facilities and pharmacies have become important providers of health services and medical drugs. Although wide variations remain in the availability and utilisation of services by different population groups, the health system is succeeding in reaching more people than ever before.

If anything, these achievements have brought challenges in the area of healthcare waste management into clearer focus.

More services generate more waste. More diagnostic tests mean more testing kits and cartridges. Wider availability of medications, both with and without prescriptions, means more packaging and expired pharmaceuticals.

According to the WHO/UNICEF Joint Monitoring Programme,[9] only 1% of healthcare facilities in Nepal provide basic waste management services (defined as separating waste into at least three bins and safely treating and disposing of sharps and infectious waste). Only 5% safely segregate waste, the fundamental building block of good waste management. Every third healthcare facility has no waste management service at all. In such cases everything is mixed together and dumped, burned — often in the open — or hidden amidst general refuse and fed into the municipal waste stream. Few, if any, health-care institutions in Nepal have systems for dealing with liquid waste, including chemical and laboratory waste, radioactive waste or e-waste.

Many people in Nepal are directly harmed as a result of poor healthcare waste management. Anecdotal evidence and surveys in individual hospitals, such as the Tribhuvan University Teaching Hospital in Kathmandu, suggest that more than 60% of clinical staff have experienced needle stick or other sharps injuries in workplaces where waste is not separated at source.[10] Waste workers frequently come into contact with hazardous healthcare waste in the course of doing their jobs. Members of the general public are also at risk: waste collection points in hospitals are generally unsecured, municipal dumping sites are often unfenced, and illegally dumped waste is commonly found in public areas, forests and riverbanks. When animals scavenge waste, the risks to public health grow even further.

The reasons for this state of affairs are manifold. Nepal has numerous laws, regulations and guidelines governing the area of healthcare waste management, but monitoring systems are underdeveloped and penalties for non-compliance are rarely issued. According to the Solid Waste Management Act 2011, the processing and management of hazardous waste is the responsibility of the institution which generates it. Thus far, however, the management of healthcare waste has generally not been prioritised within public healthcare institutions, many of which are understaffed, face high turnover of senior management, and have limited financial resources.

Good healthcare waste management also requires close cooperation between public and private healthcare institutions and local municipalities,

which bear overall responsibility for solid waste management (but not for the disposal of untreated healthcare waste). In many cases, this cooperation has been lacking and needs to be strengthened.

WASH IN HEALTHCARE FACILITIES

WASH:

- Water
- Sanitation
- Hygiene
- Waste Management
- Environmental Cleaning

→ A cleaner mops the floor at a district hospital.

HEALTHCARE WASTE MANAGEMENT: ONE OF THE FIVE PILLARS OF WASH IN HEALTHCARE FACILITIES

Every year hundreds of millions of people acquire infections while being cared for in hospitals and healthcare facilities. While such infections can occur in any type of facility anywhere in the world, the risks are higher in facilities which lack basic water, sanitation, hygiene, waste management and cleaning services. Such gaps are still all too common. In Nepal, for example, less than two-thirds of public healthcare facilities have an improved water supply on the premises and less than half have basic hand hygiene materials available at point of care.[11]

The need to improve WASH services in healthcare facilities has been rising on the global agenda since the adoption of the SDGs. WASH is directly related to the attainment of SDG 6, which calls for access to adequate and equitable sanitation and hygiene for all, as well as to SDG 3, on good health and well-being. WASH services are an essential part of good quality healthcare, and therefore a prerequisite for the achievement of Universal Health Coverage.

WHO and UNICEF are at the forefront of global efforts to achieve universal WASH services in healthcare facilities by 2030. Through the Joint Monitoring Programme (JMP) for Water Supply, Sanitation and Hygiene, the two agencies are tracking progress towards the achievement of WASH-related SDG goals. The JMP's Global Baseline Report 2019 uses a 'service ladder' approach to assess the availability of basic services in the areas of water, sanitation, hygiene, waste management and environmental cleaning. It provides global, regional and national baselines against which future progress can be measured.

Download the JMP's Global Baseline Report 2019:
www.who.int/water_sanitation_health/publications/wash-in-health-care-facilities-global-report/en/

→ Staff at the Central Treatment Facility for healthcare waste, Pokhara

NEW RESOLVE TO TACKLE A COMPLEX PROBLEM

Over the past few years, there have been some encouraging signs that the problem is receiving the attention it deserves. Recognising the urgent need to address environmental health risks — Nepal ranked 176th out of 180 countries on the 2018 Environmental Performance Index,[12] with particularly low scores in areas of air quality, heavy metal exposure, and water and sanitation — the Ministry of Health and Population has established a new Environmental Health and Healthcare Waste Management Section within the Management Division of the Department of Health Services. Now, for the first time, the topic of healthcare waste management and WASH has a clear institutional home at the national level — and a team of staff ready to drive forward efforts involving a wide range of stakeholders.

As a consequence of the newly introduced federalisation process, many local governments are also ready to act on healthcare waste management and are looking for a roadmap and technical guidance to begin the journey.

Since 2015, when Nepal began the transition to a federal state, municipal authorities have been directly answerable to citizens for the quality of basic services, from healthcare, education and roads to solid waste management. They feel growing pressure to deliver on the right to live in a clean environment that is guaranteed by Article 30 of Nepal's Constitution.

Development partners are also coming to the table. In addition to the WHO, which has long worked on WASH, German Development Cooperation has emerged as an important partner. On behalf of the Federal Ministry for Economic Cooperation and Development (BMZ), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) began to provide technical support for integrated healthcare waste management systems in selected municipalities and provinces through the Capacity Development Support to Governance project and, in 2016, through the project 'Support to the Health Sector Programme' (S2HSP). At the same time, KfW Entwicklungsbank finances investments in healthcare waste management infrastructure and technologies. Other partners, such as UNDP, UNICEF, SNV Netherlands Development Organisation, WaterAid and Health Care Without Harm, also support WASH and waste management interventions in Nepal.

Finally, the efforts of local healthcare waste management champions, such as the Health Environment Climate Action Foundation (HECAF360)[13], to raise awareness of the problem and to introduce appropriate, home-grown waste management solutions are gathering speed. Some of Nepal's largest hospitals now successfully segregate, treat and dispose of waste using no-burn technologies, and more and more hospitals are expressing interest to do the same.

This is a major development: for a long time, many managers of healthcare institutions have regarded systematic waste management as too expensive, complex or technically demanding for the Nepali context. The growing number of successful, low-cost examples is convincing people this is not the case.

In light of these developments, the newly established Environmental Health and Healthcare Waste Management Section, with the encouragement of WHO and S2HSP, concluded that it was an opportune time to convene a national workshop on healthcare waste management and WASH in healthcare facilities. The objective was to bring together key players from across the country — government, development partners, private sector companies, academic institutions and non-governmental organisations — to learn from one another's experiences and to debate what needs to be done to realise integrated approaches to healthcare waste management at the local level.

HEALTHCARE WASTE MANAGEMENT
KEY STAKEHOLDERS


HEALTHCARE FACILITY MANAGERS


HEALTHCARE TRAINING INSTITUTIONS


HEALTHCARE WORKERS


PUBLIC HEALTH EXPERTS

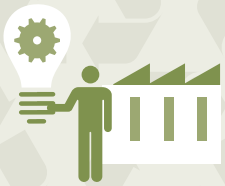

MENSTRUAL HEALTH ACTIVISTS


TECHNOLOGY SUPPLIERS


DEVELOPMENT PARTNERS

STUDENTS


FEDERAL GOVERNMENT


INNOVATORS & ENTREPRENEURS


MUNICIPAL PLANNERS


PROVINCIAL GOVERNMENT


HOUSEHOLDS


LOCAL GOVERNMENT


WASTE WORKERS


RECYCLERS & SCRAP DEALERS

INFORMAL WASTE WORKERS

Informal waste workers play a key role in the collection, segregation and sale of waste, particularly in urban areas where waste management systems are weak.

In Nepal there are estimated to be 7,000 to 15,000 informal waste workers in the Kathmandu Valley alone. They face significant occupational risks, as well as social stigma. A survey supported by the NGO Médecins du Monde, in 2018, found that one-third of informal waste workers had been ill during the previous three months, and two-thirds had been injured at work in the previous year. Nearly 40% had handled medical waste.[14]

THE ADVOCATE

MAYA TAMANG
is the founder of SASAJA (Samyukta Safai Jagaran), an organisation which advocates for the rights of informal waste workers in Nepal.

'Working in this sector is a huge challenge. We are involved in all aspects of the waste management chain from door-to-door collection and segregation to running scrap-dealing shops. Harmful waste gets mixed in with the other waste we handle, and this can lead to injury and disease. I've seen many co-workers suffering from infectious diseases, musculoskeletal problems and cancers. This could be improved if there was waste segregation. We are doing the best we can at our level, but waste management is a big problem and must be a national priority. The informal waste workforce can play a vital role. We already contribute significantly to the city's waste management, but we don't receive enough credit.

We want greater recognition and social protection, such as health insurance and other benefits.'

→ A truck delivers waste from Kathmandu to the Sisdol landfill.

THE INFORMAL WASTE WORKER

ANJU SEDAI
has been working at the Sisdol landfill for eight years. She is one of 120 people participating in a project implemented by PHASE Nepal[15] and Médicins du Monde to improve the health of informal waste workers in the Kathmandu Valley.

'I work at the landfill every day. I start segregating waste at 6 AM and finish at 2 PM when the last trucks arrive. In the afternoons, I sell the plastic, glass and paper I've managed to collect. Over the years the price being paid for segregated waste has dropped. What I'm able to earn now is barely enough to live on.

For a long time I didn't have any protective equipment, not even gloves. I just wore normal shoes and covered my face with a cloth. I would get cuts and injuries on my hands and feet all the time.

In this respect the situation has improved. Through the health project run by PHASE Nepal, I now have heavy work boots, a mask and protective gloves.

I've also learned a lot from the project's peer educators. I've become much more aware of handwashing and I never eat any more without first washing. I know about HIV and hepatitis, and also about non-communicable diseases associated with waste. And I know that it's important to go for health checks.'

THE HEALTH ASSISTANT

RASMITA KANDEL
is a health assistant at the Sisdol Health Post. She carries out health promotion work with informal waste workers on behalf of PHASE Nepal and Médicins du Monde.

'There are about 300 informal waste workers here on any given day. The main health issues they face are cuts and injuries, skin allergies and respiratory problems. There are also cancer cases.

When our project started, hardly any of the informal waste workers visited the Sisdol Health Post. Now between 5 and 10 people a day go there for first aid or for other services.

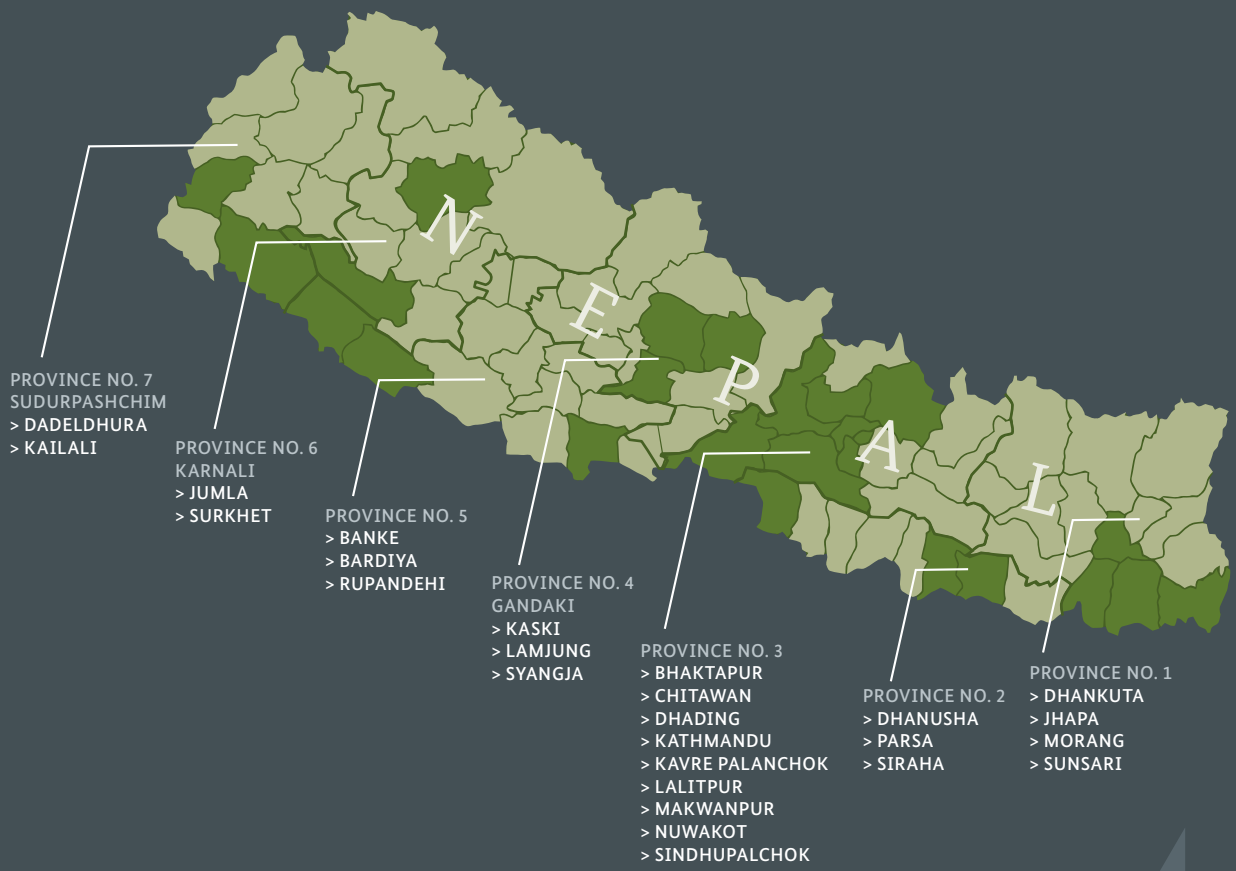
We organise monthly health education sessions, run by peer educators. These raise people's awareness of health risks and build trust in the health post.'

Nearly
40%
of informal waste workers in the Kathmandu Valley have handled medical waste.
Karki, Jiban et al., 2018 [16]

→ Nepal's Minister of Health and Population, Mr Bhanu Bhakta Dhakal, greets Germany's Ambassador to Nepal, Mr Roland Schäfer

The Workshop

The First National Workshop on Integrated Healthcare Waste Management and WASH in Healthcare Facilities featured experts from 10 countries and more than 400 participants from across Nepal.



From 10-12 December 2019 hundreds of people from across Nepal made their way to Kathmandu to take part in the first-ever national workshop on the topic of integrated healthcare waste management and WASH in healthcare facilities. Convened under the motto 'No Time to Waste! Together for a Healthy Nepal!', the workshop was organised by the Environmental Health and Healthcare Waste Management Section of the Management Division of the Ministry of Health and Population. GIZ, through the S2HSP project, provided significant assistance in the design and organisation of the workshop. Other partners supporting the workshop's technical working group include the WHO, KfW Entwicklungsbank, the United Nations Development Programme (UNDP), UNICEF, WaterAid, SNV Netherlands Development Organisation and HECAF360.

The organisers were overwhelmed by the positive response: nearly 400 representatives of local municipalities, provincial governments, federal ministries, healthcare facilities, private companies, academic institutions, the media, professional bodies, associations of informal waste workers, and civil society organisations attended the three-day event in person. More than 10,000 people joined the proceedings by livestream or have since watched a video of the workshop online, while some 25,000 people have been reached with information about the workshop on social media.

The meeting was characterised by energetic participation, high-quality presentations and technical sessions, intensive networking and vigorous debate. In addition to dozens of experts from across Nepal, speakers from 10 countries shared their experiences in healthcare waste management and WASH in healthcare facilities.

The active engagement of representatives from a range of government ministries – including the Ministry of Forestry and Environment, the Ministry of Water Supply and Sanitation, and the Ministry of Federal Affairs and General Administration – demonstrated a desire for better coordination and cooperation between health and other sectors. Strong government ownership, coupled with the involvement of multiple development partners, signalled that healthcare waste management is rising up the agenda as a development priority in Nepal.

→ Top: Dr Sushiil Baral, left, moderates a panel discussion during the workshop.
→ Left: Ms Uma Magar Thapa, Deputy Mayor of Nepalgunj Sub-Metropolitan City

'No Time to Waste! Together for a Healthy Nepal!'
December 10–12, 2019, Kathmandu, Nepal.

For more details about the workshop please see:
www.hcwm.mddohs.gov.np




FRAMING THE ISSUES: THE INAUGURATION CEREMONY

Mr Bhogendra Raj Dotel, the Director of the Management Division at the Ministry of Health and Population, highlighted the rising burden of disease that is attributable to environmental risks, including those caused by improper healthcare waste management, and the challenge this poses for Nepal.

'Lives that are being lost to strokes, heart disease and other non-communicable diseases could be saved if we removed environmental risks,'

he said. 'If we don't attend to these environmental concerns, we will not meet our health objectives under the Sustainable Development Goals.'

Mr Chudamani Bhandari, the chief of the Environmental Health and Healthcare Waste Management Section, introduced the legal and policy framework surrounding healthcare waste management and WASH in healthcare facilities in Nepal, and drew attention to some existing initiatives and good practices. These include the Ministry of Health's strong support for non-burning technologies in the treatment and disposal of healthcare waste, and the piloting of the WHO's WASH-FIT tool in selected healthcare facilities across the country.

'We have some good programmes to build upon, but we must clarify the division of responsibility and pay more attention to monitoring mechanisms.'

Ms Ruth Stringer, the International Science and Policy Coordinator with Health Care Without Harm, put Nepal's experience with healthcare waste management into international context. 'We have technical solutions that will work in Nepal,' she said, mentioning autoclaves, biogas digesters, needle cutters and a range of other technologies. 'But these alone aren't enough.'

'That so few healthcare facilities are segregating waste shows that this is not a technical problem, it's a systems problem.'

She called upon the government to provide the impetus by ensuring proper monitoring and enforcement of standards, and upon everyone else within healthcare facilities — and outside of them — to do their part: 'We need action. All of us.'

Mr Roland Schäfer, Germany's Ambassador to Nepal, also struck upon the theme of cooperation. 'When German Development Cooperation started working on this topic five years ago, we tried to improve waste management within a single hospital — and found out that it is impossible.'

'The only way to improve waste management is by bringing together many different stakeholders, especially at the municipal level.'

Schäfer expressed hope that the processes which Germany is supporting in Sudur Paschchim Province through GIZ and KfW Entwicklungsbank will result in well-designed integrated waste management systems which benefit both healthcare facilities and the municipalities of which they are part.




Dr Jos Vandelaer, the WHO Representative in Nepal, drew attention to the fact that, worldwide, an estimated 15% of patients who are hospitalised develop one or more infections during their hospital stay.

'Developing an infection in the place where one goes for treatment shouldn't happen, but it does.'

The major underlying reason is lack of hygiene, lack of water, poor sanitation and inappropriate healthcare waste management. Over the past 10 years the Government of Nepal has succeeded in rapidly increasing sanitation coverage, but challenges remain. 'This is the right time for this kind of workshop,' said Vandelaer. 'Every person in Nepal must be engaged and be committed to spread positive social norms.'

Mr Khagraj Baral, Secretary of the Ministry of Health and Population, acknowledged the timeliness and relevance of the workshop. 'Healthcare waste and waste in general is a growing problem in Nepal,' he said. 'It is degrading our quality of life, and how we manage this problem is therefore very important.' Baral lamented the fact that the gap between 'knowing and doing' continues to be so large. He noted that most hospital owners and managers are aware of this problem, but the implementation of guidelines remains weak.

'Proper waste segregation in hospitals is quite simple, but we have not been doing it. We could already solve a lot of problems if we were following basic do's and don't's.'

Mr Bhanu Bhakta Dhakal, the Minister of Health and Population, alluded in his closing remarks to the contradiction which lies at the heart of the health sector: while health institutions prevent and treat illness, they can also be a source of harm. 'I have visited hospitals where patients are being made well, but the waste from their treatment is not being properly managed. As a result, many more people can become sick, even more than were treated in the hospital in the first place.' He acknowledged the need to modernise healthcare waste management systems in Nepal, and pledged the full support of the government to close gaps in the legal framework and to coordinate efforts across different levels of government. He ended his remarks by wishing participants a fruitful meeting:

'We expect that, over the next three days, you will draw appropriate conclusions and recommendations to reduce many of these risks and hazards in the future.'

Dr Roshan Pokhrel, Director General of the Department of Health Services, officially closed the inauguration ceremony by acknowledging the contributions of the many people working in the sector: 'Today we have shared not only our challenges, but also our positive experiences in environmental health and healthcare waste management.'

Previous page, clockwise from top left: → Mr Bogendra Raj Dotel, Ms Ruth Stringer, Mr Roland Schäfer, Mr Chudamani Bhandari
This page, clockwise from top left: → Dr Jos Vandelaer, Mr Bhanu Bhakta Dhakal, Dr Roshan Pokhrel, Mr Khagraj Baral

→ Ms Rita Joshi, Provincial Health Director of Karnali Province

→ A working group on chemical and pharmaceutical waste

→ Mr Supendra Karki, Heath Coordinator of Hetauda Sub-metropolitan City

GRAPPLING WITH A SHARED CHALLENGE: WORKING GROUPS, PLENARIES AND PANEL DISCUSSIONS

How can healthcare waste be safely integrated into municipal solid waste systems when most healthcare facilities still lack basic systems in place for segregating and treating hazardous waste?

Where do the responsibilities of healthcare facilities end and those of municipalities begin?

How can privately-run healthcare facilities be brought into integrated systems?

How should the different levels of government work together to set, monitor and enforce standards?

Seeking answers to these questions, attendees spent the next two days participating in a wide range of working groups and plenary sessions. International speakers from 10 countries, including Australia, Cambodia, India, the Philippines, Taiwan, and the United Kingdom, shared their experiences alongside speakers from across Nepal representing local and provincial governments, health-care institutions and non-governmental organisations. Sessions touched upon diverse topics, including:

> Regulation, governance, oversight, monitoring and enforcement of healthcare waste management

> Approaches to improving WASH in healthcare facilities

> Treatment and disposal of specific types of waste (chemical and pharmaceutical waste, liquid waste, e-waste, menstrual waste, faecal sludge management)

> Approaches to integrated healthcare waste management at the local level

> Strategies for creating climate resilient health systems, smart/green hospitals

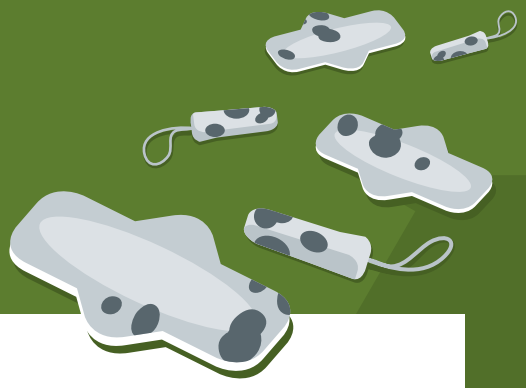
> Emerging trends in waste management in Asia

> Occupational health risks facing informal waste workers

Among the highlights of the workshop were back-to-back panel discussions which took place on the final day. The first focused on the policy framework for healthcare waste management and WASH, and featured officials from the Ministry of Health and Population, the Ministry of Forests and Environment, the Ministry of Water and Sanitation, and Sudur Paschchim Province. The second panel, featuring elected officials, a hospital director, a medical superintendent and an epidemiologist focused on concrete implementation experiences in these two areas.

Skilfully moderated by Dr Sushil Baral, the two sessions unleashed a torrent of questions and comments from members of the audience who wanted to add their voices to the discussion. The atmosphere in the hall was electric: one could not escape the conclusion that the topic of waste matters to people and that, until this workshop, there had been few outlets to discuss the political and technical aspects of the problem.

MANAGEMENT OF MENSTRUAL WASTE
GOOD PRACTICES



As Nepal's 'menstrual movement' continues to gain force, two years after the watershed MenstruAction Summit in Kathmandu, more and more women in Nepal have access to menstrual hygiene products. By one estimate, more than 120 million disposable sanitary pads are now used in Nepal every year. Where do they all go?

Ms Thérèse Mahon, a specialist in menstrual hygiene management (MHM) with WaterAid UK, says 'In general, waste is one of the least addressed aspects of menstrual hygiene management. As awareness about menstrual hygiene has risen, the reaction of many actors is to see sanitary pads as the solution.' In fact, the availability of clean menstrual management materials is only the first step: women and girls also need to be able to change these materials in private, as often as necessary; to wash themselves with soap and water; and to dispose of used materials in appropriate facilities, such as a dustbin with a lid.

The lack of options for the disposal and treatment of menstrual hygiene products is a growing problem in Nepal. Disposable sanitary products, many of which use super absorbent polymers, do not decompose easily and release toxic chemicals when burned at low temperatures. Moreover, when women and girls do not have access to appropriate facilities for disposal they may use the sanitary products for longer than recommended, putting them at risk of infection.

In a working group session conducted with **Mr Jan-Christoph Schlenk, an advisor with GIZ's Sustainable Sanitation Programme,** Mahon recommended that MHM initiatives promote informed choice of menstrual materials, including reusable products (e.g. cloth pads, menstrual cups) and compostable sanitary pads which are both lower cost and generate less waste. Schlenk highlighted the importance of national quality standards for menstrual products and raw materials, especially for biodegradable and compostable plastics. Both stressed that menstrual waste management needs to be integrated into the solid waste management service chain and that different disposal solutions need to be tested out.

Some local innovators are already on the job. Staff at HECAF360 have been exploring worm-based composting as a possible solution for the disposal of sanitary pads in Nepal. During the same working group session, **Ms Prerana Dangol** described the effects of vermicomposting on 12 different commercially-available sanitary pads. After 21 weeks, significant differences can be seen across brands and types: the most ecological friendly options decompose so completely that no traces of the original pad remain.

Mr Vivek Singh Thakuri, the Executive Director of MITRA Samaj, presented his organisation's Mitini initiative, a menstrual waste collection and disposal service which Mahon has described as 'groundbreaking.' MITRA Samaj has contracted with more than 70 restaurants and companies to provide them with specially-labelled sanitary bins and to collect and safely dispose of their contents. Since 2015, staff have processed more than 50,000 kilograms of waste in autoclaves. The proceeds from the initiative are used to provide sanitary products for girls in rural schools.

GIZ'S SUSTAINABLE SANITATION PROGRAMME

GIZ's Sustainable Sanitation Programme, which hosts the secretariat of the Sustainable Sanitation Alliance (SuSanA), promotes S2HSP's approaches and achievements in the area of MHM and WASH in healthcare facilities.

For the last five years the cooperation with S2HSP and the MHM Practitioner Alliance Nepal has ensured that activities in Nepal are in line with the global agenda and are linked to SuSanA's working group 'Sustainable WASH in Institutions and Gender Equality'. In addition, the programme is also supporting the adaptation of elements of the regional Fit for School Programme in South-East Asia to schools in Sudur Paschim Province. This includes the development of ICT materials, the implementation of behaviour change measures, advice on construction principles for female-friendly toilets and the introduction of a low-cost and water-saving handwashing facility, WASHaLOT 3.0.

https://www.susana.org/en/
http://www.fitforschool.international

→ Ms Nadira Khawaja (left) speaks with Dr Jos Vandelaer at the workshop marketplace.

→ Dr Paul Rückert (left) and Dr Elke Förster of GIZ (right), with Mr Mahesh Nakarmi of HECAF360

→ Mr Navraj Rawat

SHARING IDEAS AND SOLUTIONS: THE WORKSHOP MARKETPLACE

Many healthcare waste management solutions are already available in Nepal. One of the main goals of the workshop was to familiarise participants with them, and to encourage them to adopt these in their own communities and institutions. To this end, the workshop marketplace featured 20 stands set up by private companies, non-governmental organisations, recycling companies, and upcycling projects, each ready to share their experiences.

Among them were half a dozen biomedical technology distributors who were available over the course of the three days to answer detailed questions about everything from needle cutters, autoclaves and microwave sterilization systems to water purification systems and effluent treatment plants suitable for hospital complexes. Asked his impressions of the workshop, Mr Rajiv Bajoria, the Managing Director of JHS Analytic Traders, which specialises in autoclaves, was effusive:

'Healthcare waste is a small field, but it's growing fast. This event is great. Really great. There are so many people here, from all different sectors, and lots from outside Kathmandu. Thanks to this meeting, awareness about this issue will continue to go up.'

LOOKING TO THE FUTURE: WORKSHOP COMMITMENTS

As the workshop closed on the afternoon of December 12, the mood was optimistic and focused on the future. Three days of intense discussion had been distilled intoa set of 12 resolutions, which were presented by **Mr Chudamani Bhandari** on behalf of the workshop's technical working group. The commitments will form the basis for an action plan which will spell out specific responsibilities and activities for implementation.

Dr Paul Rückert, Chief Technical Officer with GIZ's S2HSP project, congratulated the Ministry of Health and Population for seizing the initiative and bringing people together from across Nepal to exchange experiences. 'It is really overwhelming to see so many people showing interest and committing themselves to action,' he said. 'Waste management and WASH are challenges, but the best part is that everybody can do something about them.' 'I'm leaving this workshop with a lot of hope!' He pledged GIZ's continued technical support in this area and called upon other development partners to get involved as well.

Mr Navraj Rawat, the State Minister for Health, signalled the government's support for the workshop's outcomes. 'The resolutions which have been adopted here must now be executed – for ourselves, for our society, and for a clean environment,' he said. 'The government is ready to facilitate and support these commitments to ensure a healthy life for our people. Each of us, whatever our responsibilities and whatever role we occupy, must treat this as a campaign. If we do this, we will get results.'

→ The Minister of Health, Mr Bhanu Bhakta Dhakal, is briefed on the water-saving handwashing facility, WASHaLOT 3.0.

→ Dr Sudan Raj Panthi, WHO and Mr Tirtha Kumar Sinha, GIZ

→ Top to bottom: Waste segregation supplies at marketplace; drama performance about healthcare waste; upcycled healthcare waste — mosaic

REFLECTIONS ON A PRODUCTIVE MEETING

Mr Tirtha Kumar Sinha, the senior technical advisor responsible for S2HSP's work on health governance, says 'The workshop was a clear success in terms of bringing together very different types of stakeholders. Healthcare waste management is not only a problem for the health sector. It requires an integrated solution, and we believe this message was heard loud and clear, including by decision-makers.'

Many commented on the fact that it was the first time since the transition to federalism that the different levels of government came together in a common forum to clarify roles and responsibilities. 'I found this meeting very fruitful,' said **Ms Uma Magar Thapa, the Deputy Mayor of Nepalgunj Sub-Metropolitan City.** 'There's been a lack of coordination on this topic, and finally we had a platform to bring everyone together. Local government has the main role to play in implementation, but we saw here that provincial and federal governments are ready to collaborate with us.'

The meeting was also motivational for many participants who had the opportunity to share their own experiences and learn from what others are doing. Those who are at the early stages of the journey to better healthcare waste management were introduced to core concepts, approaches and technologies that they can apply in their own communities; those who are further along also came away inspired. 'Our progress with healthcare waste management has been slow these last months, but we have no option but to keep moving forward,' said Uma Magar Thapa. 'Thanks to some of the presentations I'm leaving here with new ideas.'

With so many different types of institutions and organisations present, the workshop also helped to build and strengthen networks between individuals and groups who have thus far been working on the same challenge, but often in isolation. 'Everyone here is trying to do something on the same set of issues,' said **Ms Nadira Khawaja, the WASH Sector Leader with SNV Netherlands Development Organisation.** 'It's very good to be together for the first time since federalism.'

Finally, the high-level political support for the meeting, as well as for the 12 workshop resolutions, signals a new degree of commitment to improving waste management in the health sector. There is reason to hope that the workshop may have helped to catalyse a broader health-care waste management movement in the country.

12 WORKSHOP COMMITMENTS

SEE ANNEX PAGE 54

Experiences

From small health posts to large teaching hospitals, from municipal governments to private companies, Nepal is home to a growing community of healthcare waste management champions. Here are some of their stories.

→ Tara Subedi, Senior Auxilliary Nurse Midwife, and Jamuna Sing Thakur, Assistant, at the Budhanilkantha Health Post

MAHESH NAKARMI
co-founded the Health Care Foundation Nepal (HECAF) in 1994. The organisation has since evolved into one of the leading providers of appropriate technology solutions for environmentally sound healthcare waste management systems in Nepal and other low-resource countries. In 2020 HECAF became the Health Environment and Climate Action Foundation (HECAF360).

THE TRAILBLAZER

'I don't like to copy what other people are doing. I like to work in the gaps where there are problems no one else has managed to solve. That's how I got involved with healthcare waste management.

I was the first one to use autoclaves to treat healthcare waste in Nepal. That was in 1999, and it was a major milestone for public health in our country. Our first autoclave-based programme was instituted at the National Kidney Center (NKC), which HECAF established to make dialysis services available to people in Nepal. NKC was clearly helping a lot of people, but one day I saw staff putting waste contaminated with blood into the municipal waste system. I realised that, despite our good work and intentions, we were putting many people at risk through the waste we generated: community members, people living along the route used to transport waste to the municipal dump, those living near the dump, and the waste workers who are in the dump every day.

I started researching our options and discovered that all the guidelines recommended incinerating healthcare waste. I'm not a medical person – I'm an engineer – but I was worried about the air pollution, toxic ash and gases that burning waste produces. After doing more research, I concluded that autoclaving the waste would be a far better solution.

→ The staff of HECAF360

→ Safe handling of waste from the coronavirus evacuation flight

It took a while, but eventually I managed to get my hands on two autoclaves which were lying around, unused, somewhere outside Kathmandu. We brought them here, fixed them up, and started using one to disinfect medical waste and the other to disinfect equipment and instruments.

People thought I was crazy: "What's this engineer doing, putting waste into an autoclave?"

At some point, I stopped trying to convince other people, but I kept autoclaving NKC's healthcare waste. I was sure it was the right thing to do.

In 2007, I was invited by the WHO to attend a big international meeting on healthcare waste management in Geneva. There, I met experts from Health Care Without Harm and other international organisations. They encouraged me to keep working and to share my method with other hospitals in Nepal. I tried. I was so passionate. I met with all the hospital directors in Kathmandu and even travelled to other cities in Nepal. No one listened. No one understood the issues. One hospital director even threw me out and told security not to let me back in!

Finally, in 2010, the director of Bir Hospital, Dr. Buland Thapa, called and said he'd heard I had ideas about how to handle waste management differently. We agreed that I would set up and run a system there, based on the NKC model, free of cost.

I didn't have any staff or money, but I got office space at the hospital, recruited a group of interns, and taught them what to do. Within one year, we'd made such a big change no one could believe it.

When people are sick, they have to be diagnosed – through blood tests, X-rays, or CT scans – before they can be treated. I do the same thing with hospitals:

My goal is to diagnose the sickness of the hospital and to treat it to make the institution healthy.

I developed an assessment methodology, which I've trained my staff to use, that helps us understand what's going on at the hospital. We measure the volume and types of waste produced, and we estimate the value of this waste if it were separated and sold. We look at staff attitudes and their waste handling practices, and lots of other things. After all of that, we propose a system for handling waste differently, following Zero Waste principles.

To date, HECAF360 has completed more than 100 waste assessments and has introduced new waste systems at 10 big hospitals in Nepal.

Our system also serves as a model in other countries. It's hard work. To succeed you have to go right into the "veins" of the system. You've got to be physically present at the hospital, every day.

→ Presenting HECAF360's approach to worm-based composting of menstrual hygiene products

It's not just about autoclaves, or building new waste collection facilities at the hospitals, or buying segregation buckets. It's about changing the mindset of staff. That's the key.

My philosophy is that you can make a real difference if you have five things, which I call A-B-C-D-E: attitude, boldness, commitment, dedication and enthusiasm. I build these five things in my team, and then we build them in the staff of the hospitals where we work.

HECAF360 has grown a lot. We now have a wonderful team of 15 staff, plus interns. We don't work only in hospitals. We're also in schools, nunneries, refugee camps in nearby countries – anywhere where there are waste problems that need a solution.

Our ideas are evolving every day. Our solutions are simple and down to earth. New things keep coming up. The waste problem is so big, you can't imagine. There are still lots of issues to solve.'

www.hecaf.info

→ Middle: Teaching pupils to segregate waste
→ Bottom: Planning a waste assessment with the medical superintendent of Surkhet Provincial Hospital

A green oasis in urban Kathmandu

BUDHANILKANTHA HEALTH POST

Staff at the Budhanilkantha Health Post are proud that their facility has developed a reputation for good quality health services. They know that nearby hospitals often refer discharged patients to Budhanilkantha for routine follow-up care, and they are quite sure they know why. For the past several years, the team at the health post has been on a mission to improve cleanliness, hygiene and sanitation at the facility — and the results have not gone unnoticed.

→ The waste collection and treatment room at Budhanilkantha Health Post

→ Clearly labelled waste bins are available throughout the health post.

→ Staff help themselves to safe drinking water.

A WELL-ORGANISED HEALTH POST

The Budhanilkantha Health Post strikes the visitor as tidy and well-organised. Color-coded buckets for biodegradable, non-biodegradable and hazardous waste are positioned in every room. Liquid soap is available at every sink and in each of the three toilets, one of which is accessible for persons with disabilities. In a small waste collection room, segregation compartments hold different types of waste and a 20-liter autoclave sits on the floor. Rubber gloves, a rubber apron and a face mask hang on a nail on the wall.

In the waiting area, a large, bright-blue drinking water dispenser sits on a small table, looking like a rocket poised for take-off. Next to it are a pitcher and drinking glasses. The filtration system not only offers a supply of safe drinking water, it also helps to reduce the number of disposable plastic bottles used by staff and patients.

Outside the main entrance to the health post is a lush nursery, overflowing with plants, flowers and gardening supplies. The income which the health post makes by leasing the land to the nursery owners is reinvested in health services. The welcoming green space makes the health post feel like a tiny oasis in the midst of dusty Kathmandu.

A PROCESS OF CONTINUOUS IMPROVEMENT

It was not always this way. Five years ago, there was limited access to safe drinking water at Budhanilkantha. Soap was frequently unavailable and there were no toilets which could accommodate patients with disabilities. All the waste from the facility was mixed together and burned outside in the yard, where the nursery now stands, releasing toxic smoke into the neighborhood.

The team at Budhanilkantha realised they could do better. In 2016, they made a decision to prioritise hygiene, sanitation and cleanliness in the facility. Their efforts received a boost in early 2019, when Budhanilkantha was selected as one of seven health posts in Nepal to pilot the Water and Sanitation in Health Facilities Improvement Tool (WASH FIT). Launched by WHO to help healthcare facilities reach the goal of universal access to WASH services by 2030, WASH FIT helps teams to assess and manage risks related to insufficient or unsafe water supply, inadequate sanitation, and poor hygiene practices.

With support from LEAD Nepal, a sustainable development organisation working on behalf of WHO, Budhanilkantha set up a committee which assessed risks in the facility's water supply and water quality, hand hygiene practices, cleaning and disinfection procedures, toilets, and waste management practices. It then began to implement improvements, step by step, focusing first on gaps which pose a high risk, but are easy to address. The committee meets every month to review progress and to identify new improvements.

→ Jamuna Sing Thakur on the spot where she used to burn the health post's waste

A VIRTUOUS CIRCLE

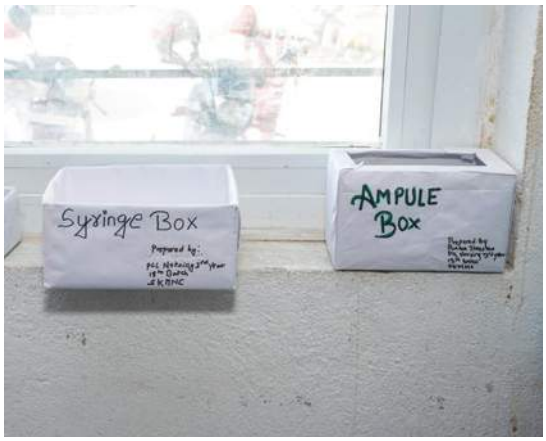
The team at Budhanilkantha takes WASH seriously, and believes that there is no such thing as a well-managed healthcare facility without well-managed WASH services. They see that their incremental efforts to improve water, sanitation and hygiene — including waste management using no-burn technologies — have improved the functioning of the facility overall. Budhanilkantha has become a safer place for its staff, for patients and for local residents, who now look down upon a nursery rather than an open burn pit.

The team's initial successes have fed an appetite for more improvements. The health post is currently turning a small outbuilding into a waste collection and treatment center, so that they can store larger volumes of segregated waste — and thereby secure better rates from scrap dealers. They'd like to dig a deeper well to reduce the turbidity of the water they use for cleaning and they dream of cooking tea using gas from their own biogas plant. Until such time as they can tackle these bigger projects, however, they will keep the focus on continuously improving cleanliness and hygiene. They know that they have a good reputation to uphold.

THE HEALTHCARE FACILITY MANAGER

MILAN UPRETY
has been the Facility In-Charge at Budhanilkantha Health Post since 2018. Under his leadership, the health post as successfully used the World Health Organization's WASH-FIT tool to improve its WASH services.

'Quality is the guiding principle for our health post. This goes beyond simply delivering good preventive and curative services. Good hygiene, sanitation and waste management are crucial for infection prevention. When we assessed the situation, we saw there were potential risks for staff, visitors and the larger community in the way we were doing things. We realised that if we were a bit more active, we could improve the situation in our health post and become a good example for others. This goes beyond just WASH, actually. Managers have to make sure that the facility is working to a range of different standards. This is what we've been trying to do.'



Clockwise from top left:
→ The waste collection room
→ Drinking water dispenser in waiting area
→ Handwashing station
→ Boxes for used syringes and ampules
→ Nursing staff in a consultation room

Revolutionising the approach to waste management

TRIBHUVAN UNIVERSITY TEACHING HOSPITAL (TUTH)

TUTH is a sprawling facility in the heart of Kathmandu. Some 2300 outpatients stream through its doors every day, and 87% of its 800 inpatient beds are occupied at any given time. TUTH generates huge amounts of waste: more than30 tons of it annually.

→ Sorting non-hazardous healthcare waste in the waste collection center

→ Sorting non-hazardous healthcare waste in the waste collection center

TURNING THE PAGE ON A SERIOUS PROBLEM

Ten years ago, there were essentially no systems in place to manage this waste. Everything was thrown into common buckets in the wards and public areas, and then transferred in plastic bags to an unsecured area on the hospital grounds. Some ended up in an incinerator; the rest was collected by the municipality and taken to the dump. Because hazardous items, such as syringes and surgical dressings, were mixed in with general trash, nearly the entire waste stream was contaminated. Everyone who came in contact with the waste — hospital staff, patients and visitors, municipal waste workers, informal waste workers at the landfill, and the general public — was potentially at risk. Nearly two-thirds of clinical staff at TUTH reported having experienced needle stick injuries. Children were seen playing with syringes on the hospital grounds.

In 2014 the hospital management decided it needed to change course. Inspired by the pioneering system at Bir Hospital, TUTH worked with HECAF360 to introduce a systematic approach to waste management, from segregation at source through to treatment and disposal, using environmentally friendly, no-burn technology.

EVERYONE'S CONCERN, EVERYONE'S JOB

The hospital started by conducting a detailed waste audit, which showed exactly what categories of waste it produced and in what volumes. It set up a waste management committee, which brought together the hospital director, department heads, the hospital engineer, nurses and auxiliary staff, and support staff. It procured color-coded buckets and waste bins to segregate waste, trolleys to transport it, and autoclaves to treat infectious waste. It built a simple waste treatment and collection center on hospital grounds, with separate entrances for infectious and non-infectious waste, and storage units to hold sorted waste prior to sale. It contracted with a large scrap dealer in Kathmandu to buy 22 different categories of recovered waste, and hired an engineer to build a two-chambered biogas system fed by pathological waste and food scraps. Most importantly, it began to systematically teach nurses, doctors and support staff how to safely handle healthcare waste in the wards and in the waste collection center. By the end of 2019, more than 900 employees had been inducted into the new system, which was operational in 22 of the hospital's 33 wards.

A SAFER, CLEANER HOSPITAL

Rather than making waste a problem for a select few, TUTH has made it everyone's responsibility. Patients who are admitted to hospital wards, and the visitors who come to see them, are also told about the waste segregation system and asked to do their part. As a result, the hospital has become a safer and more pleasant place to work — and to receive medical care. The frequency of needle stick injuries has dropped dramatically — none have been reported in the past two years – and hospital staff appreciate that the wards and grounds are cleaner, with fewer flies.

TUTH has put itself on the path to Zero Waste: under the new system, only 10% of the waste it produces cannot be composted or sold. As a result of waste separation and increased awareness among staff, the overall volume of waste the hospital produces per patient has also dropped by nearly half since 2014. In 2016, TUTH joined the network of Global Green and Healthy Hospitals, an international network of healthcare facilities committed to reducing their environmental footprint and promoting public and environmental health. Once all wards are covered by the new system, the hospital's incinerator will be decommissioned.

THE HOSPITAL WASTE MANAGEMENT COORDINATOR

DHARMA LAXMI SHRESTHA
is an Associate Nursing Controller and the Hospital Waste Management Coordinator at TUTH.

'I've been working as a nurse at this hospital for 37 years. In the past we didn't have a systematic way of dealing with waste. On the wards the infectious and non-infectious waste got mixed together. We had a box for sharps, but that's it. Needle sticks were common. Everything has changed now. The nephrology department was the first one to adopt the new system, others have followed one by one. There are 11 more wards to go until we have full coverage. The situation is better now, and we get good feedback from staff. It's become safer for us to do our jobs. Nurses are the backbone of this system. They understand why it's needed and know everything about the different types of waste that are produced here.'

THE WASTE MANAGEMENT IN-CHARGE

DEBA KUMARI THAPALIYA
is the Waste Management In-Charge at TUTH. She's been working as a nurse at the hospital for 23 years.

'Last year I was reassigned from the de-addiction ward to the waste collection center. I'm responsible for managing eight full-time staff who collect, treat, sort and process waste for sale. We have to make sure that everything is properly separated, otherwise it's not worth as much when we sell it to the scrap dealers. The metal caps on the ampules are the most valuable, they're worth 115 Rupees per kilo. Saline bottles and syringe casings are also worth a lot. Normal plastic bottles aren't, but they're what we have the most of. There are so many of them! We need to reduce the volume of these, but at the moment we don't have an alternative. I'm still quite new to this, but what I find good is that we're preventing infections and protecting the environment at the same time we're making money for the hospital.'

A NEW REVENUE STREAM

The well-organised waste management system is a financial winner for the hospital. As Dr Prem Khadga, the CEO of TUTH, proudly declares:

'Instead of spending money to get rid of waste, we're now earning!'

TUTH currently makes about NPR 80,000 (EUR 630) per month on sales of recovered paper, plastics, glass and metals. Thanks to the biogas being produced through the composting system, the hospital saves NPR 5,800 (EUR 45) a month on gas cylinders for its kitchens. It is also notching up huge savings on waste collection fees: in the past municipal trucks would come two to three times a day, at a cost of NPR 6,000 (EUR 47) per load. Now they come once every few days, at most.

The volume of waste being recovered at TUTH is now so high that more space is needed to sort, store and weigh items for sale, and more staff are needed to transport, treat and sort it. With support from WHO, the hospital is constructing a two-story waste processing facility on the hospital grounds which will double as a training center, where students in pre-service training and teams from other hospitals in Nepal and beyond can see a full-fledged healthcare waste management system in action.

tuth.org.np

Clockwise from top left:
→ Autoclave used for treating hazardous healthcare waste
→ Staff segregate waste in the wards.
→ Dr Prem Khadga, CEO of TUTH
→ Trolley with waste segregation buckets

THE STUDENT

SUJATA AWAL
learned about healthcare waste management during an internship at HECAF360. In 2019 she joined the staff of the organisation.

'I'm working towards a Masters degree in environmental science. My thesis is about the disposal of sanitary pads. To be honest, I got into this field by accident, but I'm so glad I did. I've found what I want to do in life. Everywhere you look in Nepal there's pollution and waste, but healthcare waste is a special problem. What's strange is that you can't learn about healthcare waste management in the classroom. It's not packaged up and handed to you, like some subjects are. The only way you can learn is by seeing and by doing. You have to touch the waste and separate it yourself. It was hard at first, but it's made me confident.'

Nepal's first Central Treatment Facility for healthcare waste

POKHARA CENTRAL TREATMENT FACILITY

In December 2016 Nepal's first Central Treatment Facility (CTF) for healthcare waste opened its doors next to the municipal landfill in Pokhara. The CTF is the brainchild of Santosh Poudel, a social entrepreneur with a passion for waste management, who was inspired by CTFs he'd seen in neighbouring countries and set out to establish one in his hometown.

→ Staff in the sorting area of the Central Treatment Facility

→ One of two autoclaves for treating healthcare waste at the Pokhara CTF

TACKLING AN URGENT PROBLEM THROUGH A PUBLIC-PRIVATE PARTNERSHIP

Working in partnership with the municipality, which endorsed the idea of a Central Treatment Facility (CTF) and leased him a parcel of land, Santosh Poudel built and equipped a warehouse-like building which is divided into separate sections for handling infectious and non-infectious waste. Infectious waste arrives in a dedicated truck at a special door on one side of the building, where it is unloaded by staff and treated in autoclaves before being sorted and combined with non-infectious waste. General healthcare waste arrives, in a different truck, on the other side of the building, where it is sorted by type. Recyclable items are weighed and packed up for sale to scrap dealers; anything that cannot be sold is brought to the landfill.

The CTF currently processes five tons of waste per day from more than 150 healthcare facilities in and around Pokhara, including large medical colleges, public and private hospitals, laboratories, clinics, pharmacies and nursing homes. Clients can choose from among a variety of service packages, from the most basic (regular collection of infectious and non-infectious waste) to the most comprehensive (complete in-house waste management, 'from bucket to CTF').

In 2018 the city of Pokhara made it a requirement that healthcare facilities have a contract with the CTF in order to have their operating licenses renewed. This is an important policy for ensuring compliance with healthcare waste management guidelines that could be easily repeated in other municipalities.

THE ENTREPRENEUR

SANTOSH POUDEL
is the founder and CEO of Waste Service Pvt. Ltd in Pokhara. In 2018 he was one of a select group of young innovators invited to address the Science, Technology and Innovation Forum at the United Nations in New York.

'I got involved with waste when I was active in student politics. A group of us lobbied the city to buy more vehicles to collect rubbish that was piled up in the streets near the lakefront. They said there was nothing more they could do, so eventually we started raising money from local businesses, bought a tractor, and hired a driver to bring waste to the landfill.

Two years later I got my first job, as the managing director at a waste management company. I helped to make their operations more professional, set up a regular collection schedule and expanded coverage. Gradually I decided that I wanted to be an entrepreneur in this sector. I took part in training programmes in the Netherlands, Switzerland and the United States and got more and more interested in sustainability and the problem of healthcare waste. Through a UNDP project on urban environment, I had the chance to visit CTFs in Bangladesh and India. After I saw them I was sure that Pokhara could do this, too. It took me a year to convince the local government, but eventually they agreed.

Waste is a deprived sector. When I told my mother about the job I got with the waste company, she had a negative reaction. Lots of people do. They make assumptions about people who work in waste. But things are changing. I was the first to start my own company in Pokhara, but since then five more have followed in my footsteps. They see that it's possible to be successful. And my mother now proudly tells everyone that her son works in waste management.'

→ Preparing hazardous waste for treatment in the autoclave

GOOD WASTE MANAGEMENT CREATES GOOD JOBS

The CTF model in Pokhara has proven to be financially viable, and is also creating good, stable jobs for local residents. Twenty-two staff, including drivers, waste handlers, autoclave operators, account managers and bookkeepers, are involved in running the CTF and working with its clients. Employees who work directly with waste receive training, personal protective equipment (PPE), vaccinations, and regular medical check-ups. What's more, the wages are competitive enough that some young people who might otherwise seek work abroad have chosen to remain in Pokhara, closer to their families, and to work in waste management.

PAVING THE WAY FOR OTHERS TO FOLLOW

The CTF is in its fourth year of operation and remains a work in progress. However, the benefits of the approach have become clear — and are attracting attention both in Pokhara and further afield. Healthcare workers across the city and interested parties from other municipalities have become aware of the CTF and have visited to see how it works. The site manager at the municipal landfill next door appreciates that, as a result of the segregation and separate collection of healthcare waste, informal waste workers at the landfill are now protected from sharps injuries which used to be common occurrences. Municipal officials are satisfied to see that the CTF is providing an answer to a long-standing problem in the city, while at the same time putting Pokhara on the map as an example from which other municipalities can learn.

Top right:
→ Recyclable wasted packed up for sale

Left from top to bottom:
→ Staff in the office manage contracts with more than 150 clients.
→ A guide to safety labels and waste segregation rules
→ Hazardous healthcare waste is collected and transported separately from general healthcare waste.
→ Sorting empty saline bottles for recycling

Redesigning solid waste management as a shared responsibility

NILKANTHA MUNICIPALITY

The administration of Nilkantha Municipality, in Dhading District, is getting serious about waste management. Like many communities in Nepal, the municipality finds itself caught between competing pressures: the volume of waste is growing, existing methods for managing it are inefficient and harmful, and citizens are looking to local authorities for solutions.

→ Municipal solid waste collection in Dhading Besi

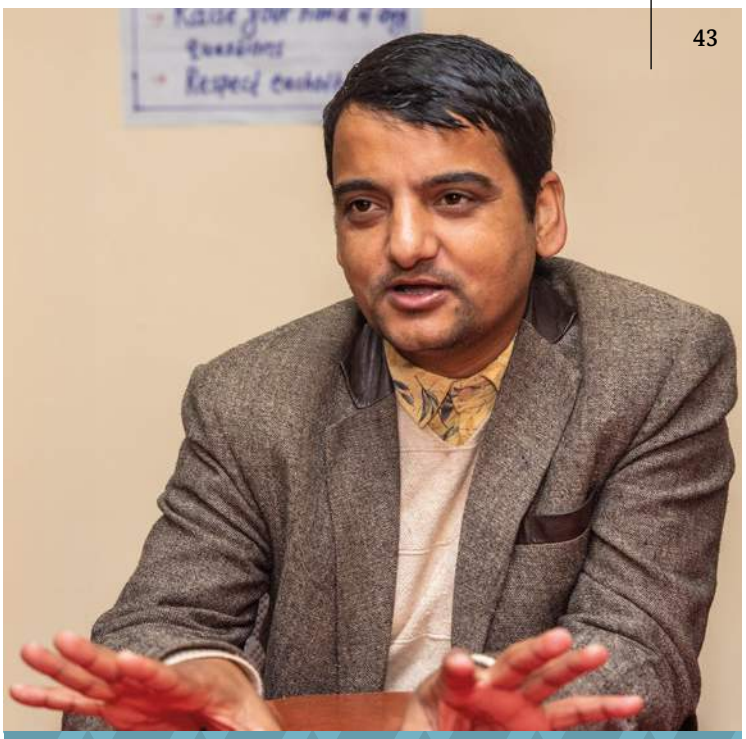
→ A privately-run material recovery center, where recyclable items are sorted prior to sale

OUT OF SIGHT, OUT OF MIND

Since mid-2018, with support from GIZ through the S2HSP project and the Capacity Development Support to Governance project, the municipality has developed a vision for a more environmentally and economically sustainable approach to waste management. For this vision to be realised, however, the producers of waste — including households, businesses, healthcare facilities and other institutions — will have to play a more active role.

This will be quite a change, because at present Nilkantha's waste management system does not require much from those who use it. In return for a modest monthly fee, approximately 1800 households in Dhading Besi, the largest town, have their waste collected twice a week by a private company (households in other parts of the municipality have no waste collection service). Segregation is not required. Everything gets bagged up together and thrown into the back of the truck, which brings the mixed waste to an unfenced dumping site about five kilometers outside town. There, a small group of workers separates out certain items that are clean enough to be recycled, packs them up, and transfers them to a material recovery center where they are held until scrap dealers come to buy them. Everything else is left behind, slowly absorbed by the forest and the river which runs through it.

The lack of waste segregation at source not only hampers resource recovery, it also allows some unsafe practices to continue in the shadows. In addition to Dhading Hospital, which since last year has been handling its own waste treatment and disposal, there are 23 other healthcare facilities in the municipality, about half of them privately run. Although they are not permitted to put out hazardous waste for collection, waste workers often encounter syringes and other types of biomedical waste hidden in the general refuse. All of this, too, ends up in the dumping site. Safely incorporating healthcare waste into a new integrated waste management system is one of the main challenges the municipality is working to solve.



THE MUNICIPAL PLANNER

DEEPAK KOIRALA
advises the administration of Nilkantha Municipality on solid waste management.

'We've made it a top priority to create a managed waste system, but we need everyone's help to do it. Citizens think it's our responsibility to solve this problem, but we can't do it alone. We have to inspire people to work with us.

We intend to introduce waste segregation at household level, but for this to work people first have to be sensitised and trained. We plan to work with as many different community organisations and structures as we can to educate people. Much of our project budget for the coming year will be spent on a public awareness campaign. Right now the main problem for us is not finances, it's lack of understanding.'

THE PUBLIC HEALTH OFFICIAL

SHIVA RANA
is the sub-coordinator in the health unit at Nilkantha Municipality. Before joining the municipal administration he worked at the Dhading District Hospital.

'When I was working as a public health inspector at Dhading Hospital I was directly involved with the set-up of the new healthcare waste management system, from the initial waste audit right through to the development of the implementation plan. The support we received from GIZ was so important, it got the hospital onto the right track.

Now we need to do something similar at the municipal level. Waste from municipal healthcare facilities has to be combined and sterilised at a central treatment facility. We should also use the hospital as an example for others, to show how waste segregation and treatment works. As the municipality's integrated waste system moves forward, the hospital will also benefit. It will be able to get a better price for its recyclable waste if it's part of a bigger system.'

A BLUEPRINT FOR THE FUTURE

In 2016 the municipality set up a waste management task force to study existing models for solid waste management and to come up with a strategy and work plan appropriate for Nilkantha's size, technical capacities and resources. What emerged is a blueprint for an integrated approach to waste management, implemented through a public-private partnership, in which resource recovery and recycling will play a central role. The plan which has been drawn up has the full support of the mayor, and the annual budget allocation for waste management has increased from 3 million to 8 million Rupees. The municipality knows where it wants to go and is now figuring out how to get there, step by step.

One piece of the puzzle relates to infrastructure. The dumping site needs to be replaced by a new sanitary landfill, and the search is underway for a suitable parcel of land. The municipality plans to create an integrated waste management center close by, comprising the material recovery facility and a large-scale composting plant. A second piece of the puzzle relates to healthcare facilities. Waste segregation and treatment are now running quite smoothly at the Dhading District Hospital, which is managed by the province, but there are 11 other public healthcare facilities under municipal authority and 10 private facilities where healthcare waste management systems are less developed. The municipal health unit has supplied mini-autoclaves to four of the public health posts in remote rural areas so that they can sterilise their infectious waste before disposing of it locally, in a pit.

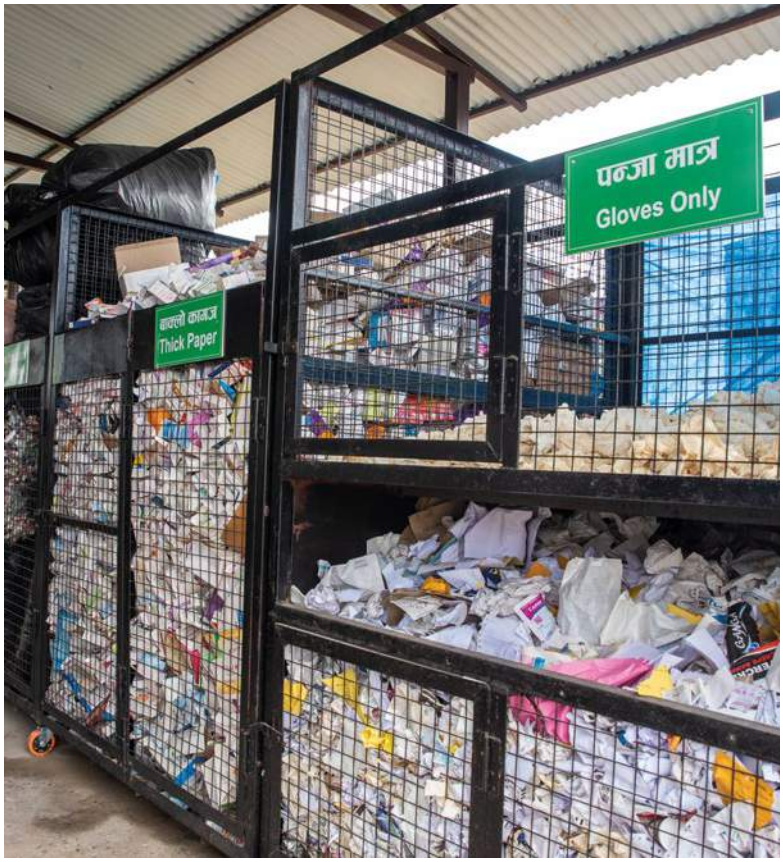
It intends to set up a central treatment facility at the future integrated waste management center. Waste from the other seven public facilities, as well as the private institutions, will be treated before being combined with the municipal waste stream.

The third piece of the puzzle — mandatory waste segregation at source — is in some ways the most challenging, but it is also the prerequisite for everything else. Until people understand the need to segregate, and start doing it regularly, it will not be possible to recycle resources at a larger scale and the volume of waste being dumped or sent to any new landfill will continue to grow. For this reason, public awareness and sensitisation is the next step. This year, the municipal administration will begin requiring households in Dhading Besi to segregate biodegradable and non-biodegradable waste. In parallel, it plans to construct the composting plant and re-locate the municipal recovery center so that it can process and store a greater volume of recyclables.

Deepak Koirala, the municipal advisor who is driving forward the design and implementation of the new integrated waste management plan, says

'When a tailor is making a suit, he takes the measurements, prepares each of the individual pieces and then joins them together. That's where we are. We know what we want the suit to look like and we're starting to stitch the pieces together.'

http://nilkanthamun.gov.np



Closewise from top left:
→ Waste storage compartments at the Dhading District Hospital
→ A needle cutter in the outpatient department
→ Shree Maya Tamang, the autoclave operator, in the hospital's new waste treatment center

Local development, powered by waste

WALING MUNICIPALITY

Twenty years ago, Waling regarded waste as nothing more than a problem to solve. The town paid salaries to 52 sweepers who collected waste from the streets and dumped it on the banks of the Aadhikhola River. The minute the streets had been swept, the next wave of rubbish began to appear. People had no incentive to keep the sidewalks in front of their homes or shops clean, because sooner or later the sweepers would do it for them. Meanwhile, the dumping site grew ever larger and the river became clogged with waste.

→ Staff at the Waling Municipality Resource Center

→ Hazardous healthcare waste from across the municipality is treated at the Primary Health Center.

NO LANDFILL, AND NOTHING THROWN AWAY

The Waling of two decades ago is long gone. The municipality no longer employs sweepers, the Aadhikhola River is fit for swimming and a bike path is about to be built right through the former dumping site. The trick? A massive change in mindset from viewing waste as a 'problem' to viewing it as a 'solution' to other problems. The Waling of 2020 offers a glimpse of what can happen when waste is harnessed as a resource for local development.

Waling does not have a landfill or a dumping site: virtually everything is composted or recycled. The Waling Municipality Resource Center is the heart of the action. Segregated waste collected from households, businesses and other institutions is brought to the complex and further sorted by sub-type. Domestically-produced glass in one pile, foreign-produced glass in another, plastics of different types, cardboard, paper, foil wrappers, food scraps, hair, sanitary pads. Healthcare waste comes here, too. Infectious waste from public health posts and private healthcare facilities is treated in the autoclave at the main Primary Health Center and then combined with the general municipal waste stream.

Waste is now a business in Waling, and the municipality sells its recovered resources to the highest bidder. Last year it made NPR 8.2 million (EUR 65,000) on sales, compared to the NPR 1.2 million (EUR 9,500) which it spent to collect, transport and prepare waste for sale. These revenues are reinvested in the priorities outlined in the municipality's mid-term development plan — schools, roads, infrastructure, digital technology, health services, water supply — which is linked to the Sustainable Development Goals.

Top to bottom:
→ A needle cutter
→ Treated intravenous tubing, ready for sale
→ Sorting general household waste at the Municipality Resource Center

THE MAYOR

DILIP PRATAP KHAND

was elected mayor of Waling Municipality in May 2017. He previously served for many years as deputy mayor.

'Over the next ten years we want to turn Waling into a "smart city." What does this mean? Greater use of technology, providing top-notch education to young people, and making sure that every household is economically productive. We want to pull our scattered population together by providing better access to services. We have a municipal development plan for the next 19 years. There are 18 different social development committees working on it and we're monitoring 106 indicators to track our progress. The plan was developed in consultation with our citizens, through the neighborhood committees. So someday, if I'm no longer in office, the next mayor can follow the plan.

Waste is connected to everything. If we manage waste well, we'll be healthier, have cleaner water and will develop our nation. Everyone has to take ownership: we make sure every household sweeps its own sidewalk and segregates its waste. When people segregate, they start to see waste as a resource.

We want our citizens to be able to propose solutions to problems. Five hundred children visit our Innovation Lab and work with engineers, scientists and other experts on everything from building sensors and drones to figuring out the best way to compost. Local government has to connect research and learning with local development challenges! We have to activate students, get them thinking, and help to make their minds sharp. If we can do this, then Waling will be developed.'

TOWARDS A CIRCULAR ECONOMY

By unlocking value from its waste stream and channeling it back into local development, Waling Municipality already embodies some of the core principles of the circular economy. But the waste revolution is not yet over: the municipal administration has some big plans in mind for the coming years.

Next to the Recovery Center, under a pavilion, six enormous composting stalls made of concrete have been built for biodegradable waste. Young people involved with the town's 'Innovation Lab' — an open space for experimentation and problem-solving — are designing experiments to find out whether worms, fly larvae or cockroaches are the best composting method. The liquid fertilizer and compost produced in the chambers will be sold to local farmers. (Nothing is given away in Waling, as this would undercut the message that everything has value.)

On the open land just next to it, the municipality plans to build a faecal sludge plant. The biogas produced from the plant will power a plastic shredder and a mixing chamber where shredded plastic can be added to hot asphalt and bitumen to create road-grade tar. It turns out that melted plastic is an excellent binding agent; 'plastic roads,' which are becoming increasingly common in India, are more durable and flexible than standard paved roads.

Transforming the municipality's plastic waste into paved roads would help local authorities achieve their goal of pulling a scattered population closer together — many of Waling Municipality's 310 villages can only be reached with great difficulty — and would also create jobs. For now, the idea will be tested out on a small scale. But if it works? The Mayor of Waling wants to build a bitumen plant, buy plastic from neighboring municipalities and then sell it back to them in the form of tar so that they can pave their own roads.

http://walingmun.gov.np

Top from left to right:
→ Newly built composting stalls for biodegradable waste
→ A plastic shredding machine

Middle from left to rigth:
→ A three-dimensional model of Waling Municipality used during local planning meetings
→ Dilip Pratap Khand, the mayor of Waling, and his innovation advisor, far right, welcome visitors from GIZ

Bottom:
→ A partially-built drone in the Waling Innovation Lab

THE GREEN INNOVATORS

A growing number of young entrepreneurs in Nepal are convinced that the future is green — and that innovative new business models can accelerate its arrival. Shaped by circular economy concepts and a commitment to reducing the extraction of new resources, social enterprises focused on repairing, reusing and recycling products have begun to spring up, particularly in the Kathmandu Valley.

SHUBU TEWARI
is a co-creator of SabKo Phone, a start-up founded in 2019.

'The idea behind SabKko Phone is to prevent the millions of cell phones that are imported into Nepal every year from ending up as e-waste. We make it more efficient for people to get their phones repaired — they can get quotes online, and we offer free pick-up and delivery — and we also buy used phones. The ones we can refurbish, we then re-sell. The ones we can't, we safely dismantle for spare parts to use in other repairs. Anything we can't reuse, we store for recycling.

I have a legal background and have taught environmental law here in Nepal. Many of my students start off thinking it's impossible for a country to develop and to be environmentally conscious at the same time. They believe that there's no space in Nepal to combine these ideas. We want to show that this isn't true! We're trying to make SabKo a model business — one that is ethical, honest and working in a carbon neutral manner.

Nepal imports virtually everything from abroad. And these things we import, like phones, have value. When their screens crack or they stop working, they may seem useless, but something can still be done with them.

We have to do a better job reclaiming value from the things around us and reinvesting it here at home.

If we can shift the demand from new, imported phones towards locally refurbished phones by even five percent, more than a billion Rupees a year that are currently going abroad would remain here in Nepal.'

https://sabkophone.com

→ Safely dismantling e-waste at Doko Recyclers

PANKAJ PANJIYAR
is the Chief Operations Officer of Doko Recyclers and leads the company's work on e-waste.

→ Drinking glasses made from wine bottles are part of Doko's range of upcycled products.

'Doko Recyclers was founded in 2017. It's the brainchild of a group of professionals from diverse backgrounds – business, development economics, engineering – who returned from abroad because they wanted to help solve social problems here in Nepal via sustainable business models. They looked at the challenges and opportunities in waste management and decided to start something new.

Doko's main focus is dry recyclable waste. We buy paper, plastic, metal, glass and e-waste from more than 100 institutional clients and 5000 households in Kathmandu. Recently we added organic composting solutions. We have also launched an upcycling range called Tatwa – an initiative to responsibly repurpose discarded materials into beautiful, useful, high-value objects.

Our goal is to change the whole perspective on waste management and move toward a circular economy where we are responsible for segregating and reusing waste as raw materials.

We conduct awareness workshops for children and young people, teaching them how to segregate waste and how to implement recycling at home and at school. If we can reach kids when they're young, they can spread what they've learned in their families, their communities and society at large. As a society, we must come to recognise that just because a material has lost utility in its present form does not mean it no longer has utility. It simply needs to be recycled to gain a new form and function.

It makes us happy that we are finding solutions for waste that would otherwise end up at the Sisdol landfill. But ultimately we don't just want to collect and segregate waste and sell it to buyers elsewhere – we want to have the option to re-process it here in Nepal. For this we need investors and the transfer of foreign technology. There's a big role for the government to play in terms of tax incentives, land acquisition, and supporting infrastructure. E-waste is another major problem that requires urgent government attention and support. We need a national policy on e-waste, including a process to certify e-waste handlers to ensure that safe disposal methods are practiced. Without this, informal sector players will continue to cherry pick the valuable e-waste items and dump the rest.

When we started Doko, many people were skeptical. They said we did not know anything about this field. But we were sure we could learn it, and waste management has become a real passion for us. Five years from now, we want to be present in all seven provinces of Nepal. Our vision is to move our country from the current system of dumping waste to responsible resource management that benefits our environment, economy and well-being.'

https://dokorecyclers.com

Conclusion

The road to integrated healthcare waste management in Nepal will be long, but the journey is already underway. The interest generated by the national workshop showed that actors at all levels are looking for approaches that can work in their institutions and communities. The meeting highlighted a widespread desire to exchange experiences and a readiness to act.

→ A mural at Doko Recyclers points the way to a different future.

The Environmental Health and Healthcare Waste Management Section of the Department of Health Services at the Ministry of Health and Population will be developing an action plan which translates the 12 workshop resolutions into concrete activities. These will include efforts to close some important gaps, including a lack of coordination structures; the absence of policies for dealing with liquid, pharmaceutical, radioactive and e-waste; and insufficient monitoring and enforcement of healthcare waste management standards. Perhaps the most important resolution, however, relates to the development of a roadmap to integrated healthcare waste management and the implementation of a campaign to get there.

Technical solutions are available for the healthcare waste challenges facing Nepal, but these alone cannot solve the problem. Poor waste management is systemic, and improving it requires everyone to do their part — from healthcare facility staff and managers, to municipal authorities, provincial and federal officials, private waste contractors and individual households. Development partners must also be engaged: global health initiatives are leading to greater waste generation and creating new waste treatment and disposal challenges for which solutions need to be found.

A campaign to change the way people think about waste, and therefore how they handle it, will not only make Nepal a cleaner and healthier country, but a more sustainable one as well. The global waste crisis, of which healthcare waste is but one part, can only be resolved through a fundamental rethinking of how we use resources. In Nepal, as elsewhere, health institutions can lead by example, starting to eliminate the use of items that are toxic for workers, patients or the planet, and to procure materials that are more energy efficient, less polluting and higher in recycled content. Tackling the problems related to the management of existing healthcare waste can simultaneously open up opportunities to help the health sector minimise the waste it produces in the future.

Workshop Commitments

These commitments were announced at the closing session of the First National Workshop on Integrated Healthcare Waste Management and WASH in Healthcare Facilities,which was held from December 10–12, 2019, in Kathmandu, Nepal.

→ Deep in consultation at the workshop

First National Workshop on
Integrated Healthcare Waste Management and
WASH in Healthcare Facilities
10-12 December 2019, Kathmandu, Nepal

OUR COMMITMENTS

01 WELL-ALIGNED POLICY FRAMEWORK FOR HEALTHCARE WASTE MANAGEMENT & WASH

The federal government will formulate medium- and long-term strategies for the sustainable management of Environmental Health, Waste Management, and Water, Sanitation and Hygiene (WASH) in healthcare facilities, including all necessary acts, policies, rules and standards as well as appropriate methodologies, technologies and equipment. Provincial and local governments will adapt these policies and guidelines to their own contexts, taking care not to contravene federal laws. The federal government will play a coordination and facilitation role in implementation.

02 A HEALTHCARE WASTE MANAGEMENT CAMPAIGN

A roadmap for healthcare waste management will be prepared and implemented as a campaign.

03 INTEGRATED APPROACH, WITH WASTE SEGREGATION AT SOURCE AND NO-BURN TECHNOLOGIES

The practice of proper segregation at source, as per approved standards; disposal of infectious waste only after disinfection through the use of appropriate non-burning technology; and a model of Integrated Healthcare Waste Management will be developed and scaled up gradually, based on best practices.

04 COLLABORATIVE FRAMEWORK, WITH ENHANCED COORDINATION AT ALL LEVELS

We will develop a collaborative framework which brings together stakeholder ministries, organisations and agencies working on Environmental Health, Healthcare Waste Management, and Water, Sanitation and Hygiene in healthcare facilities. A separate unit and/or responsible person will be assigned for implementation, monitoring, evaluation and regulation at federal, provincial and local levels, as necessary.

05 OCCUPATIONAL SAFETY AND SOCIAL PROTECTION

We will promote occupational safety and social protection measures for service providers, professionals and people involved in waste management.

06 A PILOT INFORMATION SYSTEM

We will develop, pilot and scale-up a model information system on Healthcare Waste Management and Water, Sanitation and Hygiene in hospitals and healthcare facilities.

07 MANDATORY WASTE MANAGEMENT AND WASTE AUDITS

We will ensure that a waste management system and waste audits conducted by skilled personnel are mandatory elements during the establishment, operation, renewal and upgrading of healthcare facilities.

08 INVESTMENT IN HUMAN RESOURCE CAPACITY

We will coordinate, collaborate and partner with the three tiers of government and the private sector to promote the capacity building and management of skilled human resources in Environmental Health, Healthcare Waste Management and Water, Sanitation and Hygiene in healthcare facilities.

09 CLIMATE CHANGE ADAPTATIONS IN THE HEALTH SECTOR

We will promote climate change resilience measures in health programmes to reduce the adverse effect of climate change on public health.

10 ADHERENCE TO 4R PRINCIPLES (REFUSE, REDUCE, REUSE, RECYCLE)

We will scale up good practices, lessons learned and cost-effective programmes which follow the 4R principles (i.e. Refuse, Reduce, Reuse, Recycle) and will discourage the use of plastics and related products.

11 MAINSTREAMING ENVIRONMENTAL HEALTH, HEALTHCARE WASTE MANAGEMENT & WASH

We will consider aspects related to Environmental Health, Healthcare Waste Management, and Water, Sanitation and Hygiene in the design and planning of all healthcare facility-related programmes, bearing in mind the responsibilities of the three levels of government and following the principles of coordination, collaboration and co-existence.

12 RESEARCH AND INNOVATION

We will promote studies, innovation and research, and prioritise the use of evidence which is generated in this sector.

COVID-19

A new healthcare waste management challenge

The outbreak of novel coronavirus has presented the Ministry of Health and Population with an early test of the commitments it made at the national workshop on healthcare waste management. The rapid and well-coordinated response which has unfolded has been a testament to the spirit of openness and partnership which the national workshop on healthcare waste has helped to foster.

Left to right:
→ Removing waste from the plane which evacuated Nepali students
→ New autoclave ready for handover to hub hospital treating COVID-19 patients

SAFE MANAGEMENT OF WASTE FROM EVACUATION FLIGHT

In February 2020, the Government of Nepal decided to evacuate 175 Nepali students from Hubei Province in China and to quarantine them upon arrival in Kathmandu. As plans were drawn up, the containment of potential cases of COVID-19 within Nepal was the top priority. Following so closely on the heels of the national workshop, officials at the Ministry of Health and Population recognised the need for clear protocols for the collection, transport and treatment of potentially infectious waste from the plane. They worked quickly to develop and pass guidelines for the management of waste potentially infected with the coronavirus and, in accordance with the WHO guideline **Safe Management of Wastes from Healthcare Activities**, established a special waste treatment center at the quarantine site. S2HSP supported this effort with technical advice, as well as with equipment and logistics for the collection, segregation and treatment of waste.

GUIDELINES AND STANDARD OPERATING PROCEDURES FOR INFECTION PREVENTION AND CONTROL

As the pace of infections picked up in countries around the world, the Government of Nepal stepped up its efforts to prepare for outbreaks of COVID-19 in Nepal. Aware of the need to integrate healthcare waste management into its coronavirus response, the Ministry of Health and Population began to draw up guidelines and standard operating procedures to address infection risks posed by COVID-19. With support from S2HSP it developed and introduced standard operating procedures for cleaning and disinfecting ambulances, and also prepared guidelines on infection prevention and control, use of personal protective equipment, the transportation of patients to hospitals, and dead body management in the context of COVID-19. These were quickly adopted and rolled out to healthcare facilities nationwide in cooperation with provincial governments.

ASSESSING AND STRENGTHENING HEALTHCARE WASTE MANAGEMENT AT COVID-19 HUB HOSPITALS

The Ministry of Health and Population has designated 25 hospitals across Nepal as hubs for managing cases of COVID-19. In coordination with the Ministry, WHO and UNICEF, S2HSP has developed a digital rapid assessment tool to take stock of health facility readiness in the areas of infection prevention control, healthcare waste management and WASH. Based on the results of the assessment, and with additional support from the German Federal Ministry for Economic Cooperation and Development, the project is supporting 13 hospitals with training, equipment and supplies to enable them to safely manage waste potentially infected with COVID-19. During the lockdown period, online orientations have been conducted for hospital staff and other stakeholders in cooperation with the Management Division of the Department of Health Services, the National Health Training Center and the WHO. A similar approach is set to be extended to 3 additional hospitals in Province 1 with co-financing from Swiss Development Cooperation.

Top and bottom right: → Rapid assessment of laundry facilities at Patan Academy of Health Science
Middle: → Seti Provincial Hospital, a COVID-19 hub hospital in Sudurpashchim Province
Bottom left: → New half drums for autoclaves

HEIGHTENED AWARENESS LEADS TO RAPID PROGRESS

It is often said that crisis can be turned into opportunity. The Ministry of Health and Population is rising to the challenge posed by the COVID-19 pandemic and intensifying its efforts in the area healthcare waste management. Additional development partners such as The Global Fund/Save the Children, Rotary Club International, UNDP, USAID and the World Bank, as well as the private sector, have taken notice and have expressed interest in supporting waste management and WASH services in healthcare facilities. These new investments, along with deepening cooperation among a range of partners across Nepal, are sure to yield dividends far beyond the current crisis.

References and resources

WEBSITE: First national workshop on Integrated Healthcare Waste Management and WASH in Healthcare Facilities in Nepal
www.hcwm.mddohs.gov.np

ARTICLE: Reducing the environmental cost of saving
health.bmz.de/events/In_focus/reducing_environmental_cost_saving_lives/index.html

GIZ PUBLICATION (2019): Technology Applicability Framework — TAF Assessment Low-cost Sanitary Pad Machines
www.susana.org/en/knowledge-hub/resources-and-publications/susana-publications/details/3701

WaterAid PUBLICATION (2019): Menstrual Hygiene Management — Informed Product Choice and Disposal
www.wateraidindia.in/publications/menstrual-hygiene-management-informed-product-choice-and-disposal

GIZ PUBLICATION (2019): Nepal's Menstrual Movement. How 'MenstruAction' is making life better for girls and women in Nepal — month after month
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/3629

SuSanA LINK COLLECTION:
MHM — An overview of a neglected issue
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/2657

FACT SHEET (2020): Menstrual Waste Management — An experimental study on vermi-composting of menstrual hygiene products in Nepal (GIZ/HECAF360)
www.susana.org/en/knowledge-hub/resources-and-publications/library/details/3849

IMPRINT

Published by
Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Registered offices Bonn and Eschborn, Germany

Support to the Health Sector Programme (S2HSP)
Sanepa, Lalitpur
Katmandu, Nepal
T +977 1 5013090
s2hsp@giz.de
www.giz.de/nepal

As at
May 2020

Author
Karen Birdsall

Design
Christine Lüdke, malzwei, Berlin, Germany

Photo credits
Umong Shahi: Cover, pp. 4, 6, 8–14, 16 (bottom), 17, 26, 30–49, 50 (bottom), 51–52
Sushiil Shrestha: pp. 3, 5, 16, 18–22, 24 (left, right), 25, 50 (top), 54
HECAF360: pp. 24 (middle), 28–29, 56 (left)
Suvash Nepal: p. 57 (top, bottom right)
Tejendra Thapa: pp. 27, 56 (right)
Yadav Dhunjana: p. 57 (bottom left)
Seti Hospital: p. 57 (middle right)

GIZ is responsible for the content of this publication.

On behalf of the
Federal Ministry for Economic Cooperation
and Development (BMZ)

Acknowledgements

This publication was developed with support from the project 'Support to the Health Sector Programme', implemented by GIZ Nepal on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

Many people contributed to the success of the first national workshop on Integrated Healthcare Waste Management and WASH in Healthcare Facilities in December 2019. GIZ particularly wishes to thank the Environmental Health and Healthcare Waste Management Section of the Management Division of the Ministry of Health and Population, under the leadership of Chudamani Bhandari. The contributions of Bhogendra Raj Dotel, the Director of the Management Division, and Mahendra Prasad Shrestha, Chief of Coordination Division, at the Ministry of Health and Population are also gratefully acknowledged.

Thanks go, too, to the following individuals who helped to plan, organise and execute the workshop:

> Members of technical working group:
Sudan Raj Panthi (WHO), Shankar Pandey (KfW), Upama Adhikari (WaterAid), Shiddhi Shrestha (UNICEF), Nadira Khawaja (SNV Nepal), Shanti Karanjit and Bijay Singh (UNDP), Guillaume Favel (Médecins du Monde)

> S2HSP technical team:
Paul Rückert, Tirtha Kumar Sinha, Tejendra Thapa, Suvash Nepal, Pravin Tiwari, Sara Biller, Mahesh Joshi and Bikash Nepal

> S2HSP support team:
Sangeeta Thapa, Teresa Rai, Madan Koirala, Man Gurung, Puja Malla, Tej Simkhada, Purna Budhathoki and Manisha Pokhrel

> Workshop facilitators:
Basundhara Sharma, Raj Kumar Rai and Sushil Baral

> Marketplace organisers:
Mahesh Nakarmi and staff of HECAF360

GIZ also wishes to thank all the international and national speakers, panellists, marketplace presenters, and participants who attended the national workshop, as well as those individuals who agreed to share their experiences with healthcare waste management and to be featured in this report.

The GIZ Sustainable Sanitation Programme — as partner of the Sustainable Sanitation Alliance (SuSanA) — supported the design and global distribution of this publication in order to position the national achievements in the field of healthcare waste management as part of WASH in healthcare facilities globally.

ENDNOTES

1 Kaza, Silpa, Lisa Yao, Perinaz Bhada-Tata, and Frank Van Woerden. 2018. *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050.* Urban Development Series. Washington, DC: World Bank.
2 de Wit, Mark, Jelmer Hoogzaad and Caspar von Daniels. 2020. *The Circularity Gap Report 2020.* Circle Economy.
3 *https://www.who.int/phe/infographics/environmental-impacts-on-health/en/*
4 World Health Organization and the United Nations Children's Fund. 2015. *Water, sanitation and hygiene in health care facilities: status in low- and middle-income countries and way forward.* Geneva: WHO.
5 Harhay, Michael et al. 2009. 'Health care waste management: a neglected and growing public health problem worldwide,' *Tropical Medicine and International Health.* Volume 14, No 11, pp 1414–1417.
6 WHO and UNICEF. 2015.
7 Harhay, Michael et al. 2009.
8 World Health Organization and the United Nations Children's Fund. 2019. *WASH in healthcare facilities: Global Baseline Report 2019.* Geneva: WHO and UNICEF.
9 WHO and UNICEF. 2019.
10 Mahara, Deepak. 2019. 'Safe Healthcare Waste Management at TUTH,' Presentation at First National Workshop on Integrated Healthcare Waste Management and Water, Sanitation and Hygiene in Healthcare Facilities. Kathmandu.
11 WHO and UNICEF. 2019.
12 Wendling, Z. A., Emerson, J. W., Esty, D. C., Levy, M. A., de Sherbinin, A., et al. 2018. *2018 Environmental Performance Index.* New Haven, CT: Yale Center for Environmental Law & Policy.
13 Formerly Health Care Foundation Nepal.
14 Karki, Jiban et al. 2018. *Health status and occupational risks in informal waste workers in Nepal. Results from a cross-sectional study conducted in the Kathmandu Valley.* Médicines du Monde, PHASE Nepal and The University of Sheffield.
15 PHASE stands for Practical Help Achieving Self-Empowerment.
16 Karki, Jiban et al. 2018.

www.giz.de/nepal