

ANNUAL REPORT 2022

October, 2021 - September, 2022



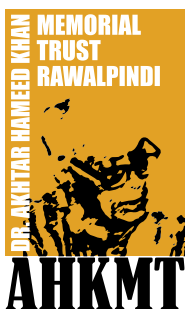
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Integrated Resource Recovery Center

CLIMATE DISASTER IN PAKISTAN



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Executive Summary

The report in your hands covers several facets of the work carried out by Dr Akhtar Hameed Khan Memorial Trust during 2021-2022 encompassing different trainings on solid waste management including visit of an international team to Pakistan for the purpose, advocacies on integrated resource recovery centers across the country, collaborations with different organizations, fund mobilization and intervention Bhara Kahu project.

The Global Green Growth Institute (GGGI) contacted Dr. Akhtar Hameed Khan Memorial Trust (AHKMT) to learn about its best practice methodology regarding integrated resource recovery center (IRRC), its operation and related solid waste management practices adopted by them. Dr. Akhtar Hameed Khan Memorial Trust and Engro Foundation have also launched a pilot project to establish an IRRC in Bhara Kahu,

Islamabad. This initiative is a business model which will be made self-sustainable through generation of revenue and above all will have a positive impact on environmental grounds in the area. Another innovation that is going to be executed through this project in Bhara Kahu will be to segregate plastic and provide it to industry as raw material.

The report also encompasses a set of eight studies conducted in different areas of Khyber Pakhtunkhwa, Islamabad and Punjab that were aimed at developing a methodology for planning a sustainable waste management system in the social-economic conditions of Pakistan's rural and urban centers.

Dr Akhtar Hameed Khan joined hands with different organization including Omar Asghar Khan Development Foundation to train sanitary



workers and community members of Kunj, a locality in Abbottabad district in Khyber Pakhtunkhwa Pakistan focusing on orientation of compost production and growing vegetables at household level for community members and providing training on solid waste management, pit operation and compost production to sanitary workers of WSSCM. The training program helped increase the level of awareness among community members as how they could address the solid waste management issue and replicate the model in other parts of the country.

The report also features a training of trainers held at Pir Mehr Ali Shah Arid Agriculture University Rawalpindi that was aimed at equipping a group of professionals to expand the scope of work across Pakistan and train youth as entrepreneurs in the field of solid waste management as well impart training to various other stakeholders to achieve the target of zero waste.

The report also encompasses a series of visits

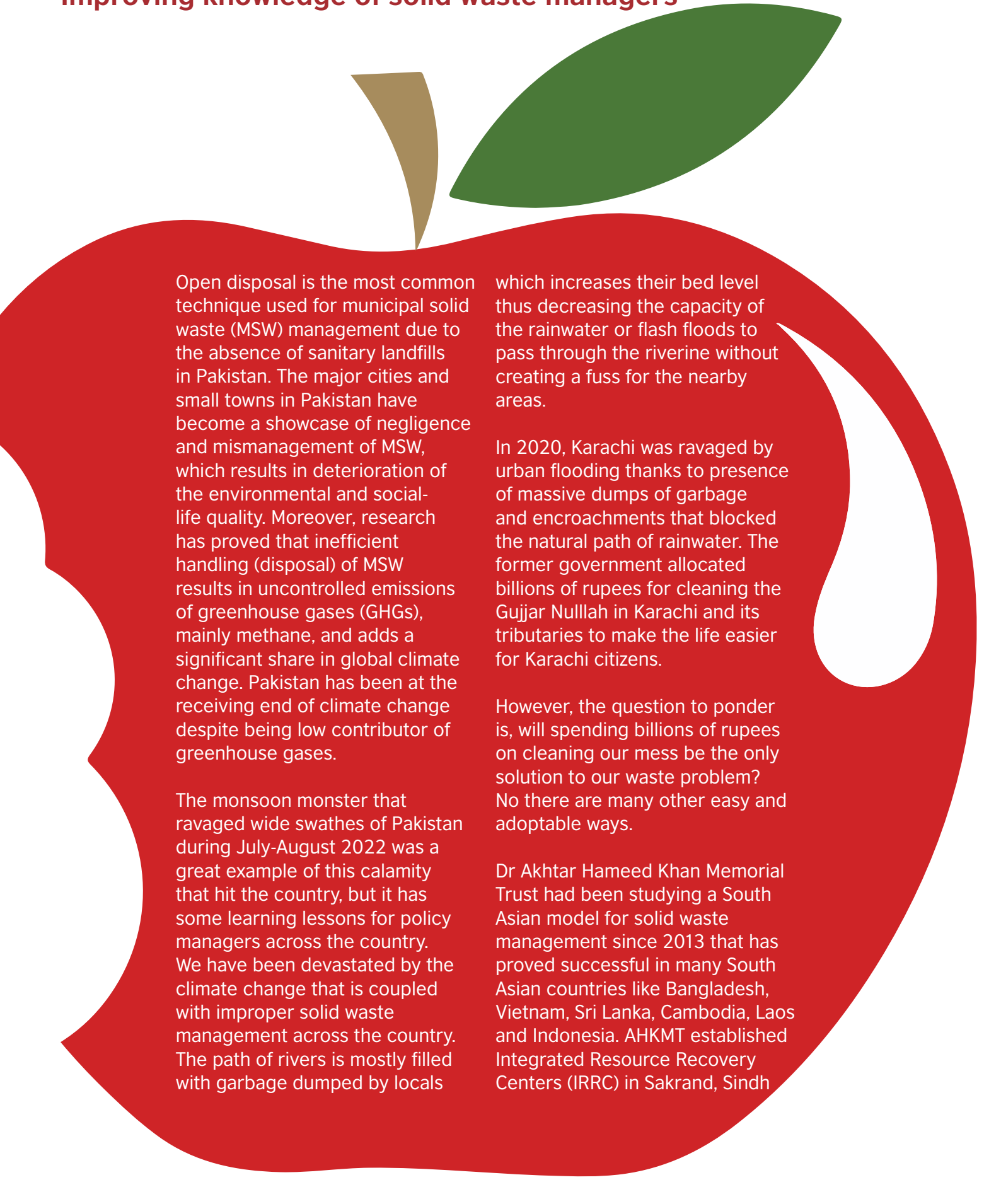
by different individuals like Ansar Burney and organizations like National Engineering Council, Engro Foundation, PLGA Lala Musa, The Asia Foundation, to integrated resource recovery centers in Islamabad and Mardan where they were apprised of the benefits of the centers.

A number of educational institutions and NGOs across the country collaborated with Dr Akhtar Hameed Khan Memorial Trust for initiating different projects in their institutions. Fatima Jinnah Women University (FJWU) Rawalpindi approached AHKMT for collaboration in developing a syllabus on solid waste management. Dr Akhtar Hameed Khan Memorial Trust signed a Memorandum of Understanding with Muslim Hands Azad Jammu and Kashmir under which both sides will work in areas of solid waste management, environment and climate change relevant initiatives, research, trainings and entrepreneurship. While a team of AHKMT visited Kohsar University and showcased its products for the visitors during Vice Chancellors Conference.



Food for Thought

Improving knowledge of solid waste managers



Open disposal is the most common technique used for municipal solid waste (MSW) management due to the absence of sanitary landfills in Pakistan. The major cities and small towns in Pakistan have become a showcase of negligence and mismanagement of MSW, which results in deterioration of the environmental and social-life quality. Moreover, research has proved that inefficient handling (disposal) of MSW results in uncontrolled emissions of greenhouse gases (GHGs), mainly methane, and adds a significant share in global climate change. Pakistan has been at the receiving end of climate change despite being low contributor of greenhouse gases.

The monsoon monster that ravaged wide swathes of Pakistan during July-August 2022 was a great example of this calamity that hit the country, but it has some learning lessons for policy managers across the country. We have been devastated by the climate change that is coupled with improper solid waste management across the country. The path of rivers is mostly filled with garbage dumped by locals

which increases their bed level thus decreasing the capacity of the rainwater or flash floods to pass through the riverine without creating a fuss for the nearby areas.

In 2020, Karachi was ravaged by urban flooding thanks to presence of massive dumps of garbage and encroachments that blocked the natural path of rainwater. The former government allocated billions of rupees for cleaning the Gujjar Nullah in Karachi and its tributaries to make the life easier for Karachi citizens.

However, the question to ponder is, will spending billions of rupees on cleaning our mess be the only solution to our waste problem? No there are many other easy and adoptable ways.

Dr Akhtar Hameed Khan Memorial Trust had been studying a South Asian model for solid waste management since 2013 that has proved successful in many South Asian countries like Bangladesh, Vietnam, Sri Lanka, Cambodia, Laos and Indonesia. AHKMT established Integrated Resource Recovery Centers (IRRC) in Sakrand, Sindh

and Islamabad and replicated the model in different parts of the country with great success for managing waste in these areas efficiently, economically and sustainably.

The staff working at these IRRCs has been well trained by AHKMT and now the journey has started touching international circuit as well. Recently a team from Laos also contacted and then visited AHKMT for learning solid waste management practices employed by the Trust at different cities of Pakistan to replicate them in their country. The WSSMC Mardan, is also a success story that proves such models can be replicated in small cities as well. Even higher ups from Armed Forces also contacted and some high-ranking officials also visited the IRRRC B-17 for understanding and model and replicating in different parts of the country.

AHKMT has been imparting training to different stakeholders with the aim at equipping them with knowledge and techniques in the field of solid waste management as well as impart them the training to achieve the target of zero waste across the country. The important aspect explored during these trainings has been to promote an effective participation of society in integrated waste management on the level of household, industry, etc. in short and long term.

These trainings have been designed to improve the knowledge of individuals who manage municipal solid waste management systems, and addresses the many and varied duties of the solid waste system managers. Concepts such as planning, developing, and managing solid waste systems are taught in detail to the participants.

In the year 2021-2022, AHKMT has also completed a series of eight comprehensive studies on solid waste management in urban and rural areas of the country in collaboration with Engro Foundation, AHT, A German Bank and Oxford Policy Management (OPM) in five areas of Khyber Pakhtunkhwa including Babuzai, Bahrain in Swat, Balakot, Nogazi in Mansehra and Oghi and Kasur in Punjab and Tarnol, Bhara Kahu in Islamabad. These studies provided holistic methods for planning a sustainable waste management system that is environmentally effective, economically affordable and socially acceptable in socio-economic conditions of Pakistan.

Managing Integrated Solid Waste Management Systems is intended for current and future generations as well and operators of government solid waste management systems and other industry professionals who may work in an advisory or consulting capacity with municipal waste managers.





TRAINING

Global Green Growth Institute (GGGI) Lao delegation visits Pakistan to learn from AHKMT's experiences



The visit by a GGGI team to Pakistan for training from AHKMT which has developed training material dedicated specifically to community-based solid waste management work in urban and rural areas speaks volume of the journey the Trust has undertaken. The techniques applied by AHKMT and e-guard, challenges and best practices were shared with the GGGI team during their stay in the country



Urban environmental management and environmental health issues are of increasing concern worldwide. The need for urban environmental management work at local level where Dr Akhtar Hameed Khan Memorial Trust works most effectively is significant, and the organization has developed training materials dedicated specifically to community-based solid waste management work in urban and rural areas of Pakistan for past many years.

The Global Green Growth Institute (GGGI)

contacted Dr. Akhtar Hameed Khan Memorial Trust (AHKMT) to learn about their best practice methodology regarding integrated resource recovery center (IRRC), its operation and related waste management practices adopted by them. Hosted by the Ministry of Climate Change (MoCC), Pakistan and AHKMT, the Lao delegation and 4 staff of GGGI Lao PDR's Solid Waste Management Unit in support of Korea International Cooperation Agency (KOICA) visited Pakistan from June 10 to 15, 2022.

Global Green Growth Institute visit to Pakistan

Global Green Growth Institute (GGGI) is working in 24 countries and having 71 member countries). GGGI is having following Six Goals,

- 1 Reduced GHG emission
- 2 Creation of green jobs
- 3 Increased access to sustainable services
- 4 Improved air quality
- 5 Supply of ecosystem services ensured
- 6 Enhanced adaptation to climate change

In 2019, Global Green Growth Institute (GGGI) in partnership with the Government of Lao (GoL) and in support of Korea International Cooperation Agency (KOICA) officially launched 'Wastewater and Solid Waste Treatment Capacity Building Project for City Environment Improvement in Lao PDR (2019-2024)'. The project is aimed at improving access to and quality of urban solid waste and wastewater services as well as build capacity within leading government institutions to guide sustainable urban development into the future.

Based on the outstanding demonstration of successful solid waste management projects

internationally recognized and the relevance to the project, GGGI identified Islamabad, Pakistan as the destination of this South-South Knowledge Exchange Program.



During the team's visit a session was held at Ramada Hotel Islamabad on June 12 in which AHKMT team comprising Sumaira Gul, Hamid Ullah and Fahad Nawab briefed the visiting delegates about the overview of the issue of Solid Waste Management (SWM) globally and the situation of SWM in Pakistan. The visiting delegates were apprised how waste is being managed in the major cities of Pakistan and the problems being countered. A brief presentation on the management of AHKMT and e-guard and their respective role in the domain of SWM was given as well.



The approaches applied by AHKMT and e-guard, challenges and best practices were shared with the GGGI team. The visitors were told how the approaches having sustainability as the core theme, engaging and mobilizing community and promoting entrepreneurship in the waste management domain are applied and encouraged and how they have been helpful in managing the solid waste menace.



GGGI delegation members presented their IRRC model which had recently been established and the team expressed its keenness to learn from the experiences of AHKMT and e-guard of making of IRRC and evolving it gradually to replicate it in multiple cities. The AHKMT delegation shared in detail its experiences and knowledge of developing IRRC in the country.



A private biogas and renewable energy company, Biogas and Renewable Energy Technology (BRET), delivered a lecture and field visit combined session regarding small scale biogas plant in Pakistan. An overview of biogas in Pakistan was shared by Dr. Khurshid. He apprised the audience of the scope of biogas generation in Pakistan, which is the 5th largest

livestock country with daily dung output of 1,320 million kg/day. He apprised the audience that 5 livestock can produce 10m³ of biogas per day which is a sufficient amount of energy for a household. He also revealed that a single household biogas plant can save 5 mature trees.

Capacity Building of GGGI under government patronage

The GGGI delegation during its visit to the Ministry of Climate Change (MoCC), in Islamabad introduced the SSKE program and GGGI delegation to MoCC and tried to establish an official communication channel between GGGI and MoCC. Mr. Joudat Ayaz (Additional Secretary of MOCC), Mr. Irfan Tariq (Former DG Climate Change Pakistan, Mr. Azeem Khuso (Acting DG Climate Change), Official Team of GLOP II Project, AHKMT team and MOCC team attended the session. The meeting was based on sharing the goals of the South-South Knowledge Exchange program.



Joudat Ayaz shared the MOCC responsibilities, the current projects under MOCC supervisions and the future planning for climate resilience in Pakistan. He told the participants that MOCC has initiated a project on green bond with WAPDA. Mr. Irfan Tariq said that IRRC is a successful initiative model for sustainable solid waste management which could be a good model for understanding SWM for the delegation. He also shared that as Pakistan is member of GGGI but GGGI should focus to build a proper office here in Pakistan starting from lower level and should start projects in Pakistan focusing on Solid Waste Management.

Ms. Shomi Kim (lead, Green Cities & Waste Management GGPI) said that GGGI is working in 24 countries and it can help Pakistan to make sustainable Solid Waste Management strategy plans for next 10 years. She also spoke about the GGGI proposed projects for Pakistan which includes:

- **GGGI readiness project**
- **Affordable climate smart housing**
- **GGGI-UNEP E-mobility project**

Mr. Joudat Ayaz and Mr. Irfan Tariq gave some suggestions to GGGI team which are following:



- **SWM projects should be included in the proposed GGGI projects for Pakistan**
- **E-vehicle projects and Carbon Pricing Units**
- **Green Building core**

The delegation also visited the Environmental Protection Agency (EPA) of MOCC for a knowledge exchange session. EPA introduced the agency's mandate, achievements, and strategic plans to the visiting delegation. EPA team apprised the delegation about its achievements which include improving air quality for which it operates 2 air quality monitoring stations. The team from Lao was apprised of how EPA was handling industrial pollution through pollution control technology (PCT) applied to industrial sector, such as the steel industry. They were apprised of law implementation monitoring and plastic bag regulation. They were also told how ban on use of plastic bags associated with awareness raising campaign has been implemented by EPA in letter and spirit.

They were also apprised of the EPA's future

strategy of making Islamabad a plastic free city and secondly digital mapping of all health facilities in Islamabad Capital Territory and conversion of traditional ICT brick kilns into zig-zag and their digital mapping as well as vehicular emission testing exercise in ICT. The GGGI delegation also visited WSSCM office Mardan where Mr. Amir Khan Mohmand briefed them about the operations, duties and responsibilities of the WSSCM with the special focus on solid waste management.



A short session was delivered by Punjab Local Government Academy (PLGA), a training institute which has been providing training to government officials from other parts of the country, including solid waste management. PLGA Director Najeeb Aslam apprised the audience that the solid waste management model developed by the Academy has been replicated in 12 cities across Pakistan.



Exposure field visits of international team

The delegation visited Section B-17 of Islamabad, which is a community managed by a private entity called Multi Professional Cooperative Housing Society (MPCHS). MPCHS is managing Section B-17 and providing independent services within relevant legal framework, which includes water supply, wastewater treatment, waste collection, and even security. During the delegation's visit, MPCHS provided a briefing on SWM in B-17 and arranged a visit to an IRRC in B-17 which was established with the technical support of AHKMT.



The delegation was apprised that waste is being managed by MPCHS partnering with e-guard. The team was apprised that waste collection service fee is included in wastewater management fee as e-Guard provides waste collection services to a part of B-17 as well as managing IRRC operation. After the briefing, the delegation was guided to the IRRC. On the way to IRRC, MPCHS management showed the waste collection operation by e-guard, through which the delegation could observe the waste collection route, waste bins, personal protection equipment of the workers, etc. With MPCHS and e-guard's briefing, the delegation seemed confident of following the operation cycle of the IRRC located within B-17. The delegation pointed out that although the structure of the facility was almost identical to the one newly established in Vientiane Capital, one difference in terms of the operation cycle was the waste separation.

The delegation and AHKMT team visited Mardan where WSSCM officials briefed them about their working. The team was also briefed by NCA about its role in establishing and operations of the IRRC. The delegation also observed waste collection service by WSSCM, visited IRRC Mardan and Takhtbhai world heritage site. After visiting waste collection areas, the delegation visited IRRC Mardan where Mr. Muhammad Ishaq briefly the activities of IRRC from transportation to the compost process.

Mr. Zohaib briefed the delegation about the installation of solar system and rain water storage in IRRC.

Technical training by WSSCM was conducted at the IRRC. The carefully arranged training delivered step-by-step demonstration of IRRC operation from waste collection, sorting to composting, which helped the delegation enhance their understanding of effective and efficient IRRC operation.

AHKMT arranged a visit to informal waste recycling centers located near AHKMT office in Rawalpindi. Before visiting the waste recycling centers, AHKMT introduced the overview of plastic waste in Pakistan and the value of the waste. The delegation was apprised that in Pakistan, each year, 30 million tons of solid waste is produced, out of which 4 million tons comprises plastic but irony of the fact remains that around 2.6-million-ton waste was being mismanaged, as only a limited proportion of it is processed and recycled. They were told that plastic waste was increasing by about 15% annually as 55 billion plastic bags are produced a year.



Training in collaboration with OAKDF in Abbottabad



In order to reduce the quantity of waste and utilize a major portion of it in compost production, Dr Akhtar Hameed Khan Memorial Trust in collaboration with Omar Asghar Khan Development Foundation arranged two different sets of trainings for community members (kitchen gardening) and sanitary workers (solid waste management)



In order to train sanitary workers and community members of Kunj, a locality in Abbottabad district in Khyber Pakhtunkhwa province of Pakistan, Dr Akhtar Hameed Khan Memorial Trust in collaboration with Omar Asghar Khan Foundation organized two different sets of trainings. The training sessions spanning two days July 20-21 2022 and followed by an orientation session for community members was focused on orientation of compost production and growing vegetables at household level,

while for the 26 sanitary staffers of WSSC, the training focused on solid waste management, pit operation and compost production.

AHKMT developed training modules for the training which were shared with Omar Asghar Khan Foundation. Moreover, training manuals in Urdu language were also prepared for the participants.

AHKMT applauded OAKF's initiative for working



on such type of community project of reducing the quantity of waste by utilizing a huge part of it for compost production. The training program helped increase the level of awareness among community members as how they could address the solid waste management issue and replicate the model in other parts of the country.

Training Sessions

Separate training sessions for male and female community members and sanitary workers were conducted by AHKMT trainers.



Kitchen Gardening Training for Community Members

Ahead of the training for female and male community members that was based on a couple of sessions, a pre-test was conducted to evaluate local community's knowledge regarding waste and its management. Later in the training sessions the trainers apprised the

participants about waste, its impacts, waste management and how it is segregated that can result in reducing waste at domestic level and how green waste can be converted to compost. The participants also carried out separate group activities to share their knowledge of what waste is and how it is segregated and the impacts of the entire process.



In another training session on 'Basic concept of home composting, kitchen and rooftop gardening' the participants were apprised in detail about the technical aspects of the composting methods and how the process can be executed at domestic level. The basic aspect of the training was to apprise the audience how they can convert their domestic waste, reuse it and turn it into compost to their advantage and how they can do kitchen gardening in their homes.

At the end of these sessions certificates were distributed among participants while 60 kitchen gardening kits were also provided to them along with seeds.



SWM Training for Sanitary Workers

A training program was organized for 26 sanitary staffers of WSSC, Abbottabad focusing basically on solid waste management, pit operation, waste management, its segregation and compost production.



The participants during an orientation segregated waste into kitchen, recyclable and reject categories and learned how waste can be segregated at the collection points.

The participants also visited rooftop gardening model where the process of converting domestic waste into compost at household level was shared with them.



Exposure Visit for the Participants

Thirty participants from community and sanitary worker's trainings were provided exposure of IRRC situated in B-17 Islamabad, a unit run by AHKMT where compost is produced from green waste at large scale. The participants were apprised of the overall steps from waste collection to the final recovery in shape of composting and recovery of recyclable materials at the IRRC.



The training was very informative and beneficial for all of us. We had no prior knowledge of home composting. This training gave us many ideas and low-cost techniques of home-based gardening.

Ms. Almas, one the female community members said after the training.

We had an idea of kitchen gardening but the home-based compost production was a new thing which was very useful to us.

Ms. Gulzar and **Ms. Shahnaz** shared their views after the training sessions

The new approaches we have learnt will help us in handling waste in a better way at the community level all over the city.

Mr Babar Shah's opinion after the training.

Training of Trainers at PMAS-AAUR to broaden knowledge of waste management



A strategy to promote effective participation of society in integrated waste management on the level of household, industry, etc. in short and long term was executed through a training of trainers where a group of professionals was trained to expand the scope of work across Pakistan and train youth as entrepreneurs in SWM field to achieve the target of zero waste



A three-day training of trainers (ToT) on solid waste management (SWM) was held at Pir Mehr Ali Shah Arid Agricultural University (PMAS-AAUR) and was aimed at equipping a group of professionals to expand the scope of work across Pakistan and train youth as entrepreneurs in the field of solid waste management as well impart training to various other stakeholders to achieve the target of zero waste.

The training of trainers conducted by Dr. Akhtar Hameed Khan Memorial Trust (AHKMT) from August 23 to 25, 2022 was attended by students from various universities, trainers as well as academia and entrepreneurs. The ToT was also aimed at broadening the knowledge of waste management practitioners and to assist in developing skilled and capable waste management trainers.



The resource persons from many renowned institutions, along with the university's faculty gave informative and valuable lectures on the issue. The important aspect explored during the training was how to promote an effective participation of society in integrated waste management on the level of household, industry, etc. in short and long term.



Sessions

In the opening session, Director, Institute of Soil and Environmental Sciences Prof. Dr. Khalid Saifullah Khan and AHKMT Board Member Edwin Samson were present.



The participants were introduced about parking lot and mood meter where they were encouraged to share their views at the end of day on them.

Ms. Sumaira Gul from AHKMT in her lecture briefed the participants about AHKMT and e-guard. She talked about the services and struggle of AHKMT and e-guard in the field of solid waste management.

Dr. Abida Imran (FJWU) shared the findings of the project "LCF" funded by World Bank and HEC

at Bhara Kahu. She also told the audience about waste, its generation sources and impacts.



Mr. Hamid Ullah (AHKMT) introduced the audience about more than 10 types of businesses and entrepreneurship that anyone can start easily in the field of solid waste management.

After launch break, the trainer Abid Hussain told the participants about the techniques, its human resources and financial requirement of waste handling.

Later in another session, the participants were apprised of the designing, construction, operations and supervision of solid waste management unit IRRC.



At the end of the day a training lecture was delivered by one of the trainers on the products of IRRC especially about the compost making process value addition, packing and its marketing.

On the 2nd day of the training 3 sessions and a field visit of IRRC Sector B17 Islamabad were conducted.

A brief on the resource mobilization and managing the financial activities of a business/firm/company were shared with the participants. They were also told about the process of registration of a company.



An e-guard representative presented the process of hiring team, vehicles and purchasing of materials for waste collection system. He also told the trainees about how to train cleanliness staff, waste collection team, supervisory team.



Dr. Qaisar Hussain (Associate Professor PASAAUR) told the audience about his research on "Biochar". He spoke at length about how he converted Biomass to Biochar and used a composting agent for water purification. Dr. Qaisar also told the visitors how the world is converting Biomass to Biochar on pilot level/ industries. He also shared the struggles in setting up Biochar on pilot level.

Mr. Idress Burhan (AHKMT), a master trainer, told the audience about preparation steps of organizing training and methodologies which could be adopted for master training programs. On the final day of the training after review of the last day, a trainer delivered a lecture on Area Identification in which he shared

techniques as how to conduct survey for finding an area for waste collection system. He also shared the techniques of conducting waste characterization study for making solid waste management system more effective.

During the training, AHKMT team focused on training the participants, in which a productive lecture on characteristic and skills of master trainers was delivered.



As in all three days the participants were told about the business startups in field of solid waste management.

Ms. Sumaira Gul gave a brief lecture on laws and policies related to solid waste management which were quite helpful for knowledge of the participants.

In the closing ceremony Director, Institute of Soil and Environmental Sciences Professor Dr. Khalid Saifullah Khan and Ms. Almas Shakoor (Board Member, AHKMT) shared their valuable thoughts.



The certificates were distributed among the participants on the successful completion of the training.

IRRC Visit

Later the participants visited IRRC in Sector B-17 where they observed in practical all the activities and process from waste collection to recycling, compost production and packing.



Orientation & training for Government delegation from Swat



AHKMT has been active in providing assistance in solid waste management field not only to private sector organizations but has been contacted by organizations from the public sector to get firsthand knowledge and practices in areas of solid waste management



A delegation of WSSCS Swat and TMA Officials visited Integrated Resource Recovery Centre Mardan and Islamabad on December 7 and 8, 2021 for an orientation and exposure visit organized by Lasoona.

the solid waste management to the participants and its impacts. He also presented the current situation of waste generation, its impacts and management not in Pakistan but also across Asia.

Orientation at WSSC Mardan

A briefing session was conducted at WSSCM office in which CEO of Dr Akhtar Hameed Khan Memorial Trust (AHKMT) gave an overview of

They were also told about the IRRC importance, construction and requirements of IRRC. The participants were apprised of the operations, outcome and positive results of IRRC on environment and society. The need of replicating the model upon the government



officials of Swat for betterment of area was stressed.

At the end of his session, Muhammad Zada from TMA Swat asked as how can they manage the uncontrolled waste generation of Swat because they don't have any official land for dumping waste. He said there is limited land in Swat and they have been facing problems in dumping waste.

They were further told that WSSCM Swat and TMA can manage their waste through a decentralized approach, select a small area for every 100 households and construct a small model on spot, where the waste can be segregated, reduced, recycled and reused. They were told that this modal can be called a rural model Haryali Centre but for congested population every 3,500 households need a 3 tons' capacity IRRC.

WSSCM, representative Mohammad Ishaq presented IRRC Mardan process and achievements of one year. He also discussed the operations of IRRC with the visiting delegates. He told them about the mechanism of waste collection in the city of Mardan.

At the end of the session Mr. Amir Khan CEO WSSCM give suggestion to Ms. Sumaira to focus

on waste management and installation of IRRC in rural area.

Norwegian Church Aid (NCA) representative Mr. Zohaib Hassan briefed the participants about the NCA's role in construction and operational capabilities of IRRC.

After briefing session WSSCM led the participants to IRRC unit Mardan where they were briefed about the practical activities and operation. All the participants saw the practical activities of IRRC step by step. Government officials of swat appreciated the vision and mission of WSSCM about solid waste management.



Exposure visit B-17 Islamabad

On 8 December 2021 Government officials of Swat visited IRRC located in B-17 Islamabad.

The delegates were given an introduction of e-guard. They were told about e-guard waste collection system in MPCHS.



SWM training in collaboration with NCRD

Dr Akhtar Hameed Khan Memorial Trust conducted a training session on solid waste management organized by National Center for Rural Development (NCRD), a government run organization working under establishment division.

The trainer apprised the participants about waste, its impacts, waste management and how it is segregated that can result in reducing

waste at domestic level and how green waste can be converted to compost.

The participants also carried out group separate activities to share their knowledge of what waste is and how it is segregated and the impacts of the entire process.

Later, AHKMT took the trainees to Integrated Resource Recovery Center, B-17 for gaining firsthand knowledge of how the technology works and the task is completed.







WASTE CHARACTERIZATION STUDIES

An insight into our solid waste issues and their solution

Solid waste generation is the result of human activities in their production and consumption cycle. Rapid development in Pakistan causes significant increases in municipal solid waste (MSW) generation and negative impacts on the environment and human health due to the inappropriate waste management system. A sustainable waste management system which ensures environmental safety and human health becomes a critical target of Pakistan.

However, hardly any study provides holistic methods for planning a sustainable waste management that is environmentally effective, economically affordable and socially acceptable in socioeconomic scenario of developing countries. Also, study on methods for evaluating social acceptance for waste management still lagged behind environmental and economic objectives.

Thus, this set of eight studies is aimed at

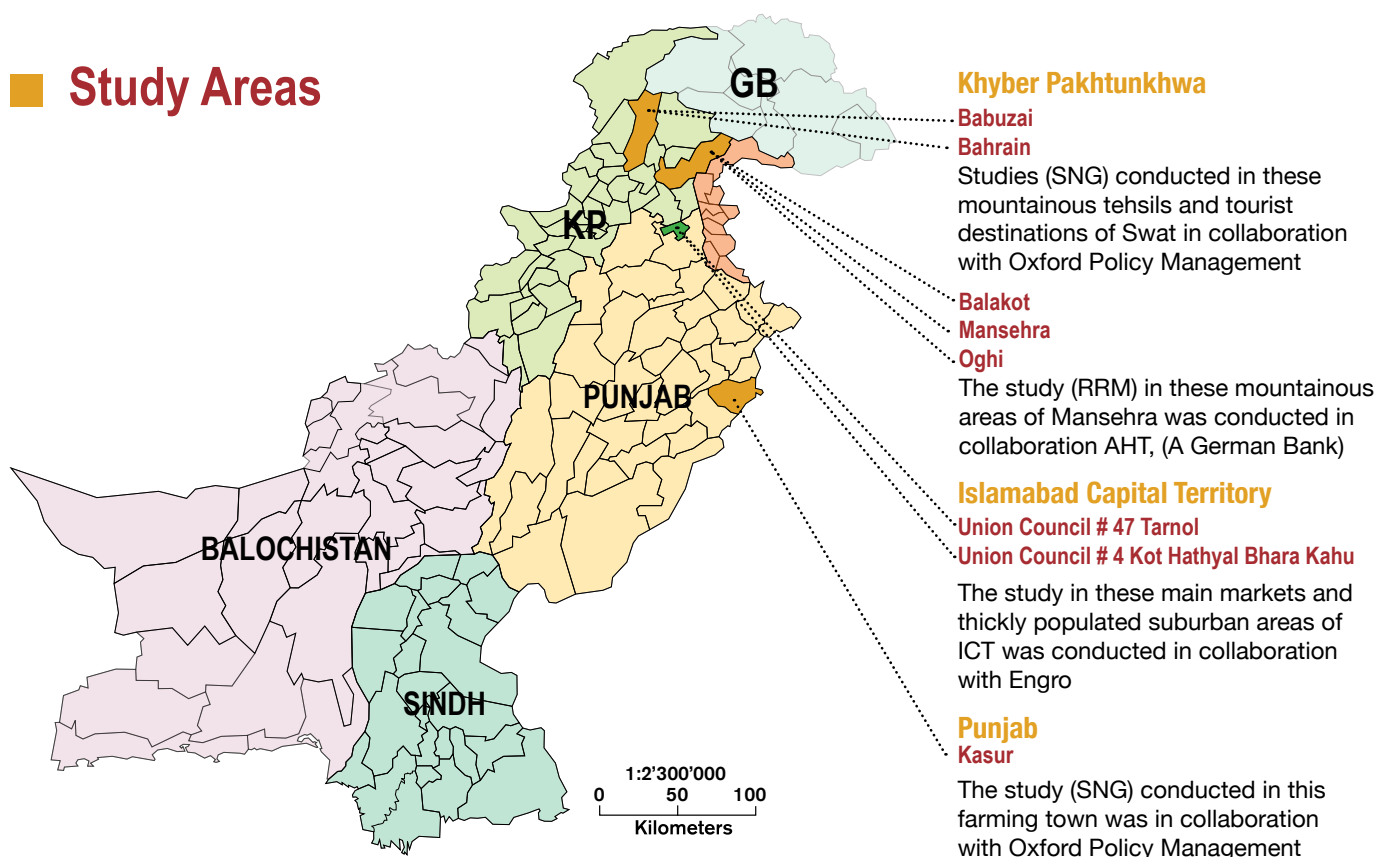
developing a methodology using UN tools for planning a sustainable waste management system in the social-economic conditions of Pakistan's rural and urban centers. A series of 8 studies, comprising sampling of municipal waste and analysis of composition and generation were carried out by Dr Akhtar Hameed Khan Memorial Trust.



AHKMT in collaboration with different organizations conducted a set of eight waste characterization studies by sampling municipal waste and analysis of composition and generation to develop a methodology using UN tools for planning a sustainable waste management system in the social-economic conditions of Pakistan's rural and urban centers



Study Areas



Methodology

Tools

The Waste Wise Cities tools (developed by UNHABITAT and translated by AHKMT)

Tool Name	Use of the Tool
Survey form for solid waste HHs	This tool gathers information regarding target HHs as relevant to solid waste and its impact on health, general expenses and other elements.
HHs survey analysis form	This tool creates the summary analysis of HHs survey.
Survey form for commercial units	This tool gathers information regarding target shops relevant to solid waste.
Analysis form for commercial units survey	This tool creates summary analysis of shops surveyed.
Questionnaire for SWM line department	This tool gathers the details of SWM in the target city by relevant line department.
Questionnaire for scavengers, sanitary workers	This tool gathers information about stakeholders and informal sector that are working in solid waste business.
Questionnaire for scrape dealers	This tool gathers information about scrap dealers who are working on solid waste business.
Recording sheet HHs daily waste	This tool records the weight of waste collected from each of the 100 HHs.
Recording sheet of daily waste collection from shops	This tool records the weight of each of the 30 shops on collecting waste.
Recording sheet for domestic waste composition analysis	This sheet records the weight of each type of waste of total of 100 HHs after segregation and analysis.
Recording sheet for commercial waste composition analysis	This sheet records the weight of each type of waste of a total of 30 shops after segregation and analysis.
Evaluation of study by HHs	This tool gets the feedback of HHs regarding study.

Target samples

- 100 households
- 30 commercial centres (Shops, 1 hotel, 2 schools)
- However, a reverse approach was adopted in Oghi (Mansehra) where 30 households and 100 shops were selected for the study.

Times Frame

- 7 to 8 Days

Practical Approach:

- The key approach in the studies was to observe and record objectively the findings and situations regarding SWM in target areas.

- Engaged line departments at all steps especially for getting permission for conducting study and showing them the process and share the findings.
- Involved local representatives, community influential/leaders, trade unions, schools and others to give them confidence and to get facilitation in study.
- Proper orientation of the team for conducting the state-of-the-art study and achieve best results.

Data Characterization

- To study the characteristics of solid waste including domestic and commercial management practices in target areas.
- To establish an understanding of the perception among local communities and

stakeholders about solid waste management for sound environmental development

- To investigate and identify opportunities of business for the individuals and institutions

of solid waste management.

- To assess how improved waste management practices can contribute to sustain the SWM processes in target communities.

Description	Mansehra			Swat		Kasur	Islamabad	
Cities	Oghi	Balakot	Mansehra	Babuzai	Bahrain	Kasur	Tarnol	Bhara Kahu
Average HH Waste collected daily	28	90	95	87	77	97	87	89
Percentage of Organic in total domestic waste								
Kitchen and Garden	61.96	47.5	59.02	63.5	42.71	62.85	67.36	60.93
Animal waste	0	0.75	0	0	0	1.01	0	0
Ash	0	5.22	0	0	14.24	0	0	0
Percentage of Plastic in total domestic waste								
Hard Plastic	1.97	1.51	1.87	1.63	0.62	0.96	1.63	0.91
Soft Plastic	2.6	3.45	8.27	7.74	3.17	7.78	3.51	13
Percentage of Dry (Recycleable) in total domestic waste								
Paper	0.89	1.31	2.12	1.61	0.71	1.05	0.94	0.64
Cardboard	1.19	0.95	4.67	3.14	0.55	2.25	1.08	2.89
Glass	1.26	1.55	1.53	1.7	1.18	0.85	0.6	0.71
Iron	0.29	0.3	0.17	0.24	0.06	0.09	0.06	0.12
Tetra Pack	0	0.26	0	0	0.08	0	0.12	0
Wood	0.22	0.96	0.9	0.63	0	0.01	0	0.47
Cloth	3.16	2.02	5.44	2.54	0.74	3.12	1.13	3.34
Shoes	1.01	1	1.12	0.19	0.39	0.56	0.71	0.66
Hair	0	0.1	0.07	0.002	0	0.06	0	0
Bone	0.19	0	0.27	0.28	0	0	0	0
Bread	0	0	0	0.39	0.05	0.11	0	0.061
Percentage of Hazardous in total domestic waste								
Electronic	0.05	0.083	0.11	0.086	0.1	0.12	0	0.06
Medical	0.29	0.17	0.067	0.14	0.11	0.09	0	0
Percentage of Residual in total domestic waste								
Diaper	6.86	11.57	10.91	12.91	6.16	16.01	8.75	12
Ceramics	2.5	0.76	1.43	0.52	0.41	0.2	0	1.56
Rejected	15.55	6.37	2	2.89	28	1.88	14.11	0.94
Building Material	0	0	0	0	0	0.48	0	0
Soil	0	13.58	0	0	0	0	0	1.3



PROPOSED SOLUTIONS

Construction of Integrated Resource Recovery Centers (IRRCs):

IRRCs are the best suggested solution to save the land from degradation. It saves fuel and other operational costs involved in handling the waste. The organic portion of the waste would be converted to compost which will make each IRRC self-sustained, initial capital cost is required for its construction only.



In Babuzai HHs survey, it has been found that on average each HH spends PKR2100/- per month on medical needs. A clean healthy and hygienic environment due to efficient SWM system will reduce the number of diseases. In tehsil Babuzai, a three-ton green waste capacity IRRC has been advised which will daily produce 300 kg compost. Later, this model of IRRC can be replicated in other areas as well. Currently WSSC is transporting about 90 tons of green waste (60 % of total 150-tons waste) to landfill site daily which is causing environmental hazards. Constructing IRRCs would result in

converting this waste into compost which will not only enrich the land but would also save the environment and land of Babuzai.

One-and-half ton green waste capacity IRRC has been advised for an individual farmer who can manage it if the WSSC company provides him the green waste at the IRRC.

In Bahrain, AHKMT proposes to construct two IRRCs, one in Qandeel, and second in Kalam. Construction of both IRRCs will cost PKR 68 million and will utilize 8-ton green waste daily giving back 800 kg compost for fields and gardens. The IRRC built at Qandeel can utilize the waste of some areas (3 village councils) of tehsil Matta as well.



In Balakot, the IRRCs is the best suggested solution to save the land from degradation, saving fuel and other operational cost which are currently being utilized in handling the waste. The organic portion of the waste would be converted in compost and this will be self-sustained model. The cost in shape of community health, and environment is very high. The IRRCs should be built at Hassa dumping site.

In Oghi, a three tons daily green waste capacity IRRC is suggested that will manage the green waste efficiently and will enrich the fields with organic compost.

Establishing Integrated Resource Recovery Center (IRRC) in Kasur to convert the green waste into compost is necessary. The green waste which remains after giving to animals can be utilized for compost production.

In Islamabad, a pilot project has been designed

for 4,000 households from where daily segregated 5 tons waste would be collected and transported to Integrated Resource Recovery Center (IRRC) for reducing the waste by converting it into resource. The kitchen waste will be converted into compost while the recyclable plastic and other items will go to industry to be reused into new products.

This facility will sustain itself generating revenue from the sale of compost and getting the monthly fee from households against the collection of waste from the door step. AHKMT will make the project functional and self-sustained and then hand it over to the CDA. AHKMT has developed successful self-sustainable models of IRRCs in Islamabad and Mardan and the system can be replicated in the areas easily.

Waste Reduction Centers (Kasur):

Establishing one Waste Reduction Center (WRC) in each union council instead of land fill depot in Kasur district is highly recommended. At WRC waste recovery and segregation systems needs to be established to reduce the waste. These WRCs can be outsourced to private entities which will manage it by segregating the waste.

They will sell recyclable waste and will separate green waste for animals. The scavengers have to be licensed and they will work with Waste

Reduction Center (WRC). It is suggested that waste has to be segregated within 24 hours at WRC at each union council and recyclable (20 to 25%) should be transported to industry, green waste (50 to 70%) for animal feed and rejected (15 to 20 %) has to be transported to landfill sites. The rejected has to be used for earth filling and RDF. It would be ideal to construct total 11WRCs, one for each 11 union councils in Kasur.

Primary Waste Collection System:

The primary waste collection system can help to make better the SWM in tehsil Bahrain. During the study it was found that HHs throw garbage in open plots and drains as the area lacks a primary waste collection mechanism. The local authorities can outsource primary collection to private entities who would be permitted to collect monthly fee from HHs against primary waste collection services.



Whereas Nogazi is producing above 3-ton waste daily which is present in open plots and creating issue of environment and spoiling the underground water in the area.

e-guard proposes a waste reduction plan as follows: Only less than 1-ton waste (reject) of Nogazi remains out of total 3 tons should be transported.

Community Mobilization (Nogazai): A strategy of community mobilization which will involve the following actions in Nogazai:

Establishing Line Committees: Line Committees would be established at each street level. In each street a volunteer line manager will work with HHs for training of waste reduction and use waste recycling and converting waste into resources. Here, the garden/kitchen composting is to be promoted.

Establishing Mohalla Committees: Mohalla committees for 15 mohallas of Nogazi would be established which would be linked to line committees.

Neighborhood Council Committee: Neighborhood council committee will play the role of establishing liaison with line departments

and stakeholders for better solid waste management system.

Primary Collection System for Nogazi: As per study 83% HHs are willing to pay average PKR. 148/- per month against the HH waste collection. So it is proposed to establish primary collection of waste from HHs. Each family has to pay PKR. 200/- for which local Nogazi Welfare Organization can facilitate to establish the system. This model would be replicated in other parts of the Mansehra as well.

Environment friendly events in summer season:

The district administrations in recreational spots like Babuzai, Bahrain and Balakot should conduct open air events every week at the spots which are frequented by the tourists.

These events will educate and persuade tourists and local people to keep environment clean. Celebrities can be engaged for mobilization and motivation of general masses in these areas.

Raising awareness among local community and tourists:

Tehsil Municipal Administration at tourist spots like Babuzai, Bahrain and Balakot should use the already installed sign boards (that tells



about the fruits of Swat) for education of local community and tourists.

These boards are in large number in tehsil Bahrain. AHKMT and e-guard can provide technical assistance to TMA Bahrain as how to display strong messages to save the river and area from pollution.

Give waste bags to jeeps drivers:

Approximately one thousand tourists travel every day in jeeps from Kalam to Mahudhand Lake in Balakot. The tourists throw litter in and around the lake which results in heaps of plastic and other wastes near the lake. It is suggested that every jeep driver must keep a bag in jeep and the wastes of tourists must be stored in that bag. When the jeep returns from Mahudhand Lake one person should collect the waste bag from the jeep drivers empty it and give it back to them on entry point of Kalam.

This would discourage the waste throwing habits and would keep the area clean.

Green waste bin:

Hotels in Bahrain tehsil should be provided with a separate bin to fill the green and kitchen waste in it. Currently all waste goes in one bin

which is transported to dumping sites. The green and kitchen waste can be utilized for animals in the area.

Training of hotels staff:

The staff of hotels can be oriented on the segregation of green and kitchen waste from other hotel waste. This will help to separate the green waste from other waste and then it could be used for animals feed in the area.

Establish complaint mechanism:

TMA Bahrain needs to set up a complaint mechanism through WhatsApp group and display of a complaint number near walls of secondary waste collection points in every target area. The beneficiaries can register their complaints regarding waste through call or text message. The referral mechanism should monitor the complaints and communicate it to relevant departments for a response and resolution of the issue.

Encourage organic gardening:

Currently farmers all around are confronted with the issue of non-availability of chemical fertilizers for wheat and other seasonal crops. AHKMT suggests that the farmers should convert the gardens in Swat on organic. There



is a lot of potential in this area and farmers can earn better revenue against their investment as the cost on fertilizers would be less.

Establishing Waste Reduction Center/ Haryali Center: A Waste Reduction Center is proposed to be established in Nogazi. This center will play the role of vacuum cleaner, utilizing recyclable and green waste as resource. TMA has to construct this waste reduction center for which 10 marla land would be required.

Teacher's Training: Schools can play a vital role by teaching waste management practices to students. This would be achieved by conducting training of teachers for all schools present in Nogazi.

Seed Bins with Children: All students of the schools have to be provided small bins which has partitions to preserve the seeds of vegetables and fruits. These seeds can be utilized for developing of green yards and green rooftops.

Plastic Solution by Engaging Schools: AHKMT suggests engaging public and private schools in Kasur city to end plastic waste in

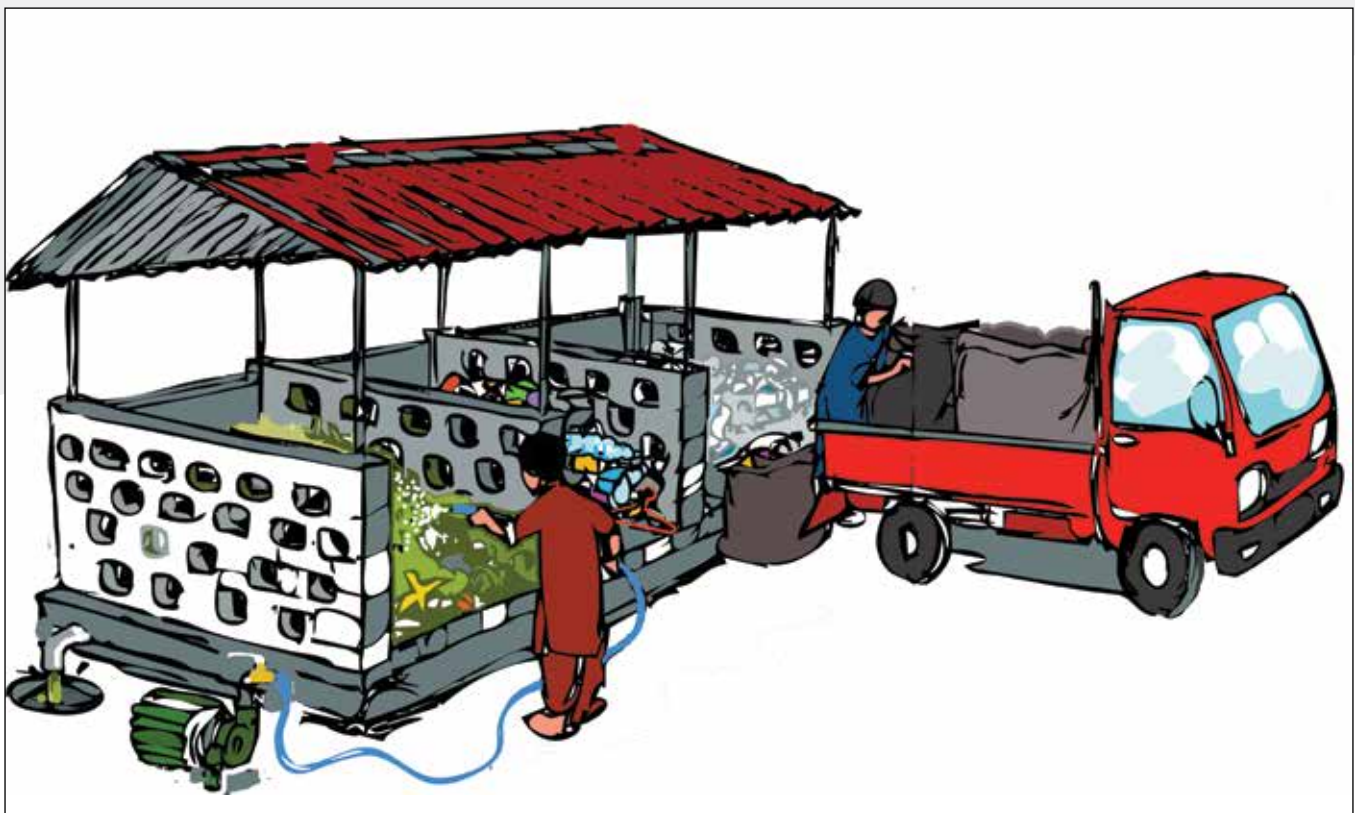
the area. District administration has to advise all schools to work with AHKMT to join the 'No Plastic' campaign. In this campaign students would be provided cloth bags to hang in their kitchen. All types of plastic have to go in that bag by the families. The student will bring plastic weekly and in return AHKMT will provide the students pencils to use in school. This will help to end plastic that pollute the area and especially the river.

Animal farms on green waste

The animal farms can be initiated which would use green waste of hotels in Babuzai, Kalam and Bahrain, Nogazai, Balakot areas. Already the owners of goat farms visit hotels in Nogazi and collect green waste for their animals from dumping plots. The green waste of the HHs could be easily managed by them.

Establishing Nurseries: In Nogazi area nurseries can be established as it has vast stretches of land available. In these nurseries the compost produced from green waste can be utilized.

Green Roof Top Concept: The rooftop gardens are a unique learning experience for families in Nogazai. This impacts the lives



of families in a variety of ways. As a result of AHKMT's partnership with families, they are afforded the opportunity to learn the preservation and conservation of our natural resources by reducing and recycling plastic in their surroundings especially at households. In this program the families take care the plants at their houses rooftops from where they get their food and also sell extra vegetables for family livelihood.

Private Companies Model: Already TMA Nogazai has awarded contracts to two private companies for primary waste collection. This model can be replicated in other areas which will resolve the issue of waste collection. These companies can be trained for waste reduction which will help to solve the waste management in Mansehra.

Small Compost Production Units.

Construction of a small compost production units for each 100 HHs is recommended, for this TMA Balakot has to mobilize farmers where the farmers can produce their compost and sell the recyclable materials.

Deep Pit under Secondary Waste

Collection Containers: The waste is found littered outside the TMA Balakot containers in the residential area. As the families send younger kids to throw garbage in containers and they cannot throw heavy bags of garbage in those containers. It is recommended that one or one and half feet deep pit should be dug to put the container in it which will make the situation better.

Converting Organic Waste into Meat: In Kasur one cow can utilize 20 to 40 Kg green waste, so green waste of Kasur has to be utilized as feed for cows to convert the green waste into meat. There are thousands of cows present in peri-urban areas of Kasur so the farmers have to be involved to purchase the green waste.

Dealing Vegetable Market Waste Separately:

It is suggested that specific vehicles have to be used to collect specific waste like vegetable market separately, animal waste (dung) has to be collected by specific vehicle and these wastes should not be mixed.





INITIATIVES AND COLLABORATION

IRRC Bhara Kahu: A stepping stone for solid waste management efficiently, sustainably



AHKMT has been striving to develop minds to shift from the conventional end-of-the-pipe waste management system (focused merely on collection and disposal) towards a resource management approach. This approach can be bolstered by establishment of Integrated Resource Recovery Centers. For this purpose it has launched several initiatives and has been collaborating with different organizations for the larger interest of the community.



The rapid urbanization and economic development taking place in the Asia-Pacific region is leading to increasing solid waste generation, with an estimated 1.3 billion tons of municipal solid waste generated globally per year and this figure is expected to reach 2.2 billion tons per year in 2025. Managing solid waste is one of the costliest urban services in developing countries, where local governments spend 20 to 50 per cent of their budget on solid waste management. In low-income

countries like Pakistan, municipal solid waste management is the single largest budgetary expenditure, with on average 80 per cent being spent on collecting and transporting waste to the dumpsite. Despite the high-spending on waste management, cities are finding it increasingly difficult to collect, process and dispose of solid waste in a cost effective and environmentally friendly manner. Open dumping is the most common method for final disposal of waste as it offers a quick and easy solution

in the short run. However, this option is not sustainable in the long run as landfills reach capacity resulting from rapid waste generation rates and due to scarcity of land. Finding space for new landfills within municipal boundaries is becoming increasingly difficult. This problem is further compounded by the opposition of local communities to locate new landfills in their vicinity.

Moreover, open dumping causes severe environmental problems. Uncontrolled dumping leads to water and soil contamination, odors, and other health and hygiene problems. In addition to these adverse effects, uncontrolled dumping leads to the anaerobic decomposition of organic materials resulting in the release of methane, a powerful greenhouse gas (GHG), negatively impacting the climate. Improper waste management practices usually result in higher downstream costs than what it would cost to manage the waste properly in the first place.

In order to solve the problem, it is imperative to shift from the conventional end-of-the-pipe waste management system (focused merely on collection and disposal) towards a resource management approach. This approach can be bolstered by establishment of Integrated Resource Recovery Centers (IRRCs), which are facilities that enable cities to turn waste into resources through composting, recycling and bio digestion, thereby diverting municipal solid waste from landfills or open dump sites. IRRCs typically process 80-90% of waste streams, in proximity to the source of generation, and in a decentralized manner. Plants with a capacity to process between 2 and 10 tons of municipal solid waste per day have been established in cities in Cambodia, Sri Lanka and Vietnam and, now in different areas of Pakistan particularly in Islamabad, Sakrand (Sindh), Mardan (Khyber Pakhtunkhwa) by Dr Akhtar Hameed Khan Memorial Trust.

In June 2022, Dr. Akhtar Hameed Khan Memorial Trust and Engro Foundation launched a pilot project to establish an IRRC in Bhara Kahu, Islamabad. This initiative is a business model which will be made self-sustainable through generation of revenue and above all will have a

positive impact on environmental grounds in the area.

On 19th June, 2022 AHKMT and Engro Foundation reached an agreement that was attended by Engro Foundation Mr. Favad Soomro, Mr. Ahmed Shayan, Ms. Zearma Khan, Mr. Rao Mubeen and Mr. Saad Husain while AHKMT board members Mr. Edwin Samson, Hamid Ullah and CEO Sumaira Gul were present on the occasion. The agreement signing ceremony was held at Engro office, Islamabad. Later, the teams from both organizations visited the site where proposed Integrated Resource Recovery Center will be established.

So far the, the collaboration between AHKMT and CDA/MCI, MOCC, EPA, local government, ICT Administration collaboration has remained at correspondence level and AHKMT is awaiting final approval from them for further process on the project.

The correspondence has been beneficial as AHKMT has found the legal status of the land with the help of ICT administration and local government. The CDA has been written to give clearance for land after which EPA will conduct an IEE study.

The project is a physical facility of solid waste management and is aimed at recovering valuable resources from waste. Three major activities will be carried out by the IRRC collection of segregated waste, processing of waste and sale of the resources generated.

The main focus of IRRCs is on organic waste, which typically comes from kitchens, restaurants, and wholesale & fruit Shops. Inorganic waste –mainly paper, packaging materials made of plastic, glass, tin, aluminum, etc. can also be collected and stored on an IRRC, for subsequent sale, when market rates are at its most favorable.

Innovation Facet

A new innovation will be executed at this IRRC that will be built on government land, the IRRC will segregate plastic collected from general waste. And sell it as raw material to industry.

The pilot project in Bhara Kahu has been designed for 3000-4,000 households from where daily waste would be collected and transported to the IRRC where it will be reduced and converted into a resource. The kitchen waste will be converted into compost while the recyclable plastic and other items will go to the industry. This facility will sustain itself generating revenue from the sale of compost and getting the monthly fee from households against the waste from door step. AHKMT will make functional and self-sustained the pilot and would handover to relevant department.

The project plans to engage all relevant stakeholders to understand the working of this model and replicate it into other parts of the country as well.

The project will not only save government resources (transportation, human resource, land) but will have a positive impact on the environment on a considerable ground which would affect the lives of thousands of dwellers in the area. The project will help stop thousands of tons of waste and plastic especially from

reaching the Rawal Lake through its catchment areas that is resulting in environmental and health issues. This initiative will save acres of land from degradation annually where waste is dumped besides saving huge amount of government budget utilized for transportation of waste and purchase of landfill sites.

Since July 1, the pilot project team is actively engaged with stakeholders including Capital Development Authority, Environment Protection Agency, local government, Ministry of Climate Change, district government and others to present the project and get support for the initiative.

Initially AHKMT will construct a five ton daily green waste capacity Integrated Resource Recovery Centre where daily 500-kilogram compost would be produced and daily 1.4-ton plastic would be processed for recycling. The project would comply with more technologies to reach level of zero waste and create a replicable low-cost environment friendly SWM model.



VCs Conference at Kohsar University, Murree

Dr Akhtar Hameed Khan Memorial Trust was invited by Kohsar University, Murree to showcase their solid waste management model at Vice Chancellors Conference from September 29 to October 01, 2022.

AHKMT organized a stall at the conference showcasing all relevant material to brief the visitors and attract them towards the solid waste management modules. The visitors keenly visited the stall where they were briefed about the solid waste practices, its stages and solutions to address it.



The visitors, majority of whom, were students were briefed in detail about the benefits of solid waste management systems that can be adopted as a profession in an honorable manner and how IRRC can play a role in national economy by becoming the engine of circular economy.

Governor Punjab Dr. Baligur Rehman who was the chief guest at the opening and concluding ceremonies during his visit to AHKMT stall, appreciated the IRRC model. He was also presented a bag of Haryali compost by the AHKMT team.

HEC Chairman Mukhtar Ahmed also appreciated the IRRC model and its methodology for addressing solid waste issues of Pakistan. Kohsar University Vice Chancellor Syed Habib Bokhari said IRRC should be replicated across Pakistan as it is need of the hour.

Prof Dr Asif Ali Qaiser, HET Lahore, appreciating the IRRC model said people should be motivated

for source segregation and more emphasis should be given to value addition.

AHKMT and Muslim Hands AJK join hands for joint ventures, trainings

Dr Akhtar Hameed Khan Memorial Trust signed a Memorandum of Understanding with Muslim Hands Azad Jammu and Kashmir on September 27, 2022 for a period of ten years.

Under the agreements both sides will work in areas of solid waste management, environment and climate change relevant initiatives, research, trainings and entrepreneurship. Muslims Hands AJK and AHKMT will devise an annual action plan and make this plan of action see light of the day both sides will jointly mobilize their resources to generate funds.

The two sides also agreed in principle to jointly take up initiatives like establishing Integrated Resource Recovery Centers, training of youth as entrepreneurs, research work and capacity building in area of solid waste management.



AHKMT and Muslims Hands AJK also agreed to implement joint ventures for which separate agreements and detailed roles and responsibilities would be charted down.

Meanwhile, e-Guard Training Centre signed another Memorandum of Understanding with Muslim Hands AJK's representative Dr. Muhammad Nasir on September 29, 2022 to work on an initiative Black Soldier Flies as well as other solid waste management initiatives. Both the sides agreed that the profit earned

from the project will be distributed on equal sharing principle after managing the running expenses like human resource, medicines, chemicals, raw material, maintenance and utilities.

To further the agenda of trainings, a Memorandum of Understandings was inked between e-Guard and Muslims Hands AJK representative Muhammad Idrees Burhan. Under the agreement the two sides will work jointly for training initiatives.

Both sides agreed to utilize e-Guard platform for the purpose and later the partnership would be registered.

Both sides agreed to conduct online and face to face trainings initially and later to expand the scope of training as per need and requirement with the passage of time.

The two sides agreed to conduct trainings:

1. 3-Day Training
2. 15 Day Training
3. 3 Months Training

National Conference on SNG's pilot on SWM in Punjab, KP

A National Conference on Sub-National Governance's (SNG's) End-To-End Pilot for strengthening Solid Waste Management in Punjab and Khyber Pakhtunkhwa was held on March 03, at Pearl Continental, Lahore that was attended by Dr Akhtar Hameed Khan Memorial Trust CEO Sumaira Gul.



The aim of this conference was to share the methodology and approach of these pilot

initiatives with wider stakeholders scope, to discuss issues and challenges in implementation of service delivery plans prepared by SNG and also, to consider options for scaling these up in both provinces. The conference was also aimed at generating a discussion among stakeholders on the need to take immediate steps for addressing burgeoning issue of SWM in both provinces.

Addressing the conference AHKMT CEO Sumaira Gul spoke at length about IRRC Model of SWM by Private Sector in Pakistan and Waste Analysis and Characterization Study (WACS) in MC Kasur. She highlighted how AHKMT conducted Waste Analysis and Characterization Study (WACS) in MC Kasur in Punjab and WSSC Mingora and TMA Bahrain KP as part of SNG's SWM End-to-End service delivery pilot.

They also worked out the proposals for establishment of IRRCs in Punjab especially in SNG's pilot LGs.



She played a video about how IRRC model actually works on ground as a small scale effective SWM practice. She further elaborated the IRRC working mechanism in her subsequent slides of the presentation. The main spirit of an IRRC is to re-use, re-cycle and reduce the solid waste at source by a mechanism of first door to door collection with efficient HR and transport, followed by segregation and treatment etc.

Environment Day: Saving water resources through IRRCs stressed

Dr Akhtar Hameed Khan Memorial Trust celebrated Environment Day on June 06, 2022

in collaboration with Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST). The theme for the Environment Day was 'Only one earth living sustainability in harmony with nature'. Ambassador of Kyrgyzstan HE Mr. Ulanbek Totuiaev was the chief guest on the occasion.

Those who attended the seminar titled 'Integrated Resource Recovery Center and Water Resources' included AHKMT CEO Sumaira Gul, DG Pak EPA Farzana Altaf Shah, Asif Khan CEO Bhutto Foundation, Dr. Ghulam Rasool, Head Climate Change IUCN Pakistan and Dr. Imran Khalid, Director Environment WWF Pakistan.



Speaking on the occasion, Ambassador of Kyrgyzstan Ulanbek Totuiaev stressed the need of resorting to Integrated Resources Recovery Centers (IRRCs) for addressing solid waste management issues of Pakistan that can eventually help save water resources of Pakistan. He pointed out that Kyrgyzstan adopted the model of IRRCs ten years ago and Kyrgyz nation was reaping its benefits now. He called upon the government of Pakistan to adopt this model in larger interest of the country.

Earlier, briefing the guests, AHKMT CEO Sumaira Gul reverberated the alarming situation that has arisen due to garbage littered in water resources in Pakistan majority of which comprises plastic bottles. She pointed out the alarming situation of the Indus River which passes along 100 cities in the country and every city contributes to the water pollution by littering it with plastic and solid waste. "The issue of addressing solid waste along Indus River is quite easy, if 100 IRRCs are

established in the cities from where Indus River or its tributaries cross, there will be no garbage for the people to throw in the river besides this 1000 tons garbage will also help in preparing organic compost that can also help in addressing the agricultural needs of the farmers of these cities and towns and cultivate around 100 acres of barren land," she said adding IRRCs enable cities to turn waste into resources through composting, recycling and bio digestion, thereby diverting municipal solid waste from landfills or open dump sites. IRRCs typically process 80-90% of waste streams, in proximity to the source of generation, and in a decentralized manner.

Guest Speaker, Dr. Farzana Shah, DG Pak-EPA called upon the government and private sector to come forward and address the solid waste issue through establishment of IRRCs across the country. CEO, Bhutto Foundation, Asif Khan also spoke on the occasion.

National Conference on World Environment Day

Dr. Akhtar Hameed Khan Memorial Trust participated in National Conference on World Environment Day at Marriot Hotel, Islamabad on June 07, 2022. The theme of the event was Sustainable Solutions to Climate Change.



The conference was attended by Anam Rathore, Advisor Climate Finance GIZ, Dr Imran Saqib, Director Governance and Policy, WWF, Dr Antaonis Malagardis GIZ Advisor, SAR Project, Mehrunisa Malik, Co-Founder, Saaf Suthra Sheher, Ameera Adil, Founder, Clim-8, and Dr Salman Raza, Director National Science and Technology Park.

AHKMT CEO Sumaira Gul participated in the conference as a guest speaker and spoke at length about the solid waste management and solutions for addressing the issue of climate change.



She pointed out that adverse impacts of climate change needed to be reversed by adopting sustainable consumption practices, protecting natural water resources, ensuring fertile soil and taking collective transformative action on a global scale by developing partnerships with all concerned authorities to save our planet Earth.

AHKMT CEO said that the effects of climate change will be detrimental to the future of the country and coming generations without taking necessary mitigation measures. “Every Pakistani citizen has to play his role for the protection of environment and protection of his mother earth. A clean and healthy environment is possible only when every citizen fulfills his national and moral responsibility,” she said.



Talk shows on World Environment Day

AHKMT CEO Sumaira Gul in a couple of interviews with Radio Pakistan and Pakistan Television in connection with World Environment Day shared her views about the impacts of climate change and how the issue can be addressed.

She pointed out that environmental pollution and global warming was a challenge for the whole world including Pakistan.



Sharing her thoughts, Sumaira Gul was of the view that Pakistan was one of the top ten countries badly affected by the adverse impacts of climate change.

She elaborated her thoughts how impact of our actions are resulting in climate change. She also presented a number of activities (suggested solutions) how environment can be improved.

Environment Mela

Dr Akhtar Hameed Khan Memorial Trust attended Environment Mela at Ayub National Park, Rawalpindi on March 19, 2022 organized by National Cleaner Production Center Foundation (NCPC). The NCPC has a history of organizing ‘Environment Mela’ for past eight years.

AHKMT exhibited its products and projects and studies modules at the Environment Mela with the objective to involve different segments of the society to play their role in combating the hazardous effects of climate change besides promoting environment friendly technologies.

A large number of schools, colleges, universities and highly reputable organizations working in different areas of environment displayed their stalls at the event.



NPAP introductory Steering Committee Meeting in Islamabad

Dr Akhtar Hameed Khan Memorial Trust CEO Sumaira Gul attended a National Plastic Action Partnership Introductory Steering Committee Meeting held at Serena Hotel, Islamabad on October 13, 2022. The meeting was hosted by the Ministry of Climate Change, Government of Pakistan, in association with the World Economic Forum (WEF) under the Global Plastic Action Partnership (GPAP) initiative of the WEF. The meeting was annexed with the regional initiative of Plastic Free Rivers and Seas for South Asia (PLEASE) consultative workshop.



The purpose and brief agenda of the steering committee meeting was to present plastic waste management baseline and commitments of the major stakeholder's /committee members especially from private sector and development

sector. The steering committee meetings provided an opportunity to steer the plastic waste management issues in conjunction with all the major stakeholders (public sector, private sector, development sector, civil society and academia).

Speaking on the occasion Federal Minister for Climate Change Senator Sherry Rahman called for urgent need for creation of incentives for end user of single-use plastics.

She called upon stakeholders from across the country and abroad on strengthening innovation and coordination of circular economy solution to plastic pollution flowing through Pakistan's rivers mainly the Indus River.

The federal minister said that people were ingesting micro-plastics everyday through consumption of seafood, making it a crisis of our own creation that impacts our nutrition through plastic pollution.

Sherry called for an urgent need for creating incentives for the end users of single-use plastics in the society, as plastic pollution is one of the most significant barriers towards the on-going and future environmental interventions.

The Federal Minister, while highlighting the urgency of the matter, said that "Pakistan is facing the largest climate event of the century as there is no example in living memory of 33 million people affected by a single catastrophe. While the country adapts to a very uncertain, contingent, and unpredictable future, plastics are going to complicate our adaptation process and will hurtle us towards a 3°C world temperature."

WEF team visits AHKMT office for collaboration on NPAP

A team of World Economic Forum visited the office of Dr Akhtar Hameed Khan Memorial Trust in Westridge, Rawalpindi.

Mr. Muqees and Ms. Mariam from WEF contacted AHKMT CEO Sumaira Gul for holding a

meeting over National Plastic Action Plan. During the meeting the two sides discussed National Plastic Action Plan which will be led by Ministry of Climate Change. Engro Polymer Foundation is also the member of the plan. However, the WEF team expressed the eagerness to include AHKMT in the plan and a few days later, a Steering Committee was formulated and AHKMT was made part of the steering committee.



Students awareness in F-17

e-Guard Rawalpindi has been working in the field of solid waste management for over ten years. It has been providing services of solid waste collection and its processing in different areas of Islamabad and after finding garbage near schools and parks, the e-guard service providers sought AHKMT help for creating awareness among school students.



One of the first lessons that we impart to our children is to practice what we preach. The most common example to set is to use ecofriendly alternatives to disposable plastics. Instead of using plastic bags that choke the seas, we can use cloth bags for groceries. Instead of buying

single use plastic bottles for drinking water, we can carry water from home or when on the move. Vegetable peels and fruit peels can be used as manure for plants and water used for washing and other activities can be recycled for further use.



During visit of Sector F-17 in Islamabad, it was noticed that children visiting the local parks use to spread rappers and other garbage in the parks. A team of e-guard visited the area and motivated the children in T & T Colony School and Apple School in MPCHS, F-17 where children were apprised how they can take of not only their own waste but their home and community's to improve the ambience of their localities and create a sense of responsibility among them. AHKMT played its part and asked the school students to throw their garbage in dust bins and should not be littering around randomly.

Some of the students even asked that in case they don't have dust bins then what should they do. They were asked to collect all of their waste in a polythene bag and dispose it in a safe manner. They were also asked to raise their voices before the local management for putting up dustbins where necessary so that garbage is not littered around.

Children are naturally curious and creative so we must engage our imagination and start looking at waste and recyclables as useful materials and give them a new life. Turning plastic bottles into planters and starting an herb garden, creating mosaic art from bottle caps and turning cereal boxes into a periscope or a kaleidoscope help kids think creatively. Activities like these are fun and engaging. They also aid in

the learning process of the children and make them more conscious from a very young age.

Engaging School Students to Reduce Plastic

Dr Akhtar Hameed Khan Memorial Trust (AHKMT) is working with few schools of Islamabad to reduce plastic at household and community levels. Plastic pollution is caused by the accumulation of plastic waste in the environment. Negligence is the main cause. In fact, it is estimated that 80% of marine litter comes from land. This pollution comes mainly from household waste, which is poorly recycled, dumped in landfills or abandoned in nature. This waste is carried by the winds, pushed by the rains into sewers, streams, rivers, and finally in the oceans.

'Plastic Free Pakistan' is a campaign of AHKMT that aims to measurably reduce plastic pollution in communities across Pakistan. e-guard has identified plastic pollution as a key concern and taking action to confront the problem by engaging schools. This is self-sustained model where the revenue generated through weekly collected plastic helps run the initiative.

First of all, e-guard team mobilizes the school management for collaboration, where the team suggests the educational institutions to become part of the campaign and join hands with e-guard.



The mobilization prepares the school to sign a memorandum of understanding (MoU) with e-guard and both sides discuss the roles and responsibilities for the campaign. The school nominates a focal person and 100 students

and e-guard team provide orientation to the nominees for their job for the campaign.



During the third stage e-guard team visits the partner school once a week where they collect and measure the plastic given by students and in reward give them pencils. The collected plastic is then prepared for recycling.

For running the operations and making 'Plastic Free Pakistan' campaign sustainable, AHKMT needs an initial financial support for 6 months, following which it would be able to run on the basis of monthly revenue generated through sale of collected plastic from 10,000 students. One unit (100 schools) requires PKR. 200,000 for pencils, operation and salary of 3 persons which is managed by sale of collected plastic.

AHKMT partnership with Fatima Jinnah Women University (FJWU) Rawalpindi

Sustainable development has forced developing countries to have a focused look at their waste management system including educational institutions. Pakistan is at the brink of disaster. Being the 5th most climate risk country, institutions in Pakistan needs to revisit their operational mechanisms and learn from the countries that are emerging out of the challenging structures and stepped into the path of self-sustainability. Bangladesh is one such example which is progressing day and night. An era of knowledge economies and technological advancement poses different challenges that demand the incorporation of a participatory approach of development.

Fatima Jinnah Women University (FJWU) Rawalpindi approached Dr. Akhtar Hameed Khan Memorial Trust (AHKMT) for collaboration in developing a syllabus on solid waste management. AHKMT agreed to provide technical support on a Solid Waste Management (SWM) project to FJWU team. The team of FJWU has been provided training on the process of initiating the project in the community. AHKMT has developed an indigenous model of SWM and has devised a module covering four major areas i.e. theoretical, research, commercialization to innovation.

It was agreed mutually that short courses will be launched by the FJWU in collaboration with AHKMT during the vacations and gradually the module will be included in BS Programs from 3rd semester. The formal Memorandum of Understanding (MoU) is in the finalization process.

Both of the organizations are quite comfortable with each other and see the opportunity to collaborate on sustainable basis. AHKMT provided 3-day training to a group of social mobilizers from Fatima Jinnah Women University.

The Asia Foundation team takes interest in rooftop gardening

A team of The Asia Foundation visited Dr Akhtar Hameed Khan Memorial Trust to take an overview of the operations managed by the trust in field of rooftop gardening and solid waste management at the Integrated Resource Recovery Centre (IRRC) on August 22, 2022.

In Pakistan, The Asia Foundation works with local partners to promote inclusive participation and build the capacity of local institutions to meet the needs of citizens and sustain the gains of economic and social development. Through a continuous presence in Pakistan since 1954, The Asia Foundation has developed strong ties and valuable expertise on local, regional, and international issues. With an extensive network of local and regional partners in both government and civil society, The Asia

Foundation projects extend throughout the country, and range from large, nationwide programs to small, local initiatives. In Pakistan, efforts focus on promoting economic development and social inclusion, especially for women, strengthening citizen-state relations, and fostering human rights.

The Asia Foundation that visited AHKMT comprised Haris Qayyum Khan, Senior Advisor Pakistan, Kamran Yousuf, Grants and Compliance Advisor, Hania Mubarak, Program Officer and Tahir Khan Kundi, Program Associate.

The team was given an overview of the rooftop gardening by Hamid Ullah. During the briefing he apprised the visiting delegates the process of compost production and later its utilization in maintenance of plants.

Later, the team visited IRRC, B-17 where they were briefed about the different sections of the centre handling solid waste particularly the compost production.

Later, AHKMT submitted a proposal to The Asia Foundation for development of a pilot for one sector of Islamabad which would be replicated in other areas. It was suggested that this pilot project should be initiated through launch of:

- A campaign for communities, schools and other stakeholders for creating awareness among families for waste reduction and segregation etc.
- Roof gardening projects should be a must.
- A partnership with Islamabad district government during which a person has to be trained to perform the segregation of the waste in few streets (Mohallah). The person shall not be hired on a fixed salary but will have to manage his income through sale of recycling items and getting monthly fee from households.
- Improve the solid waste management system in one sector.



KNOWLEDGE SHARING

PLGA Lala Musa delegations' knowledge sharing visit to IRRC B-17, Mardan



AHKMT is exchanging its experiences and knowledge with different organizations and local levels and their teams received training and visited IRRC in Islamabad and Mardan to gain firsthand knowledge of the developments on solid waste management.



A 30-member delegation of Punjab Local Government Academy (PLGA) Lala Musa visited Integrated Resource Recovery Centre (IRRC) Sector B-17, Islamabad on May 23, 2022 and another trip on June 20, 2022 to get first-hand knowledge a practical solution to overcome the insurmountable waste management challenge of the country in the environmentally sustainable manner. Meanwhile, AHKMT representative Hamid Ullah visited PLGA Lala Musa for imparting training to government officials on June 13, 2022.

About Lala Musa Academy (PLGA)

PLGA at Lala Musa is a training academy for local government officers and newly elected representative from neighborhood and village/ Panchayat Council. PLGA has so far provided trainings to 10,000 officers from BS11 to BS-15, 1696 officers from BS-16 to BS-20 and 122,500 elected representatives from neighborhood and village/Panchayat Council bodies.

The existing PLGA academy at Lala Musa is also being upgraded to meet training needs of local government employees. With the mission of capacity building of government officials and elected representatives of local governments at district, tehsil/town and union level in Punjab. The objective of the PLGA is capacity building of elected representatives of various tiers of local governments, capacity building of govt. functionaries in local bodies for better service delivery, organizing conferences and seminars on local governance issues and liaison with donor agencies like UNICEF, CIDA, JICA, UNDP etc. to facilitate them for their country programs related to local government capacity building initiatives.

IRRC-B-17 Visit

On 16 May 2022, PLGA send a request letter to Dr Akhtar Hameed Khan Memorial Trust (AHKMT) for visiting IRRC B-17 to acquaint the participants about the administrative structure, operational methodologies and institutional arrangements. The main objective of the visiting IRRC was to understand the solid waste management and practical operations and various functions of IRRC and solid waste collection.



The delegation was received and welcomed by Ms. Sumaira Gul and Engineer Mr. Azeem. Mr. Najeeb Aslam the Director of PLGA briefed the AHKMT team about the objectives of the exposure visit and then all the participants introduced.

Mr. Azeem briefed the participants about the residential society MPCHS Sector B-17 and the delegation.

On 19 September 2022, Director Local Government Training Academy Lala Musa Najeeb Aslam, also led a delegation of government officers and visited IRRC B-17. The delegation was apprised of the journey taken by AHKMT and how building upon the successful experience, IRRC idea has been replicated into other cities of Pakistan.

Briefing on IRRC

The PLGA delegation was apprised of the Integrated Resources Recovery Center (IRRC) which is aimed at recovering valuable resources from waste. The delegation was apprised that three major activities can be carried out by IRRC, including collection of waste, processing of waste and sale of resources generated. The main focus of IRRCs is on organic waste, which typically comes from kitchen, restaurants and vegetable & fruits markets.

The PLGA delegation termed the visit quite fruitful and expressed the hope the model is quite beneficial and promoted in different parts of Punjab.

Engro delegation visits IRRC B-17 and Mardan

A delegation of Engro Foundation led by Ahmad Shayan and Ms. Shiza visited IRRC B-17 on September 21, 2022 to take the firsthand knowledge of the entire process of waste management, its segregation and compost production.

They were accorded a warm welcome by AHKMT representatives and briefed about the working of the IRRC.



Later the delegation visited IRRC Mardan where they were welcome by the IRRC focal person Mohammad Ishaq and briefed how the IRRC works. The delegation was apprised that presently around 5 tons' waste is being processed at the IRRC but the organization was planning to process waste from entire Mardan in the center.

The team was apprised about both the projects as how the same model has been implemented by private and public entities. The B-17 is a 3 tons' project managing garbage from 4000 houses and garden waste where zoo waste is also mixed for compost production.

WSSCM official Mr. Ishaq briefed the delegation about the 5 tons' capacity IRRC that is managing waste from 2000 households where for value addition waste coming from animal slaughterhouse is added in the compost.

Ansar Burney's visit to IRRC B-17

Ansar Burney, is a renowned social activist running a network of human rights organizations and volunteers is working to deliver social services, justice, better treatment of human beings, and for the rights and freedoms of civil liberty. Ansar Burney and his team work to raise awareness, provide free legal advice and services and humanitarian assistance where needed. The Trust enjoys the same repo as Abdul Sattar Edhi has in social service in Pakistan.



Ansar Burney along with some female members of his team visited Integrated Resource

Recovery Centre, B-17 Islamabad. He along with other guests was accorded a warm welcome by IRRC Incharge Hamid Hayat and Brigadier (r) Amjad Saeed Khan.

The delegation was briefed about the B-17 and around 4000 houses are covered from which e-guard collects garbage which is processed at the IRRC.

NIE delegation's visit to IRRC B-17

A team of National Institute of Electronics (NIE), an autonomous organization under the administrative control of Ministry of Science & Technology (MoST), led by Director General NIE Mr. Taufeeq Ahmad visited Integrated Resource Recovery Centre, B-17 Islamabad on 22 July 2022. The visit was arranged in collaboration with Brigadier (r) Amjad Saeed.

They were accorded a warm welcome by IRRC team and were briefed about the B-17 and operational structure of IRRC and its working.





AWARDS AND ACHIEVEMENTS



Kohsar University Murree presented a shield to Mr. Hamidullah during Vice Chancellor's Conference where AHKMT presented its solid waste management model.



GGGI from LAO presented the souvenir to AHKMT.



PMAS-AAUR presented shield to AHKMT against the contribution as course advisor.



Pak Mission Society presented shield to AHKMT in recognition of work in the area of climate change.



Services of Dr Akhtar Hameed Khan Memorial Trust have been widely appreciated by organizations across the country.



Pak Mission Society presented shield to AHKMT in recognition of work on environment.



Punjab Local Government Academy Lalamusa presented shield to AHKMT in recognition of work in the area of solid waste management.



Punjab Local Government Academy Lalamusa presented shield to AHKMT in recognition of work in the area of solid waste management.

Book Shelf: The Slum Culture launched



The book written by Sumaira Gul “Ham Gharib Shehri” and translated in English language with title ‘The Slum Culture’ was launched on 11th May, 2022 at SZABIST Islamabad. Senator Farhatullah Babar was the chief guest on the occasion while those in attendance included PPP Punjab Secretary Information Shahzad Ahmad Cheema, Haris Khaleeq, Shaheed Bhutto Foundation Chairman Asif Khan, City President Raja Kamran, Faiza Khan and others spoke on the occasion.

Eulogizing services of Sumaira Gul for PPP and the city of Rawalpindi, Senator Farhatullah Babar said that PPP leadership is always proud of such activists who always strive to serve the community and protect their rights.

AHKMT CEO Suamira Gul thanked all the participants and added PPP always strives to serve the community at grassroots level. “It also remains on the credit of the party to field ordinary citizens like me in the elections, as

its leadership knows how to give respect to its activists,” she concluded.



This book written is the reflection of her knowledge about slum areas of Rawalpindi. This book is representative of 24% population of the globe which lives in slum areas. The key message that Sumaira gives to her readers is that life is going on in slums and these slums are a great support to posh areas of the cities otherwise posh areas will not be like they

are now. She tried to present the philosophy that it does not matter where you are born and brought up but the continuous struggle matters which takes you to high places of your aspirations.

This book is a comprehensive syllabus for students of universities who are studying urbanization and other relevant subjects like sociology, population, urbanization, cultures, etc. Moreover, this book is a guideline for social workers who are engaged with slums development. The book presents the details of a special slum where Sumaira lived but it has a global context as well, especially the slums of South Asia are very alike and this is remarkable picture of slum life.



Earlier, reviewing the book, Fayyaz Baqir said that the book gives a first-hand account of people living in the informal settlements in Pakistan. “As noted by many renowned scholars, 90 percent of our population depends on the informal economy. Perween Rahman noted that people in these settlements create most of their infrastructure themselves. The best way to know about them is to become Ninja Turtles of Mapping. Sumaira Gul is one of those Ninja Turtles who has drawn the map of an informal settlement in Rawalpindi in words. The book has received tributes from international and national development experts and has been recommended for the briefing of development experts and teaching at the universities. If we want to change, we need to learn from the knowledge in the field. Sumaira’s book is a welcome addition to this body of knowledge,” he added.

E-guard participated in SEE Pakistan NSC 2022 Awards

SEE Pakistan 2022 is an embodiment of entrepreneurial dreams of Pakistani youth. Association of Private Sector & Universities of Pakistan (APSUP) offered a unique platform to emerging entrepreneurs to exhibit their innovative products at SEE Pakistan and participate in the National Start-up Championship. This event also intended to acknowledge the efforts of real national superheroes who are contributing in uplifting the entrepreneurial ecosystem of Pakistan by recognizing them at the largest entrepreneurship awards of Pakistan, the Entrepreneurial Excellence Awards powered by EO Lahore.

e-guard is one of the leading firms working at national level under the supervision of well-equipped professional experts. Since its inception e-guard achieved excellent results in different fields after thorough competition in last 5 years. As a result, e-guard remains a well-known firm in the subsequent activities.



In July 2022, e-guard participated in SEE Pakistan National Start-ups Champions subject event that was attended by around 10,000 participants. Out of which approximately 4,000 large companies of Pakistan were selected after short listing process.

e-guard won the laurels by qualifying and being selected in top 5 large and popular companies of Pakistan and recommended for participation in regional round as planned in different cities of

Pakistan. On July 27, 2022 e-guard participated in regional round held at Preston University, Islamabad. Bilawal Khan Operational Manager and Shahwaiz, Account Officer represented e-guard at the event.



1st Day of Event

SEE Pakistan 2022 welcomed all participants from 100 National start-up Champions at Superior University, Lahore. A couple of different training sessions were organized including one session for Start-up branding guidelines & Marketing Strategies Purpose while the other session was organized for Financial Statement and Financial Projection in entrepreneurship. Both the sessions remained quite productive. A musical night & barbeque dinner was also arranged for the refreshment of participants.



2nd Day of Event

A workshop for Entrepreneurship & Business, Learn Start-up Methodology, a mentorship activity covering of start-ups life cycle and how to raise funds for start-ups were organized. Pakistan Management called 20 top ranking CEOs to meet each start-up and gave their inputs as how to improve their business in short

timeframe. In the end Entrepreneurial Movie & Cultural Night was organized.

At the end of the day all the start-ups moved to Expo Centre, Lahore for the final leg of the event.



Final Day of Event

Final round of The National Start-ups Championship was held on 18 August 2022 at Expo Centre, Lahore. Mian Aslam, Minister of Industries, Commerce and investment was the chief guest of the event who cut the ribbon to launch the event.

Entrepreneurs displayed their stuff at stalls. The judges and guests visiting e-guard stall that was managed by Bilawal Khan and Shahwaiz appreciated the efforts of the company in managing solid waste efficiently. A large number of businessmen showed interest in Integrated Resource Recovery Centre (IRRC) and also undertaking joint ventures in future as well.

IRRC B-17 product compost 100 bags of 25 kg handed over to MPCHS in 2022





VISITORS COMMENTS

Visitors Comments



People visiting IRRCs for trainings or knowledge shared their thoughts about the prospects and benefits of the facilities set up by AHKMT



IRRC B17



IRRC G15



IRRC Mardan



IRRC Sakrand



IRRC Jinnah Garden

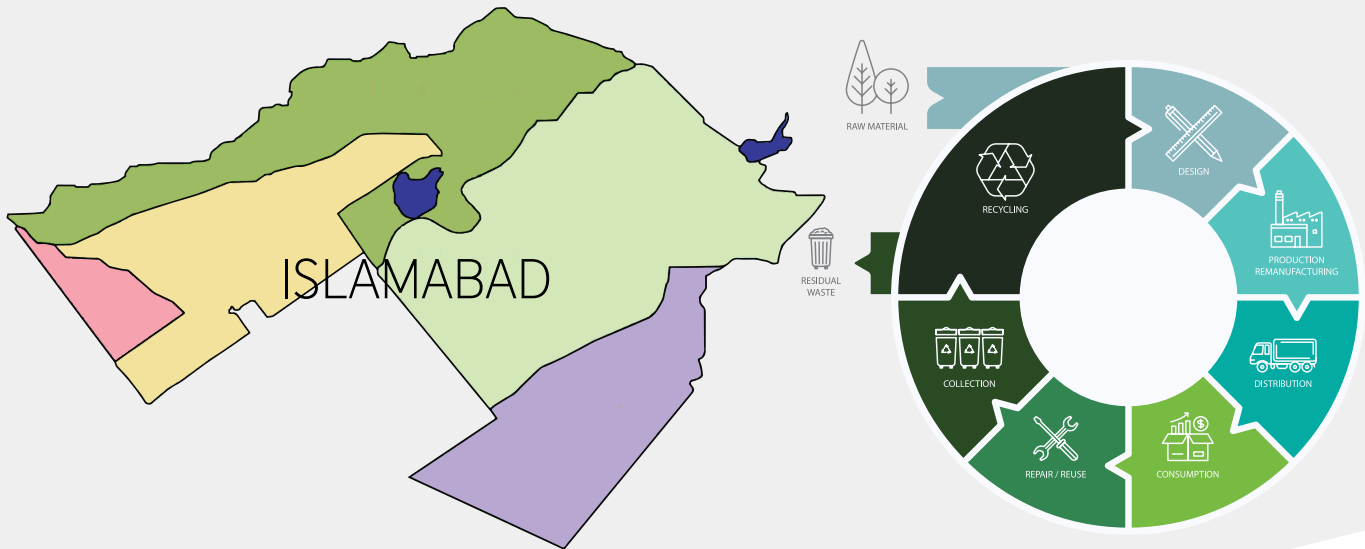


Date	Name	Remarks
18-03-2021	Sommich Flower , Director Sitara Trust	I am so happy to see this beautiful and efficient facility. We want to find a way to develop something similar in our own town.
18-03-2021	Asma Sayyam , Principal Girls High School	Everything here is amazing. It has been well built and well organized. We really want to have this kind of facility in our area, Chattha Bakhtawar.
18-05-2021	Major (Retd) Hassan Akhtar	It was a pleasure to visit the site. An activity which is urgently required for entire Pakistan. Keep it up!
16-07-2021	Parvez Abbasi , Project Director NIC	I am pleased to see the great environment friendly recycling plant by Hamid Ullah and his team. We would like to learn and replicate this work across Pakistan for plastic recycling as well as kitchen waste into fertilizers to help clean and protect the environment for future generations of Pakistan. Great work, Job Well Done.
24-08-21	Naveed Aziz , Government Advisor FCDO, Pakistan Team: Sana Aziz, Dr. Vaqar, Umar, Anum and Riaz (Deputy Collector)	Highly impressive initiative which is not only sustainable but replicable too. Government agencies and development sector has a lot to learn from them.
24-08-2021	AHT Group RRM Mansehra Project Manelly Casawava Ulrich Samuet	Great and important initiative to replicate in other districts in Pakistan. Thank you for your time and detailed explanation.
18-09-2021	Sabih Ul Hassan , District Water Quality Surveillance Officer, Local Government, Peshawar	Being an environmentalist, I feel very happy to see such a great initiative like IRRC. Projects like these are the corner stone in handling the issue of solid waste.
20-09-2021	Arsalan Ayaz	We had a very good experience, management is very cooperative and gave us very useful information.
20-10-21	Deputy Manager Crescent Pakistan	What an example of a decentralized waste management collection and processing center. Wishing you good success and perhaps will collaborate in the future. Insha Allah!
21-10-21	M Qadeer , Incharge Landfill site Multan MWMC	I have seen here segregation process of waste and understood the system of e-guard. MWMC is looking forward to work with you.
3-11-21	Hamad Hamid	Deeply impressed by the operations of e-guard
3-11-21	Afaq Haroon, Adnan (Peshawar)	A very well organized process for organic recycling

3-11-21	Hassan Ali (Quetta)	Wonderful structure of SWM, very manageable and cooperative staff.
11-11-21	Breshma, Fatima Sabir, Tayyaba Younis and Minhas Ali	It was truly wonderful experience. The infrastructure combined with the efforts made by the team, truly show the potential for a greater tomorrow. A very detailed visit. Sir Bilawl is very understanding and answered all our queries. Love the work done with honesty.
13-11-21	Naufil Shahrukh, GM Operations Institute of Policy Studies	The policymakers at all levels of the government should study this successful model and implement it across the country for the benefit of all
17-11-21	Habib Bhatti, VC Kohsar University, Murree	Hats off to see the waste management unit working efficiently at very low cost. Glad to see the maturity of workers. It will clearly be able to address environmental challenges of the region.
08-12-21	Mohammad Rana	Today We visited the Solid Waste Management unit and found it be very beneficial for environment. Such steps should be established across the country as well.
08-12-21	M Tahir Khan, Dy. Manager SWM WSSC Swat	Today we visited this facility and learned a lot of innovative ideas from them about handling of waste and its useful usage. they are really impressive and not wasting the waste.
22-01-22	Amir Bukhari	It was a nice learning experience visiting the plant today. It is an innovative solution to solid waste management issue.
27-01-22	Dr. M Mohiuddin, AP	Today our team from KUM visited this place. We learned a lot of things. The place is clean and well managed.
31-01-22	M Usman Sarim (AC)	Today our team from Dhir Kot including agricultural department and local farmers visited the IRRS. We learned about solid waste management. This plant has contributed in the cleanliness of environment and Islamabad. We wish them best of luck and we pay tribute to them for their work. We hope nature will pay them back
02-02-22	Amer Majeed, Coordinator Clean Green Pakistan	Today we visited IRRS and learned the sustainable model of solid waste management process. I must appreciate the efforts to provide employment as contribution to the environment. Wish them success.
02-02-22	Syeda Fatima Haider, Advisory Committee, Punjab Clean and Green	This has been a rewarding experience. We would like to use this model in our UC Lahore (203). We hope to set an example for all UCs all over Punjab.
10-02-22	Dr. Majid Mahmood Tahir, Associate Professor, University of Poonch, Rawalakot, Azad Jammu and Kashmir	Very motivational. You are doing very notable job. Will visit again with my students. Thanks
10-02-22	Ijazul Haq, Research Officer, Agricultural Institute, Peshawar	This was really an honor for us to visit your prestigious institute, which is doing a very good job in terms of converting waste into useful material. More power to you.
10-02-22	Dr. M Arif Mengal, Deputy Director	It is a great technology to get organic fertilizer for production to use the waste. "Hard work always pays off". Appreciate the work. Thanks
10-02-22	Engineer Mohammad Aftab, Manager, Lahore Waste Management Company	After the visit and briefing, it has been observed that this model is self-sustainable and generating revenue. It should be encouraged at small/large scale as it was only inspiration and very minimal amount of maintenance plus environment friendly.
10-02-22	Zahid Hussain, Research Officer NCRD	One of the greatest service provider by the organization, innovative techniques are adopted.
10-02-22	Divisional Deputy Director LG, Skardu	Visited the centre and found very informative. Indeed, this organization is doing very well.
10-02-22	Director ORIC Jinnah University of Women, Karachi	Excellent effort, seems like a dream of clean and green Pakistan can come true through such efforts. On behalf of Jinnah University of Women, Karachi. We really appreciate all the efforts.

05-03-22	Rana Abdul Qayyum , President Ghauri Welfare and Management Association, Ghauri Town, Islamabad	I along with Mohib Ur Rahman Khattak visited the IRRC Islamabad today. We were given a detailed briefing by Bilawal Khan on working of the centre. We were really glad to find that the IRRC team led by Bilawal Khan is working diligently for improving the environment of not only Islamabad but all over Pakistan. We found the environment of B-17 quite clean. The way these people are handling waste and turning it into useful material is quite laudable. In our town two tons of waste is produced on daily basis. Ins Allah I will contact the management of e-guard for launching a similar set up in Ghauri Town.
10-03-22	Sajjad Akbar, Mohammad Shoaib , Unicef Peshawar	Extremely impressed to see this solid waste management facility by AHKMT. Good learning opportunity for replication and upscale. Many thanks to Sumaira for her detailed briefing and her passion to resolve solid waste issue.
28-03-22	Khubaib Zafar , Director Marketing, Technology International	It is very impressive project. Not only a business but also societal beneficial work. I am blessed for being able to visit a wonderful site.
25-04-22	GM Saadat Ullah , GE Mariat PMO Taxila	Very impressive. Good effort for business. Such projects are very much recommended for awareness and recycling of waste. Which is to be used positively without harming nature rather helping the nature.
10-05-22	Dr. Saniya Hameed Pasha , AC Saddar Islamabad	I visited the site and I am really impressed to see the amazing work being carried out by IRRC. These projects are the need of the hour in order to save our future and the greenery/environment of the capital. This needs to be replicated in every sector to achieve a sustainable solution of solid waste management. Absolutely inspiring and motivational visit for community and society.
12-05-22	Abrar Ahmad , NESCOM, Qazi Abid Qayyum , Chief Officer PCGB	Excellent pilot project can be replicated to a large scale. A delegation of 28 chief officers visited the site.
13-06-22	Shomi Kim , GGGI	Thank you for the warm welcome and taking us through the process of IRRC. Very impressive.
13-06-22	Bomchamc , VCOMS	Impressive IRRC. Thanks for warm hospitality.
13-06-22	HyeunjaeKzn , GGGI	Great effort, very impressive. Thank you very much for your hospitality.
7-7-22	Brigadier (r) Tofiq Ahmad , Director General National Institute of Electronics	Indeed! it was a great honor to visit IRRC. Excellent display of community service with innovation and commitment. My whole hearted appreciation to Mr Hamid Ullah for his service to Pakistan and community. I feel so grateful to join hands with e-guard for starting R&D to infuse technology in this project.
22-07-22	Almas, Tahira Jabeen, Sajida, Gulzar and Sheraz Nigar , Community members from Abbottabad	We have learned a lot from this IRRC which is a great service to the community. There is dire need of such set ups to address the issue of solid waste and it should be replicated in other parts of the country as well. May Allah Almighty grant you success in your endeavors.
	Muhammad Saqib , WSSCA	I chief sanitary inspector and all workers visited IRRC and had great visit. We learned a lot. When the IRRC in Sabhad dumping ground is complete we will use this experience there. Special thanks to Sir Hamid Ullah and Ms Sumaira Gul Vissal also facilitated us.
	Saad Rafique , Head of Programs, Muslims Hands AJK	Indeed, it was a great experience visiting IRRC. Witnessing great community services with innovation has been pleasure for myself and my team. I wish best of luck for future endeavors for IRRC team and management. Best regards.

Solid Waste Management Vision 2047



Dr Akhtar Hameed Khan Memorial Trust has envisioned a 25-year progressive plan to turn Pakistan into a responsible country having solutions in the area of solid waste management on the centenary celebrations of the country in 2047. It will turn Islamabad Capital Territory into a model for other parts of the country having zero waste, applying innovative waste management techniques.

The plan is based on creating a national hub in collaboration with partners including different friends (institutions) and replicate best global practices in area of solid waste management in Islamabad. This will be a pilot project which will be reflective of various dynamics AHKMT has found in different areas of Pakistan. AHKMT has envisioned the goal that in 2047 the solid waste produced in Islamabad will be collected and processed the same day. Islamabad has been taken to as a model because of its representation of Pakistan having mountains, plains, rivers, 2 main dams, several streams, rural, and urban areas as well as slums, and it comprises 100 union councils with a population of approximately 2 million people. The city is divided in five zones in which 40% area is covered with housing societies while the city also has 22 slums (Kachi Abadis), 40 universities, 5 government hospitals. Around 1000 tons waste is generated in the city's

urban, rural and slum areas while only 800 tons is transported to the landfill through use of conventional methods. In the city, vegetable market alone produces 40 tons of waste alone. The waste is generally polluting water bodies and streams in the region. The conventional approach to handle the waste is deemed unfit for future needs of the city, which needs a new vision to handle the issue.

There are also a number of benefits this national hub could have by doing waste management, such as saving the money on supplies, reducing the current waste disposal costs, and in the long term this step may avoid the environmental burden caused by producing and disposing unnecessary materials.

The AHKMT has envisioned creating a network and separate body for the work plan to be executed which also includes creation of circular economy hub (recycling), introduction of entrepreneurship models, review and amendments in laws and regulations of the institutions to involve innovations, provide training to sanitary workers, councilors and other relevant individuals and institutions, build the capacities of relevant institutions, create integration and engaging with institutions like madaris, educations institutions etc, conduct experiments on a variety of wastes (urban, rural,

slums, industrial, hospital, housing societies) and adopt models relevant to Pakistan situation like South Asian models and make arrangements for acquiring grants from donor organizations. The AHKMT will be mapping the stakeholders and assigning tasks as per their strengths, devising functions of institutions, create integration among institutions and ensure their mobilization, replicate Integrated Resource Recovery Centre models in the city, share knowledge management through publications, introducing new products from the wastes and promotion of entrepreneurship, develop the capacities of institutions.

AHKMT's work plan has been divided in five cycles of five years each, doing work on training, expanding plants of waste converting in resource, recycling products, working with educational institutions, promoting organic crops and vegetables and inclusion of innovations.

AHKMT has envisioned a number of innovations and activities to be implemented during execution of the Vision 2047 under which it will provide regular training to councillors, district councillors and other social activists, and use sewerage sludge for compost production, while projects for waste to energy will be executed under which gas/bio fuel/KDF will be generated. It will work on process of organic food production, ensure a legal bindings for all housing societies at public and private levels to have a proper solid waste disposal system, besides ensuring separate bins placed at important spots for waste segregation. AHKMT will work on food generation for animals from hotels and restaurants waste, and set up nurseries and such plants will be planted in the city that are profitable for public. AHKMT also envisions to promote food for animals and insects,. It also plans to set up waste services providing companies at local, national and international levels. AHKMT also envisions to establish a solid waste university besides developing a solid and efficient IT system that will monitor waste and workers associated with the waste sector. IT also aims to promote profitable initiatives along drains, roads, parks and housing societies, facilities and organizations for reducing waste at local level. A separate and dedicated website which carries information on every successful model/

survey will be developed. It will also arrange environment friendly transport system and promote industries products from 22 recyclable items as well as products made from green waste. For this purpose all affordable models will be replicated in Islamabad. The solid waste will be segregated and supplied to the relevant places while the informal sector involved in solid waste will be provided training. The AHKMT also plans to generate food products from organic compost and kitchen gardening, entire machinery utilized in solid waste sector will also be manufactured at local level, trainings provided in schools for no littering and producing less waste and income generation through waste and ensure that no child will remain involved in trash sector.

AHKMT has planned to set up institutions for training (Local, National and International), Research and Studies, Waste Recycle, International Models, NGOs, Industry and Informal Sector, Networking, Publications, Products, Green Business Development, Human Resource Development and Networking/Social Media, Print and Electronic Media.

It has also defined a set of stakeholders for executing the Vision 2047 which include District Administration: (Commissionaire, Deputy Commissionaire, Assistant Commissionaire, CDA, MCI), Forces: (Army, Navy, Air Force, Police, Rangers, FIA, IB), Judiciary: (Supreme Court, High Court, Lawyers Associations), Govt. Departments: (Health, Education, Local Govt, Forest, EPA), Media: (Press Club, media houses, print media), Banks: (World Bank, Asian Development Bank, State Bank of Pakistan), Embassies: (USA, UK, Germany, China, Australia, Korea), NGOs:(Unicef, Asia Foundation, Muslim Hands, ShahrSaaz, Hands, ABES, NRSP, AHKMT, NCA), Pakistan Agriculture Research Council, NCRD, National Institute of Electronics, Political Parties, Religious and Ethnic Groups, Private Housing Societies, Land Registration and Revenue Authorities, Chamber of Commerce, Private Hospital associations, Private Schools Associations, Hotel Association, Poultry Association, AnjumanTajran, Barber's Association, KachiAbadi Network, Property Network, HEC, Universities, Dams and Parks. Apart from research, a capacity building and training institute will be established to enhance the skills of all stakeholders.



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