



Puntland Highway Authority

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The 1st Annual Puntland Road Development CONFERENCE REPORT

“Building Resilient Road Networks for Sustainable Growth”

Garowe, Puntland, Somalia

JAN, 2025



THE 1ST ANNUAL PUNTLAND ROAD DEVELOPMENT CONFERENCE

THE 1ST ANNUAL PUNTLAND ROAD DEVELOPMENT CONFERENCE BUILDING RESILIENT ROAD NETWORKS FOR SUSTAINABLE GROWTH

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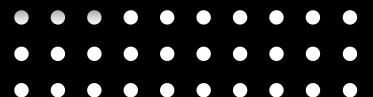


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EXECUTIVE SUMMARY

The 1st Annual Road Development Conference in Puntland, held from January 9th to 12th, 2025, in Garowe, marked a historic milestone in Puntland's efforts to address critical challenges in road infrastructure development. Organized and sponsored by the Puntland Highway Authority (PHA), the conference brought together government officials, engineers, experts, and stakeholders to collaboratively tackle issues such as inadequate road networks, limited technical capacity, and insufficient policy frameworks. The event aimed to set a roadmap for sustainable road infrastructure development in Puntland, aligning with the PHA's Strategic Plan for 2025-2029.

Thank you for your dedication and support. Here's to an even brighter future ahead!

The conference was structured around **four thematic areas**, each addressing key aspects of road infrastructure development:

THEMATIC AREAS

- **Thematic Area I:** Highway Planning and Design Innovations
- **Thematic Area II:** Road Safety and Traffic Management
- **Thematic Area III:** Materials, Construction, and Maintenance Solutions
- **Thematic Area IV:** Improving Puntland Road Procurement and Enhancing Public-Private Partnership Model.

The **1st Annual Road Development Conference in Puntland** concluded with a set of **key outcomes and actionable recommendations** aimed at driving sustainable road infrastructure development, enhancing economic growth, and improving the quality of life for Puntland's residents. The Conference emphasized the importance of **collaboration, innovation, and capacity building** in addressing the region's infrastructure challenges, setting a strong foundation for future development initiatives.



Dr. Abdifitah Sugulle
CEO, Puntland Highway Authority

BACKGROUND

Puntland faces significant challenges in road development, ranging from inadequate infrastructure to limited technical resources. Recognizing these challenges, the Puntland Highway Authority (PHA) organized “The 1st Annual Road Development Conference in Puntland” to create a platform for collaboration, knowledge sharing, and strategic planning.

This conference is the first of its kind in Puntland and aims to bring together policymakers, engineers, and industry experts to address pressing issues in road construction and management. The event aligns with PHA’s strategic vision for 2025, focusing on policy improvement, innovation, and sustainable practices to enhance road infrastructure across the region. The overall aims of the 1st Annual Road Development Conference in Puntland are:



Objectives

- *To raise awareness of the current state of Puntland’s roads among the public, government, and international stakeholders, advocate for enhanced road infrastructure, and showcase completed projects and achievements.*
- *To present findings from the Road Condition Surveys (RCS) conducted by the Puntland Highway Authority (PHA) on paved roads, providing actionable insights to prioritize interventions.*
- *To showcase research studies aimed at advancing the planning, design, construction, maintenance, and management of road infrastructure in Puntland, emphasizing innovation and sustainability.*
- *To facilitate knowledge-sharing by bringing together academics, engineers, road construction experts, policymakers, and contractors to exchange experiences and best practices.*



OPENING SESSION

Welcome Address



Dr. Abdifitah Sugulle
PHA CEO

Dr. Abdifitah Sugulle, CEO of the Puntland Highway Authority (PHA), warmly welcomed government officials, experts, and participants to the 1st Annual Road Development Conference in Puntland, a landmark event in the region's road development efforts. He highlighted the conference's significance in fostering innovation, improving project execution, aligning local initiatives with global standards, and contributing to PHA's strategic plan for 2025, which aims to drive transformative growth in Puntland's road sector.



Opening Remarks

Opening remarks were delivered by key government officials, including **H.E. Ilyas Osman Lugatoor, Vice President of Puntland; H.E. Farah Awad, Minister of Public Works, Transport, and Housing; H.E. Maryan Ahmed Ali, Minister of Women Development and Family Affairs; H.E. Mohamed Farole, Minister of Environment and Climate Change; H.E. Mohamud Aidid Dirir, Minister of Information, Telecommunication, and Tourism; Eng. Abdikadir Isse, Chairperson of the Puntland Engineering Association; Mr. Abdirahman Abdirisak, Chairperson of the Puntland Non-State Actors Association; and Mr. Mohamed Aidid, Chairperson of the Puntland Chamber of Commerce.** Each speaker emphasized the critical role of road infrastructure in driving Puntland's economic growth, improving regional connectivity, and enhancing the quality of life for its residents. They reaffirmed the government's commitment to fostering innovation, sustainability, and collaboration between the public and private sectors to address the region's infrastructure challenges. Speaking on behalf of the government, **H.E. Ilyas Osman Lugatoor** highlighted the establishment of the **Puntland Development Fund**, a dedicated initiative to allocate resources for critical infrastructure projects, and called for collaboration from private businesses, the diaspora, international donors, and the broader international community to support these efforts.





Key Presentations

Thematic Area I: Highway Planning and Design Innovations

Thematic Area I, Highway Planning and Design Innovations, aimed to address key challenges and opportunities in advancing Puntland's road infrastructure development. Through Four focused sessions, experts and participants explored innovative strategies, tools, and approaches to improve highway planning and design while ensuring sustainability and efficiency.



Session 1: Presentation of the Establishment of a Road Asset Management System (RAMS)



Eng. Yusuf Abdinasir Mohamed, **Technical Advisor, Puntland State Ministry of Public Works, Housing & Transport**, delivered a detailed presentation on the establishment of a **Road Asset Management System (RAMS)** for Puntland. His presentation aimed to highlight the importance of systematic road management, the challenges faced by Puntland's road infrastructure, and the proposed framework for implementing RAMS to address these issues.



Key Highlights:

1 Importance of Road Infrastructure & Need for Systematic Management:

Eng. Yusuf emphasized the critical role of road infrastructure in enabling economic and social growth, regional connectivity, and stability. He highlighted that roads connect urban areas, rural communities, and essential services, making them vital for the economic recovery of post-conflict countries like Somalia, where roads have suffered from decades of neglect and underinvestment. Inadequate road conditions hinder economic growth and increase transport costs, making the preservation of roads in adequate condition a primary necessity for any society. He noted that road agencies can enhance the efficiency of their operations by adopting modern integrated data and asset management systems, such as RAMS, which can streamline decision-making and resource allocation.

3 Proposed RAMS Framework for Puntland:

Eng. Yusuf presented a proposed framework for RAMS in Puntland, adapted from the **African Development Bank's (AfDB) RAMS Toolkit**. The framework would be placed under a new department within the existing **Puntland Highway Authority (PHA)** and would focus on organizing and displaying road asset data, managing road network maintenance, and optimizing resource allocation. The framework aims to enhance decision-making, improve road standards, increase accountability and transparency, and engage stakeholders effectively. Eng. Yusuf outlined the key steps for implementing RAMS, including setting clear objectives, aligning institutional structures, developing a **Road Asset Management Plan (RAMP)**, and deploying the system in phases. He emphasized the importance of preventive and routine maintenance strategies, cost-benefit analysis, and environmental sustainability in the RAMP.

2 Current State of Puntland Road Infrastructure: Challenges & Opportunities:

He outlined the current state of Puntland's road infrastructure, which consists of **891 km of primary roads (paved but deteriorated), 4,541 km of secondary roads (earthen), and 219 km of tertiary roads (earthen), totaling 5,651 km of classified roads**. He highlighted several challenges, including the lack of a centralized road asset and condition database, which hampers decision-making and prioritization. Institutional misalignment, resource constraints, limited institutional capacity, and operational challenges, such as a focus on reactive rather than proactive maintenance, further exacerbate the problem. Additionally, extreme weather conditions and increasing axle loads pose significant threats to road infrastructure. However, Eng. Yusuf also identified opportunities, such as the availability of open-source tools for RAMS development, the potential for partnerships with donors and regional organizations, and the opportunity to position Puntland as a pioneer in implementing RAMS for wider application in Somalia.

4 Current State of Puntland Road Infrastructure: Challenges & Opportunities:

Eng. Yusuf detailed the implementation plan for RAMS, which involves a phased approach to ensure gradual adoption and minimize risks. The plan includes **Phase 1 (Year 1): Core System Development, Phase 2 (Year 2): Pilot Testing, and Phase 3 (Year 3): Full-scale Rollout**. He stressed the importance of capacity building for RAMS users and stakeholder engagement throughout the implementation process. The core system would include a database, data collection tools, and asset management tools, with open-source and paid GIS and IT software used to support the system.

5 Financial Considerations:

He highlighted the considerable financial resources required for the initial development of RAMS, including data collection, institutional strengthening, and stakeholder engagement. He noted that current financial sources are limited, relying on allocations from the Puntland State budget and ad-hoc donor funds, which are often slowed by political bottlenecks. To ensure long-term sustainability, he recommended reducing reliance on ad-hoc funds and establishing diversified financing models, such as user-based schemes, long-term asset management funds, and cost-sharing strategies. Strong financial management and transparency were emphasized as essential for the success of RAMS.

6

Monitoring and Evaluation:

Eng. Yusuf discussed the importance of establishing **Key Performance Indicators (KPIs)** for monitoring and evaluating the success of RAMS. These KPIs would include road condition metrics, maintenance and rehabilitation efficiency, financial management metrics, stakeholder satisfaction, and system usability metrics. He emphasized the need for continuous improvement through feedback loops and periodic reviews of the entire framework to assess its overall impact and adapt to evolving changes.

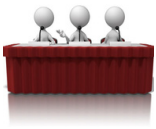
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Global Case Studies and Success Stories:

Eng. Yusuf shared global examples to underscore the effectiveness of RAMS. He highlighted Pakistan's successful implementation of a Road Asset Management System, which integrated GIS technology and structured data collection. This system improved decision-making, enhanced maintenance planning, and significantly reduced long-term infrastructure costs, serving as a model for Puntland's adoption of RAMS.

Conclusions and Recommendations:

Eng. Yusuf concluded by reiterating the importance of roads as crucial public assets and the need for their sustainable management for Puntland's socio-economic development. He emphasized that RAMS is a flexible framework that fosters data-driven decision-making, institutional strengthening, and efficient resource allocation. To ensure the successful implementation of RAMS, he recommended taking strategic decisions to place RAMS under PHA, prioritizing institutional assessment and reforms, using phased deployment and scalable technologies, ensuring continuous stakeholder engagement, securing diverse and sustainable funding sources, and using monitoring and evaluation systems to refine RAMS over time.



Panel Discussions

Panel Discussion I: Road Asset Management System (RAMS) Implementation



Moderated by **Eng. Yasiin Husseini Yasiin**, Project Manager at the Puntland Highway Authority (PHA), this panel discussion centered on the importance of implementing a Road Asset Management System (RAMS) in Puntland. The panel explored the benefits of RAMS, challenges and opportunities for its adoption, and the current status of Geographic Information Systems (GIS) at PHA. Panelists outlined strategic steps to ensure successful RAMS implementation and improve road infrastructure management. The panelists included:

1. **Eng. Yusuf Abdinasir Mohamed**, Technical Advisor, Puntland State Ministry of Public Works, Housing & Transport
2. **Eng. Abdimahad Said**, Technical Advisor, Hydro Nova for the Design of Garowe Drainage
3. **Eng. Abdirahman Adan**, GIS and EIA Section Head, Puntland Highway Authority (PHA)

Key Discussion Points:

01 Importance of RAMS for Puntland's Road Management:

The discussion underscored the critical role of RAMS in transforming Puntland's road management. Its centralized data management system enhances decision-making and resource allocation, addressing the inefficiencies caused by fragmented data. Furthermore, RAMS promotes cost reduction and sustainability by prioritizing maintenance and construction through data-driven insights, ensuring efficient resource use and long-term infrastructure durability. These benefits highlight RAMS as a vital tool for effective road management in Puntland.

02 Puntland as a Pioneer in Somalia:

The panel emphasized Puntland's potential to set a benchmark in road asset management through the implementation of RAMS. By adopting this system, Puntland positions itself as a leader in Somalia, providing a model for other regions to follow. The transparency offered by RAMS, through centralized road data, was highlighted as a key factor in attracting donors and investors. By clearly showcasing progress and needs, Puntland can build trust and secure funding for critical infrastructure projects, further solidifying its pioneering role.

04 Opportunities for Leveraging GIS and Cost-Effective Tools:

The panel identified significant opportunities in adopting cost-effective tools like QGIS, which provide a financially viable solution for managing GIS data essential to RAMS. By leveraging existing GIS data, Puntland can enhance road network management without requiring substantial additional investment. These tools reduce financial barriers and make the implementation of RAMS more feasible, offering a practical pathway for Puntland to modernize its road management practices.

03 Simplifying Road Data Management:

The discussion underscored how RAMS addresses inefficiencies in road data management. By integrating all road-related data into a single system, RAMS eliminates the fragmented records currently maintained through paper-based methods and basic software like Excel and Word. This centralized approach enables improved planning, maintenance scheduling, and long-term infrastructure analysis, leading to more efficient and effective outcomes for Puntland's road network.

05 Challenges to RAMS Implementation:

Despite its potential, the panel acknowledged several challenges to implementing RAMS. A critical barrier is the lack of trained GIS personnel, which underscores the need for capacity building and training programs. Additionally, inconsistent and non-standardized project data complicates decision-making and resource allocation within the system. While tools like QGIS are available, their integration and utilization remain underdeveloped, limiting their effectiveness in supporting RAMS. Addressing these challenges is essential for the successful adoption of the system.

06 Current Data Management Practices at PHA:

The panel highlighted the outdated methods currently used by the Puntland Highway Authority (PHA), such as paper records and basic software, which result in fragmented and inefficient data management. This underscores the urgent need for a systematic approach like RAMS to streamline data collection, storage, and analysis, ensuring more effective road management.

08 Steps for Successful RAMS Implementation:

The panel outlined key steps for the successful implementation of RAMS. These include investing in training and capacity building for PHA personnel, particularly in GIS and data management. Standardizing data collection and storage protocols across all road projects is essential to ensure consistency and reliability. Additionally, securing support from key stakeholders, including the government and donors, is critical for the sustainability and success of RAMS.

10 Promoting Transparency and Accountability:

The panel highlighted how RAMS can enhance transparency and accountability by showcasing road data to stakeholders. This transparency demonstrates efficient resource use and builds trust with donors and investors, ultimately attracting more funding for road infrastructure projects. By promoting accountability, RAMS supports Puntland's broader development goals and ensures the sustainable management of its road network.

07 Progress in GIS Utilization:

The discussion noted significant progress in PHA's adoption of GIS tools for road network management. With road networks now being mapped and managed using GIS, PHA has laid a strong foundation for further advancements, including the implementation of RAMS. This progress demonstrates Puntland's commitment to modernizing its road management practices.

09 Enhancing GIS Capabilities:

To fully leverage GIS for RAMS, the panel emphasized the importance of continuous training for engineers and data managers. Expanding the range of GIS tools and resources available to PHA will improve data integration and analysis. Establishing a centralized database for all road-related projects will further streamline data management and support the effective implementation of RAMS.

Key Outcomes and Recommendations

key Outcomes

* CRITICAL ROLE OF ROAD INFRASTRUCTURE:

The conference underscored the vital importance of road infrastructure for Puntland's economic and social development. Roads serve as critical connectors, linking urban centers, rural communities, and essential services. However, decades of underinvestment, inadequate maintenance, and poor road conditions have resulted in deteriorating infrastructure, rising transport costs, and constrained economic recovery. Systematic management through the Road Asset Management System (RAMS) was identified as a transformative solution to address these challenges and ensure sustainable road networks for Puntland's future growth.

* RAMS AS A TRANSFORMATIVE SOLUTION:

The conference presented the proposed RAMS framework, adapted from the African Development Bank (AfDB) toolkit, as a structured approach to revolutionize road asset management in Puntland. The framework centralizes road asset management under the Puntland Highway Authority (PHA), ensuring more efficient planning and oversight. Its phased implementation, beginning with system development and culminating in full-scale deployment, ensures a structured rollout. A key feature of RAMS is the shift from reactive to data-driven preventive maintenance, which reduces long-term costs and extends road lifespan. Financial sustainability is achieved by integrating diverse funding sources, including government allocations, road user charges, and public-private partnerships (PPPs). Technological integration, particularly through GIS-based tools and digital asset management systems, enhances road condition monitoring and optimizes infrastructure planning.

* CHALLENGES IN ROAD INFRASTRUCTURE MANAGEMENT

The conference highlighted several key challenges hindering effective road infrastructure management in Puntland. These include the lack of a centralized road asset database, which limits planning and resource allocation, leading to inefficiencies. Funding constraints, driven by reliance on ad-hoc financing, were identified as a major barrier to long-term sustainability, delaying critical maintenance and upgrades. Institutional weaknesses, such as poor coordination among stakeholders, slow decision-making and result in fragmented infrastructure development. Additionally, the absence of preventive maintenance strategies leads to higher costs and accelerated road deterioration, complicating long-term planning. Environmental stressors, including extreme weather conditions and increasing axle loads, further weaken the road network, reducing its effectiveness and longevity.



Cont..

*** GLOBAL SUCCESS STORIES:**

The conference highlighted global examples to demonstrate the effectiveness of RAMS. Pakistan's successful implementation of a Road Asset Management System was cited as a model. By integrating GIS technology and structured data collection, Pakistan improved decision-making, reduced long-term infrastructure costs, and enhanced maintenance planning. This success story serves as a benchmark for Puntland's adoption of RAMS.

*** PROGRESS IN GIS UTILIZATION:**

The conference noted significant progress in PHA's adoption of GIS tools for road network management. With road networks now being mapped and managed using GIS, PHA has laid a strong foundation for further advancements, including the implementation of RAMS. However, challenges such as inconsistent data and a lack of trained personnel remain, underscoring the need for capacity building and standardized data protocols.

*** IMPORTANCE OF TRANSPARENCY AND ACCOUNTABILITY:**

The conference emphasized how RAMS can enhance transparency and accountability by centralizing road data and showcasing progress to stakeholders. This transparency builds trust with donors and investors, attracting funding for infrastructure projects. By promoting accountability, RAMS supports Puntland's broader development goals and ensures the sustainable management of its road network.

KEY RECOMMENDATIONS:



*** INSTITUTIONAL COMMITMENT:**

The conference stressed the importance of establishing RAMS as a strategic priority under the Puntland Highway Authority (PHA). Integrating RAMS into national road management policies will ensure clear oversight, alignment with development goals, and sustained institutional support.

*** CAPACITY BUILDING AND TRAINING:**

To address the skills gap, the conference recommended investing in comprehensive training programs for PHA personnel, particularly in GIS and data management. Building technical expertise will ensure the effective operation and maintenance of RAMS.

*** STANDARDIZATION OF DATA COLLECTION:**

Developing and implementing standardized protocols for data collection, storage, and reporting across all road projects is essential. This will ensure consistency, reliability, and efficiency in data management, enabling better decision-making and resource allocation.

*** SUSTAINABLE FINANCING MECHANISMS:**

Diversifying funding sources is critical for long-term financial sustainability. The conference recommended incorporating government allocations, road user charges, and public-private partnerships (PPPs) to ensure adequate and consistent funding for road infrastructure projects.

*** STAKEHOLDER ENGAGEMENT:**

Fostering collaboration among key stakeholders, including government agencies, donors, and the private sector, is vital. Establishing transparent data-sharing mechanisms will build trust, secure support, and ensure the successful implementation and sustainability of RAMS.

*** TECHNOLOGICAL INTEGRATION:**

The conference emphasized the need to fully leverage GIS-based tools like QGIS and digital asset management systems. Expanding the range of GIS tools and resources available to PHA will enhance data collection, monitoring, and analysis, improving overall infrastructure planning.

*** PREVENTIVE MAINTENANCE STRATEGIES:**

Shifting from reactive to data-driven preventive maintenance is a key recommendation. This approach will reduce long-term costs, extend the lifespan of roads, and improve the overall quality of Puntland's road infrastructure.

*** CENTRALIZED DATABASE DEVELOPMENT:**

Establishing a centralized database for all road-related projects is essential. This will streamline data management, improve decision-making, and support the effective implementation of RAMS, ensuring efficient and transparent road asset management.

*** PROMOTE TRANSPARENCY AND ACCOUNTABILITY**

Using RAMS to showcase road data to stakeholders will demonstrate efficient resource use and attract funding for infrastructure projects. This transparency will build trust with donors and investors, ensuring accountability and sustainable development.

*** CONTINUOUS IMPROVEMENT:**

Providing ongoing training for engineers and data managers will enhance GIS capabilities and ensure the effective use of RAMS. Regularly updating and expanding GIS tools will keep Puntland's road management practices aligned with technological advancements, ensuring long-term success.



STUDY ON CHALLENGES IN HIGHWAY PLANNING AND DESIGNING IN PHA



Eng. Abdimahad Huruse

Director of Engineering, Technical and Road Design, (PHA)

Eng. Abdimahad Mohamed Farah (Huruse), **Director of Engineering, Technical and Road Design, Puntland Highway Authority (PHA)**, presented a detailed analysis of the challenges faced by the **Puntland Highway Authority (PHA)** in road planning and design. His presentation aimed to highlight the key issues in road planning, the limitations of current road design manuals, and recommendations for improving road infrastructure development in Puntland.

Key Highlights in the Presentation:

* PUNTLAND ROAD NETWORK OVERVIEW:

Eng. Abdimahad provided an overview of Puntland's road network, which consists of **891 km of primary roads (paved but deteriorated)**, **4,541 km of secondary roads (earthen)**, and **219 km of tertiary roads (earthen)**, totaling **5,651 km of classified roads**. He highlighted that secondary village roads and urban streets remain uncounted, and the network includes around **50 main concrete bridges (deteriorated)** and hundreds of concrete/steel culverts (also deteriorated). This overview set the stage for understanding the challenges in road planning and design.

* ROAD PLANNING & PRIORITIZATION:

Eng. Abdimahad discussed the importance of road planning and prioritization beyond the creation of the **Puntland Road Network Plan**. He emphasized the need for a strategic approach to prioritize roads based on various parameters, including economic, environmental, social, and technical criteria. He introduced **Multi-Criteria Analysis (MCA)** as a flexible model that allows decision-makers to balance diverse factors and prioritize road projects effectively. Additionally, he highlighted other international models such as the **Transport Model for Economic Evaluation (TMEV)** and the **Sustainable Transport Appraisal Rating (STAR)**, which assess economic impacts and sustainability criteria, respectively.

*** INTERNATIONAL MODELS AND CASE STUDIES:**

Eng. Huruse shared examples of road planning and prioritization models used in other countries, such as Ethiopia and Kenya. In Ethiopia, the **Road Sector Development Program (RSDP)** focuses on expanding the road network to boost economic growth and regional integration, using MCA to prioritize projects based on economic benefits, social impact, and environmental sustainability. In Kenya, the **Kenya Roads Board Formula** allocates resources for road maintenance based on road type, traffic volume, and road condition, ensuring that resources are directed toward critical roads for economic activity and connectivity.

*** RECOMMENDATIONS FOR ROAD PLANNING AND DESIGN:**

To address these challenges, Eng. Abdimahad recommended the establishment of a **standardized road prioritization model** to enhance transparency and fairness in infrastructure development decisions. He also emphasized the need to **enhance collaboration with government institutions** to access essential data, such as economic indicators and demographic information, which are crucial for informed decision-making in road planning and development.



RECOMMENDATIONS FOR ROAD DESIGN GUIDELINES:

Eng. Huruse recommended revising and enhancing the current road design manuals to include mechanical and empirical design methods, aligning with contemporary engineering standards. He suggested adopting international guidelines such as **AASHTO (American standards)**, **DMRB (British standards)**, and **IRC (Indian guidelines)** to improve the quality and rigor of road design in Puntland. Additionally, he proposed an implementation strategy that includes **technical workshops, research on input data, pilot projects, and feedback systems** to continuously improve the guidelines based on real-world performance.

*** CHALLENGES IN ROAD PLANNING AND DESIGN:**

Eng. Abdimahad outlined the key challenges faced by PHA in road planning and design. He highlighted the **lack of a standardized model** for road prioritization, which complicates systematic evaluations and decisions on infrastructure projects. Additionally, he noted data deficiencies, including the absence of crucial economic indicators, population density, and growth projections, which impact effective planning and prioritization. These challenges hinder the ability of PHA to make informed decisions and allocate resources efficiently.

*** ROAD DESIGN GUIDELINES:**

Eng. Abdimahad discussed the importance of **road design guidelines**, which are standardized principles and specifications used to plan, design, and construct road infrastructure. He highlighted that the current manuals used by PHA, developed in 2014, lack comprehensive coverage necessary for modern road design. Key shortcomings include the **absence of mechanical steps** and **empirical methods**, which hinder the effectiveness of road designs and impact the safety, efficiency, and sustainability of infrastructure projects.



PRESENTATION OF ROAD DESIGNING TOOLS AND TECHNOLOGIES



Eng. Abdikadir Mohamed, **MSc. Road and Transportation**, presented a Case Study on the integration and effectiveness of advanced tools and technologies in road design and surveying by the **Puntland Highway Authority (PHA)**. His presentation aimed to assess the availability, integration, and utilization of advanced tools and provide recommendations for their adoption and implementation.

Eng. Abdikadir Mohamed

MSc. Road and Transportation, (PHA)

Key Highlights in the Presentation:

* IMPORTANCE OF ROAD DESIGN AND SURVEYING:

Eng. Abdulkadir emphasized the critical role of road design and surveying in the development and maintenance of road infrastructure, affecting safety, cost, and efficiency. He highlighted that the effectiveness of PHA relies on the integration of advanced technologies such as **GIS, GPS, drone surveying, and CAD software**. However, he noted that there is uncertainty regarding the extent to which PHA has adopted these tools, including the availability of equipment, staff expertise, and compliance with current construction standards.

* KEY STUDY FINDINGS:

Eng. Abdulkadir presented the key findings of the study, which revealed that while some modern tools have been adopted, there are still gaps in technology utilization and training. The study assessed the current levels of familiarity and use of technologies, the impact of these technologies on project accuracy, cost-effectiveness, and time efficiency. The findings indicated that **AutoCAD Civil 3D** is the most widely recognized tool among respondents, while other tools such as **OpenRoads Designer** and **InRoads** are less familiar. Additionally, the study found that **Total Stations** are the most popular advanced land surveying instruments, followed by **GPS/GNSS Receivers** and **Digital Levels**.

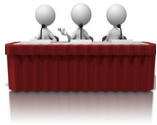
* EFFECTIVENESS OF CURRENT TOOLS AND TECHNOLOGIES:

Eng. Abdulkadir discussed the effectiveness of the current tools and technologies used by PHA. The study found that most tools are rated as "Normal" across all tasks, with **Road Geometric Design** receiving the highest "Excellent" ratings. However, there is a split in opinions regarding how well current road design tools and technologies meet Puntland's unique conditions, with 50% of respondents believing they address the conditions "very well" and the other 50% believing they do not.



RECOMMENDATIONS FOR ROAD DESIGN GUIDELINES:

Eng. Abdulkadir concluded with several recommendations to improve the use of advanced tools and technologies in road design and surveying at PHA. He recommended **updating road design manuals** to develop region-specific guidelines tailored to Puntland's geographic and environmental conditions. Additionally, he emphasized the need for **capacity building** through comprehensive training programs for engineers and surveyors on advanced tools like **GIS, drone technology**, and modern design software. He also suggested **enhancing equipment availability** by increasing access to **GPS/GNSS receivers** and other advanced surveying instruments. Finally, he recommended incorporating **climate-resilient design** practices to mitigate environmental challenges.



Panel Discussions

Panel Discussion II: Planning Gaps and Technology Adoption in Road Development



Moderated by **Eng. Abdikadir Mohamed**, MSc. Road and Transportation, this combined panel for Sessions 2 and 3 focused on identifying planning gaps, stakeholder roles, and practical solutions for adopting advanced technologies and sustainable practices in Puntland's road sector. Panelists highlighted the need for standardized planning models, the integration of advanced surveying technologies, and collaborative efforts to improve road infrastructure development. The panelists included:

1. **Eng. Abdimahad Mohamed Farah**, Director of Engineering, Technical and Road Design, Puntland Highway Authority (PHA)
2. **Eng. Abdirahim Muhyidin Bihi**, MSc. Structural Engineering
3. **Eng. Farah Abdullahi**, Surveyor Engineer, Puntland State Ministry of Public Works, Housing & Transport

Key Discussion Points:

01 Road Prioritization Model for Puntland:

The discussion underscored the importance of adopting a road prioritization model tailored to Puntland's unique needs. A model focused on **economic, agricultural, and natural resource sectors** was highlighted as highly suitable, ensuring that road development aligns with areas critical to regional growth and development. Additionally, the use of **Multi-Criteria Decision Analysis (MCDA)** was emphasized as a comprehensive approach to evaluate multiple factors, such as economic impact, social benefits, and environmental considerations. This ensures balanced and strategic road prioritization, supporting Puntland's overall development goals and fostering sustainable infrastructure growth.

02 Obtaining High-Quality Data for Prioritization:

The discussion emphasized the critical role of integrating **Geographic Information Systems (GIS)** with advanced survey technologies, such as drones, **GPS/GNSS receivers**, and **digital levels**, to obtain high-quality data for road prioritization. These tools enhance data accuracy, streamline collection processes, and ensure comprehensive coverage of road networks. By leveraging these technologies, Puntland can improve the reliability of its infrastructure planning, enabling data-driven decision-making and more efficient resource allocation.

04 Challenges in Road Surveying:

The discussion identified several challenges in road surveying that hinder accurate data collection and planning. These include the **lack of benchmarks** and **reference points**, which can lead to inaccuracies such as map shifting, complicating surveying efforts. Additionally, **disconnected data**—where survey data is fragmented and lacks integration—results in inconsistencies and inefficiencies. Furthermore, the **absence of standardized codes** and **manuals** for surveying procedures leads to avoidable errors and inconsistencies in data collection. Addressing these challenges is critical for improving the quality and reliability of road surveying in Puntland.

03 Adopting Models from Neighboring Countries:

The discussion highlighted the potential for Puntland to adopt road prioritization and surveying models from neighboring countries like Kenya and Ethiopia. However, participants stressed that these models must be carefully evaluated and adapted to Puntland's specific needs, resources, and environmental conditions. By tailoring these regional models, Puntland can leverage proven strategies while ensuring they align with local priorities and challenges, ultimately enhancing the effectiveness of its road development efforts.

05 Mitigating Survey-Related Errors:

To address the challenges in road surveying, participants recommended the **development of standardized codes and manuals** for surveying procedures. These guidelines will help ensure consistency, reduce errors, and improve the reliability of collected data. Additionally, **training survey teams** on the use of these standards and advanced tools is essential for enhancing data accuracy and ensuring the effective implementation of surveying practices. These measures are vital for building a robust foundation for accurate and efficient road development in Puntland.

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* BRIDGE DESIGN SOFTWARE:

The discussion emphasized the importance of using advanced software for bridge design in Puntland. Tools such as **STAAD.Pro** and **CSI Bridge** were recommended for their comprehensive capabilities in structural analysis and design. These software solutions ensure the safety, precision, and durability of bridge projects, making them essential for Puntland's infrastructure development. By adopting these tools, engineers can deliver high-quality bridge designs that meet international standards and support the region's long-term growth.

KEY RECOMMENDATIONS:



* CHALLENGES IN ROAD PLANNING AND DESIGN:

The conference highlighted significant challenges in Puntland's road planning and design, including the lack of a structured framework for prioritizing projects, insufficient data for evidence-based planning, institutional fragmentation, and outdated design manuals. These issues result in inconsistent project selection, inefficient resource allocation, and delayed project execution.

* IMPORTANCE OF ADVANCED TECHNOLOGIES:

The discussion emphasized the critical role of modern tools such as GIS, GPS/GNSS, drones, and CAD software in improving the accuracy, efficiency, and cost-effectiveness of road design. However, challenges such as limited access to equipment, outdated manuals, and insufficient training hinder the full integration of these technologies in Puntland.

*** GLOBAL BEST PRACTICES IN ROAD PLANNING:**

Successful road planning models from Ethiopia and Kenya, such as Ethiopia's Road Sector Development Program (RSDP) and Kenya's Formula-Based Approach, were highlighted as examples for Puntland. These models demonstrate the benefits of data-driven prioritization, sustainable practices, and alignment with national development goals.

*** NEED FOR SUSTAINABLE AND CLIMATE-RESILIENT INFRASTRUCTURE:**

Participants stressed the importance of adopting sustainable practices and climate-resilient solutions in road design. This includes updating design manuals, integrating modern technologies, and prioritizing projects based on economic, social, and environmental impact.

*** CHALLENGES IN ROAD SURVEYING:**

The discussion identified challenges in road surveying, including the lack of benchmarks, disconnected data, and the absence of standardized codes and manuals. These issues lead to inaccuracies, inefficiencies, and avoidable errors in data collection and planning.

*** ROLE OF ADVANCED SOFTWARE IN BRIDGE DESIGN:**

Tools such as STAAD.Pro and CSI Bridge were recommended for their comprehensive capabilities in structural analysis and design. These tools ensure the safety, precision, and durability of bridge projects, making them essential for Puntland's infrastructure development.



KEY RECOMMENDATIONS:

> Develop a Standardized Road Prioritization Model:

Establish a transparent framework for prioritizing road projects based on economic, social, and environmental impact. Adopt Multi-Criteria Decision Analysis (MCDA) to ensure balanced and strategic decision-making.

> Enhance Data Collection and Integration:

Invest in advanced technologies such as GIS, GPS/GNSS receivers, and drones to improve data accuracy and streamline collection processes. Develop a centralized data system to ensure comprehensive coverage and integration of road network data.

> Modernize Road Design Manuals:

Update Puntland's road design guidelines to incorporate international best practices, such as AASHTO, DMRB, and IRC standards. Ensure that design manuals reflect modern engineering principles and climate-resilient solutions.

> Strengthen Institutional Capacity:

Provide training programs for engineers and surveyors on modern planning models, advanced tools, and empirical design methods. Build technical expertise to ensure high-quality road construction and maintenance.

> Adopt and Adapt Global Best Practices:

Evaluate and adapt successful road planning models from neighboring countries like Ethiopia and Kenya to suit Puntland's specific needs and challenges. Leverage proven strategies to enhance infrastructure development.

> Promote the Use of Advanced Software:

Encourage the adoption of advanced software such as STAAD.Pro and CSI Bridge for bridge design. Ensure that engineers are trained to use these tools effectively to deliver safe, precise, and durable infrastructure projects.

> Implement Sustainable Practices:

Integrate sustainable and climate-resilient solutions into road design and construction. Prioritize projects that support environmental resilience and long-term development goals.

> Address Challenges in Road Surveying:

Develop standardized codes and manuals for surveying procedures to reduce errors and improve data reliability. Train survey teams on the use of advanced tools and ensure the availability of benchmarks and reference points.

> Foster Collaboration and Stakeholder Engagement:

Collaborate with government institutions, private sector stakeholders, and international partners to improve data sharing, resource allocation, and project execution. Engage stakeholders in decision-making processes to ensure alignment with local priorities.

> Invest in Modern Equipment and Training:

Allocate resources for the purchase of modern equipment, such as drones and digital levels, and provide training for engineers and surveyors. Ensure that Puntland's road development practices align with global standards.



INNOVATIVE MATERIALS FOR ROAD CONSTRUCTION AND MAINTENANCE



Eng. Hashim Mohamed
Independent Engineer

Eng. Hashim Mohamed Ahmed, Independent Engineer, delivered a comprehensive presentation on the use of emulsion asphalt for surfacing and pavement design in Puntland. The presentation focused on the benefits of emulsion asphalt as a cost-effective, sustainable, and durable solution for road construction, particularly in the context of Puntland's challenging infrastructure environment.

Key Highlights in the Presentation:

* IMPORTANCE OF ROAD INFRASTRUCTURE & SYSTEMATIC SURFACING

Eng. Hashim emphasized the critical role of road infrastructure in Puntland's economic and social development. He highlighted that the Puntland road system comprises **5,651 kilometers**, with only **831 kilometers paved**, including the principal highway connecting **Galkayo, Garowe, and Bossaso**. He noted that inadequate road conditions, particularly during the rainy season, have made many district and rural settlements inaccessible, hindering economic growth and social development. Systematic surfacing and pavement design using **emulsion asphalt** were presented as a transformative solution to address these challenges and ensure sustainable road networks for Puntland's future growth.

* CURRENT CHALLENGES IN PUNTLAND'S ROAD INFRASTRUCTURE:

Eng. Hashim outlined the key challenges hindering effective road infrastructure management in Puntland. He highlighted the lack of major investment in transport infrastructure and very limited maintenance of existing roads, which has resulted in severe depletion of the capital transport infrastructure. Funding constraints, driven by reliance on ad-hoc financing, were identified as a major barrier to long-term sustainability, delaying critical maintenance and upgrades. Institutional weaknesses, including poor coordination among stakeholders, were noted to slow decision-making and result in fragmented infrastructure development. Additionally, the absence of preventive maintenance strategies was emphasized as a cause of higher costs and accelerated road deterioration, complicating long-term planning. Environmental stressors, such as extreme weather conditions, were cited as factors weakening Puntland's road network and reducing its effectiveness.

* PROPOSED EMULSION ASPHALT FRAMEWORK FOR PUNTLAND:

Eng. Hashim presented a comprehensive framework for using **emulsion asphalt** in Puntland's road construction projects. He explained that emulsion asphalt, a water-based mixture of bitumen and emulsifiers, offers several advantages over traditional hot bitumen. The framework would focus on using locally available materials, such as natural soils, gravel, and stone, in combination with emulsion asphalt to reduce costs and improve sustainability. The implementation would follow a phased approach, beginning with pilot projects to demonstrate the effectiveness of emulsion asphalt, followed by scaling up to larger road construction initiatives. A key feature of the framework is the shift from reactive to preventive maintenance, which is expected to reduce long-term costs and extend the lifespan of roads. Financial sustainability would be achieved by integrating multiple funding sources, including government allocations, donor support, and public-private partnerships (PPPs). Technological integration, particularly through the use of modern construction techniques and equipment, would enhance the quality and durability of road surfaces.

GLOBAL CASE STUDIES AND SUCCESS STORIES:

Eng. Hashim shared global examples to underscore the effectiveness of emulsion asphalt in road construction. He highlighted the success of **Italy** and **China** in constructing high-quality chip seal roads in Puntland, demonstrating the durability and cost-effectiveness of emulsion asphalt in challenging environments. In contrast, poorly constructed chip seal roads in Somali cities, such as those built under the JPLG program, were cited as examples of what to avoid, emphasizing the importance of quality materials and proper construction techniques. These case studies underscored the potential for emulsion asphalt to transform Puntland's road infrastructure if implemented correctly.



RECOMMENDATIONS:

To ensure the successful adoption of emulsion asphalt in Puntland, Eng. Hashim proposed several key recommendations. He stressed the need for **institutional commitment**, urging that emulsion asphalt be established as a strategic priority under the Puntland Highway Authority (PHA) and integrated into national road management policies. **Capacity building** was identified as critical, with training sessions recommended for engineers and construction workers on emulsion asphalt application techniques. **Sustainable financing mechanisms**, including diversified funding sources such as government allocations, road user charges, and private-sector partnerships, were emphasized to ensure long-term viability. Finally, **stakeholder engagement** was highlighted as essential, with transparent data-sharing mechanisms proposed to enhance public trust and donor confidence. These steps, he concluded, would pave the way for effective and sustainable road infrastructure management in Puntland.



Thematic Area II: Road Safety and Traffic Management

Thematic Area II, Road Safety and Traffic Management, focused on addressing critical challenges and identifying opportunities to enhance road safety and traffic management practices in Puntland. This thematic area examined the current road safety landscape, highlighting key challenges such as the implementation of axle-load regulations, road user behavior, and gaps in traffic management policies and enforcement mechanisms. Discussions also explored the role of law enforcement collaboration and technological solutions in advancing road safety initiatives and ensuring safer travel for all road users.



Through two targeted sessions, experts and participants analyzed road safety challenges, including accident rates and safety measures, and discussed sustainable strategies to protect infrastructure and enhance compliance with axle-load regulations. The thematic area aimed to provide actionable solutions to reduce road accidents and create a safer, more efficient transportation network in Puntland.

Session 5:



ANALYZING ROAD SAFETY ENHANCEMENT IN PUNTLAND



Eng. Abdisamad Abdisalan Said (Tooreye), **Researcher and Lecturer at Gollis University Bossaso**, presented a detailed analysis of traffic safety and engineering challenges in Puntland, focusing on reducing road accidents and enhancing safety measures. His presentation aimed to highlight the critical issues in road safety, the impact of road accidents, and the strategies needed to improve the transportation network in Puntland.

Eng. Abdisamad Tooreye

Researcher and Lecturer at Gollis University Bossaso,

Key Highlights in the Presentation:

* INTRODUCTION AND ROAD SAFETY CHALLENGES:

Eng. Abdisamad began by emphasizing the critical global issue of road safety, which has significant implications for human tragedy, economic strain, and societal disruption. In Puntland, these challenges are exacerbated by inadequate infrastructure, inconsistent traffic law enforcement, and emerging environmental factors such as climate change. He highlighted that road accidents in the region result in loss of life, injuries, and reduced productivity, underscoring the urgent need for comprehensive interventions. The primary highway, stretching from Galkayo to Bosaso, has suffered extensive damage from historical conflicts and climate impacts, further accelerating infrastructure degradation. Factors such as over-speeding, poor visibility, distracted driving, insufficient signage, and animal interference contribute to hazardous travel conditions.

* LITERATURE REVIEW:

Eng. Abdisamad reviewed several studies and frameworks related to road safety. He referenced the African Development Bank's report, which emphasizes the need for comprehensive road safety frameworks across Africa, including the integration of Geographic Information Systems (GIS) to monitor accidents and enhance traffic safety measures. He also discussed studies from **Tanzania, Mogadishu, and Kenya**, which identified poor road infrastructure, inadequate law enforcement, and driver behavior as significant contributors to road accidents. These studies recommended improving road infrastructure, stricter law enforcement, and public awareness campaigns to mitigate road safety challenges.

* RESULTS OF THE STUDY:

Eng. Abdisamad presented the results of the study, which analyzed traffic-related incidents recorded by the Traffic Office from **2019 to 2023**. The data showed a consistent decline in accidents, serious injuries, and minor injuries over the years, indicating potential improvements in road safety, traffic management, and public awareness. However, fatalities remained relatively stable, highlighting the need for targeted interventions to address fatal incidents. The study also examined the health impact of traffic-related incidents, noting that accidents often result in physical injuries and long-term mental health issues such as PTSD, anxiety, and depression. Additionally, the study highlighted the damage caused to road infrastructure by the spring rainy season, particularly on key routes between Garowe and Bossaso, where heavy rains have led to erosion, culvert damage, and surface cracking.

* QUESTIONNAIRE FINDINGS:

Eng. Abdisamad shared the findings from a questionnaire conducted among road users. The majority of respondents fell within the age range of **26–40 years**, highlighting the importance of focusing safety measures on this demographic. Public transportation (buses) was the most commonly used method of travel, followed by private transportation. The questionnaire also revealed that damaged roads, excessive speed, and distractions while driving were the most significant challenges affecting road safety. The majority of respondents reported feeling unsafe while traveling, citing poor road conditions and reckless driving as primary concerns.



RECOMMENDATIONS:

Eng. Abdisamad concluded with several recommendations to improve road safety in Puntland. He emphasized the need for a **multifaceted approach**, including the installation of clear and visible hazard warning signs in accident-prone areas, regular maintenance and monitoring of road signage, and public awareness campaigns to educate road users about traffic rules and safety measures. Short-term recommendations included establishing a **Computerized Traffic Management System**, ensuring all drivers possess valid driving licenses, and conducting medical tests for drivers. Long-term recommendations focused on road maintenance, controlling overspeeding, and enforcing fines and road laws. He stressed that sustained efforts and long-term investments are critical to achieving a safer, more reliable transportation network in Puntland.



CHALLENGES OF IMPLEMENTING AXLE-LOAD REGULATIONS IN PUNTLAND



Eng. Mohamud

Director of Road Safety Department,
PHA

Eng. Mohamud Farah Jama, **Director of Road Safety Department, Puntland Highway Authority (PHA)**, presented a detailed analysis of the challenges of implementing axle-load regulation in Puntland. His presentation aimed to highlight the impact of **axle-load regulation** on road infrastructure and discuss strategies for effective implementation.

Key Highlights in the Presentation:

* UNDERSTANDING AXLE LOAD:

Eng. Mohamud began by defining **axle load** as the total weight transmitted to the road surface by all wheels connected to a given axle. He explained that axle-load limits are set to prevent excessive stress on road infrastructure, which can lead to structural damage, accelerated wear, and safety hazards. He highlighted the economic consequences of overloading, including increased maintenance costs, reduced road lifespan, higher vehicle operating costs, and decreased economic efficiency.

* CURRENT STATE IN PUNTLAND:

Eng. Mohamud outlined the current challenges in Puntland, including limited infrastructure, inadequate road networks, and insufficient maintenance. He noted that overloaded vehicles are common due to weak enforcement of regulations, and the lack of **weighbridges** and inspection points hinders effective monitoring. These challenges contribute to the rapid deterioration of road infrastructure and increased safety risks.

*** MITIGATING AXLE LOAD IMPACT:**

Eng. Mohamoud proposed several strategies to mitigate the impact of axle load on road infrastructure. These included implementing **weighbridge** systems at key transportation hubs, enhancing road design to accommodate heavy axle loads, conducting regular maintenance to prevent cumulative damage, and educating stakeholders about the importance of axle-load compliance. He emphasized that these measures are essential to ensure the longevity and safety of Puntland's road network.

*** OPPORTUNITIES FOR PUNTLAND:**

Eng. Mohamoud highlighted the opportunities for Puntland in implementing axle-load regulation, including improved road quality, economic growth, technological advancements, and regional cooperation. He referenced successful case studies from **Kenya, South Africa, and Tanzania**, where the implementation of automated weighbridges, comprehensive road transport management systems, and multi-agency approaches have significantly reduced overloading and road damage.

*** CHALLENGES IN IMPLEMENTATION:**

Eng. Mohamoud discussed the challenges in implementing axle-load regulation in Puntland, including limited resources, resistance from transporters, lack of technical expertise, and the need for strong political will. He noted that insufficient funds for infrastructure development and enforcement mechanisms, as well as opposition from trucking companies fearing increased operational costs, are significant barriers to effective regulation.

*** NEXT STEPS FOR PUNTLAND:**

Eng. Mohamoud concluded with several next steps for Puntland, including the development of axle-load regulations, investment in infrastructure such as weighbridges and road upgrades, capacity building for personnel in regulation enforcement and system maintenance, and stakeholder engagement with transporters, businesses, and regional partners. He emphasized that these steps are essential to ensure the successful implementation of axle-load regulation and the long-term sustainability of Puntland's road infrastructure.



Panel Discussions

Panel Discussion III: Enforcing Axle-Load Regulations and Improving Road Safety



Moderated by **Eng. Abdullahi Wacane**, this combined panel for Sessions 1 and 2 focused on exploring best practices for enforcing axle-load regulations and enhancing road safety measures in Puntland. Panelists discussed the impact of overloaded vehicles on road infrastructure, the need for a comprehensive traffic code, and strategies for improving enforcement and public awareness. Emphasis was placed on adopting advanced monitoring systems and fostering multi-stakeholder collaboration to ensure road safety and infrastructure sustainability. The panelists included:

1. **Eng. Maxamud Farah Jama**, Director of Road Safety Department, Puntland Highway Authority (PHA)
2. **Eng. Abdisamad Abdisalan Said (Tooreeye)**, Researcher and Lecturer at Gollis University Bossaso
3. **Eng. Abdihakim Mohamed Mahdi**, Technical Department Manager, TTN Construction Co.
4. **Abdifatah Saciid Saleban**, The General Command of Puntland Traffic Police

Key Discussion Points:

01 Road Accident Statistics and Safety Challenges:

The discussion highlighted the alarming road accident statistics in Puntland, with **1,594 car accidents** recorded in the last year, including **81 minor injuries, 174 hard injuries, and 1,074 collision accidents, resulting in a death toll of 57**. Participants identified key factors contributing to these accidents, such as driver irresponsibility, unlimited axle loads, high speeds, and the lack of driver licenses. They emphasized the urgent need for a traffic code, noting that unlike Galmudug, Puntland's closest neighboring state where traffic laws are already enforced, Puntland has yet to implement a traffic code. The absence of such regulations poses a significant barrier to improving road safety and reducing accidents.

02 Economic Infrastructure and Axle Load Act:

The discussion highlighted the current state of Puntland's roads, with some parts destroyed and in need of reconstruction, while others are under maintenance or construction.

Participants emphasized that without proper traffic laws, road degradation will continue, leading to higher reconstruction costs. They also discussed the economic impact of the Axle Load Act, noting its positive effects, such as increased competition, improved regional connectivity, reduced air pollution, and extended vehicle lifespans. However, they acknowledged that the act may initially increase transportation costs, posing a challenge for transporters.

04 Traffic Signs and Accident Reduction:

The discussion noted that Golis was the first to install traffic signs, but many have disappeared, leading to an increase in accidents, especially during the "xaaga bax" period in hot cities like Bosaso. This period sees inexperienced drivers traveling with families to cooler cities, increasing the risk of accidents. Participants emphasized the importance of proper maintenance and availability of traffic signs for road safety, highlighting that the **Qardho-Waaciye** stretch has more signs compared to other areas, but overall implementation is lacking. They stressed the need for collaboration between the government, stakeholders, and communities to ensure effective traffic sign implementation.

03 Implementation of Axle Load System:

Participants proposed the use of monitoring devices at key locations, such as **ports, and mobile checkpoints** to enforce axle load limits. They also suggested the installation of automated systems with cameras to read vehicle load capacities and license plates, imposing fines for violations. These fines could be integrated into tax payment systems to ensure compliance and generate revenue for road maintenance.

05 Awareness and Enforcement of the Axle Load Act:

Participants recommended public awareness campaigns to disseminate the **Axle Load Act**, including organizing conferences with transporters and incorporating the act into school curricula. They also emphasized the importance of stakeholder engagement, particularly with transporters and local authorities, to ensure successful enforcement of the act.

06 Traffic Code Implementation Challenges:

The discussion highlighted that **Puntland's traffic code exists** but is under parliamentary review. Participants noted that effective enforcement requires a robust and empowered authority. They identified challenges such as lack of cooperation from local authorities, unfamiliarity of drivers from the **Somali Regional State (SRS)** with local road conditions, and insufficient awareness campaigns. To address these challenges, they recommended strengthening government institutions, enforcing driver licensing, and launching awareness campaigns for SRS drivers.

07 Achieving Full Road Safety:

Participants stressed the importance of collaboration among **public safety agencies** to ensure road safety. They emphasized the need for public awareness campaigns to educate drivers and pedestrians on safe road practices. Additionally, they highlighted the necessity of strong enforcement of traffic rules, including fines for violations, to ensure compliance and reduce accidents.

KEY OUTCOMES & RECOMMENDATIONS:

key Outcomes



* CRITICAL ROAD SAFETY CHALLENGES IN PUNTLAND

The conference highlighted the alarming road safety situation in Puntland, with **1,594 car accidents** recorded in the last year, resulting in **57 fatalities, 174 serious injuries, and 81 minor injuries**. Key factors contributing to accidents include driver irresponsibility, excessive speed, poor road infrastructure, distracted driving, unregulated animal crossings, and weak enforcement of traffic laws.

* IMPACT OF OVERLOADED VEHICLES ON ROAD INFRASTRUCTURE:

Overloaded vehicles accelerate road surface deterioration, leading to **cracking, rutting, and pavement deformation**. This increases maintenance costs, reduces road lifespan, and poses safety risks for road users.

*** NEED FOR AXLE-LOAD REGULATIONS:**

The discussion emphasized the importance of **axle-load regulations** to prevent excessive stress on road infrastructure, reduce maintenance costs, and improve road safety. However, challenges such as limited resources, weak enforcement, and resistance from transporters hinder effective implementation.

*** IMPORTANCE OF TRAFFIC LAWS AND ENFORCEMENT:**

The absence of a traffic code in **Puntland**, unlike neighboring states like **Galmudug**, poses a significant barrier to improving road safety. Strengthening enforcement mechanisms and implementing a traffic code are essential for reducing accidents and ensuring compliance with traffic rules.

*** GLOBAL SUCCESS STORIES IN AXLE-LOAD REGULATION:**

Examples from **Kenya, South Africa, and Tanzania** demonstrated the benefits of effective axle-load regulation, including reduced overloading, extended road lifespan, and lower maintenance costs. These case studies provide valuable insights for Puntland.

*** ROLE OF PUBLIC AWARENESS AND STAKEHOLDER ENGAGEMENT:**

Participants emphasized the need for public awareness campaigns to educate drivers and pedestrians on safe road practices. Engaging stakeholders, including **transporters, local authorities, and communities**, is critical for successful enforcement of traffic laws and axle-load regulations.



KEY RECOMMENDATIONS:

> **Develop and Enforce a Traffic Code:**

Implement a comprehensive traffic code to regulate driver behavior, enforce speed limits, and ensure vehicle inspections. Strengthen enforcement mechanisms to hold violators accountable and reduce accidents.

> **Enhance Public Awareness and Education:**

Launch public awareness campaigns to educate drivers and pedestrians on safe road practices. Incorporate traffic safety and axle-load regulations into school curricula and organize conferences with transporters to promote compliance.

> **Strengthen Enforcement Capacity:**

Train and equip regulatory agencies to effectively enforce traffic laws and axle-load regulations. Establish mobile checkpoints and monitoring devices to ensure compliance across Puntland's road network.

> **Promote Stakeholder Collaboration:**

Foster collaboration between the government, transporters, local authorities, and communities to ensure effective implementation of traffic laws and axle-load regulations. Engage stakeholders in decision-making processes to build trust and cooperation.

> **Invest in Road Maintenance and Infrastructure Upgrades:**

Allocate resources for road maintenance, including repairing potholes, improving drainage systems, and installing proper signage and pedestrian walkways. Incorporate flood-resistant drainage systems and stronger asphalt mixes to mitigate damage from extreme weather conditions.

> **Implement Axle-Load Regulations:**

Develop a clear and enforceable legal framework for axle-load regulations, with penalties for violations. Install modern weighbridges at key transport hubs and use automated systems with cameras to monitor vehicle loads and impose fines for overloading.

> **Adopt Global Best Practices:**

Learn from successful axle-load regulation models in countries like Kenya, South Africa, and Tanzania. Adapt these models to Puntland's specific needs and challenges to improve road safety and infrastructure sustainability.

> Improve Traffic Signage and Maintenance:

Ensure proper installation and maintenance of traffic signs, particularly in high-risk areas like Bosaso during the “xaaga bax” period. Collaborate with stakeholders to address the disappearance of traffic signs and enhance road safety.

> Ensure Full Road Safety Through Collaboration:

Promote collaboration among public safety agencies to ensure road safety. Implement strong enforcement of traffic rules, including fines for violations, to ensure compliance and reduce accidents.

> Address Challenges in Traffic Code Implementation:

Strengthen government institutions to enforce the traffic code effectively. Launch awareness campaigns for drivers from the Somali Regional State (SRS) to familiarize them with local road conditions and regulations.



Thematic Area III: Materials, Construction, and Maintenance Solutions

Thematic Area III, Materials, Construction, and Maintenance Solutions, focused on exploring innovative approaches to road construction and maintenance to improve infrastructure quality and longevity in Puntland. This thematic area examined key aspects such as the use of advanced materials, sustainable construction practices, geotechnical investigation methods, and strategies for climate change resilience.



Through two targeted sessions, experts and participants analyzed methods to enhance road quality control (Q/C) management systems and incorporate geotechnical insights into road construction processes, providing actionable recommendations for improving road infrastructure durability and sustainability.





IMPROVING ROAD Q/C MANAGEMENT SYSTEM AND GEOTECHNICAL INVESTIGATION METHODS



Eng. Ali Afrah, **Director of TTN Construction Co.**, presented a detailed analysis of road quality control management systems, focusing on the importance of quality control in road construction and the key components required to ensure high-quality road infrastructure. His presentation aimed to highlight the benefits of quality control and the best practices for implementing effective quality control systems.

Eng. Ali Afrah

Director of TTN Construction Co.

Key Highlights in the Presentation:

INTRODUCTION AND IMPORTANCE OF QUALITY CONTROL:



Eng. Ali Afrah began by defining quality control as the process and mechanism by which specified quality standards are achieved. He emphasized that quality control is essential for ensuring that road construction projects meet the required specifications and standards, which are critical for the safety, durability, and efficiency of road infrastructure. He noted that while quality costs more, the lack of quality can lead to even higher costs due to the need for repairs and maintenance. He also highlighted that quality standards do not demand the best quality but establish the minimum requirements to be achieved.

FACTORS AFFECTING QUALITY IN CONSTRUCTION:



Eng. Afrah outlined several factors that affect the quality of road construction projects, including the quality of design documents such as specifications, drawings, and bills of quantities, the quality of supervision, the quality of construction materials, the quality of workers, the quality of tools and equipment, and the qualification of contractors. He emphasized that these factors must be carefully managed to ensure the successful implementation of quality control systems.

* KEY COMPONENTS OF QUALITY CONTROL:

He also discussed the key components of quality control in road construction, which include **quality control of materials, process quality control, end quality control, training and monitoring, documentation and communication, statistical analysis, and third-party quality audits**. He explained that these components ensure that materials meet specifications, construction processes are monitored, and the final product adheres to design standards. He also emphasized the importance of training personnel and conducting independent audits to maintain quality standards.

* BENEFITS OF QUALITY CONTROL:

Eng. Afrah outlined the benefits of implementing quality control in road construction, including **improved road quality, cost savings, enhanced safety, and public satisfaction**. He explained that quality control ensures roads are built to high standards, reducing the frequency and severity of maintenance and repairs. It also prevents costly rework by catching issues early in the construction process, ensures roads are safe for public use, and leads to higher public satisfaction with road infrastructure.

* MIX DESIGNS FOR ROADS AND BRIDGES:

Eng. Afrah explained the importance of mix designs in road and bridge construction. He discussed two key methods for asphalt mix design: the **Marshall Mix Design method** (Asphalt Institute MS-2) and the **Superpave method**, which considers traffic and environmental conditions. He also highlighted the **ACI 211 Concrete Mix Design method**, which involves selecting appropriate aggregates, cement types, and admixtures to ensure the durability and strength of concrete.

* IMPLEMENTING BEST PRACTICES:

Eng. Afrah concluded with several best practices for implementing quality control in road construction. He recommended **detailed specifications** to clearly define material and construction method standards, **rigorous testing** at various stages of construction, **continuous monitoring** through regular inspections and quality checks, **training** for personnel involved in construction and quality control processes, and **documentation** of all quality control activities and test results.



IMPROVING ROAD QUALITY CONTROL MANAGEMENT SYSTEMS IN PUNTLAND



Eng. Bashir Guure, **Director of Quality Control Department, Puntland Highway Authority (PHA)**, presented a detailed analysis of the challenges and opportunities in improving the road quality control system in Puntland. His presentation aimed to highlight the importance of quality control in road construction, the achievements of PHA in this area, and the recommendations for addressing key challenges.

Eng. Bashir Gure

Director of Quality Control Department, PHA

Key Highlights in the Presentation:

* INTRODUCTION AND IMPORTANCE OF QUALITY CONTROL:

Eng. Bashir Guure began by defining **quality control (QC)** and emphasizing its importance in road construction projects. He highlighted that quality control ensures the **safety, structural integrity, and durability** of roads, reducing the risk of accidents and structural failures. He also noted that quality control enhances the **efficiency** of the construction process, optimizes resource utilization, and ensures compliance with local, national, and international standards.

* QUALITY CONTROL PROCESS IN ROAD CONSTRUCTION:

Eng. Bashir discussed the quality control process in road construction, which includes four key phases: **planning phase, implementation phase, monitoring phase, and feedback and improvement phase**. He explained that the planning phase involves establishing quality control plans and setting quality objectives, while the implementation phase focuses on material selection and testing. The monitoring phase involves continuous quality checks during construction, and the feedback phase involves analyzing results and implementing corrective actions.

* **PHA QUALITY CONTROL ACHIEVEMENTS:**

Eng. Bashir highlighted several achievements of PHA in improving road quality control, including **improving PHA lab efficiency** by purchasing new machines and repairing malfunctioning equipment, **developing quality control documents**, and **capacity building and training** for personnel. He emphasized that these achievements have enhanced PHA's ability to conduct quality control tests and ensure compliance with construction standards.

* **CHALLENGES IN ROAD QUALITY CONTROL SYSTEM IN PUNTLAND:**

Eng. Bashir also outlined several challenges faced by PHA in implementing effective quality control systems, including **financial constraints, climate and environmental factors, limited technical experts, and inadequate laboratory facilities**. He noted that insufficient budgets for quality control activities, extreme weather conditions, a shortage of trained personnel, and a lack of essential laboratory equipment hinder the effective implementation of quality control in Puntland.

Recommended Solutions:

Eng. Guure proposed several solutions to improve the road quality control system in Puntland. He recommended **sustainable construction practices** such as using durable, locally available materials and incorporating climate-resilient designs. He also suggested **public-private partnerships** (PPPs) to bring in additional expertise and investment, **upgrading PHA laboratory facilities** to conduct essential tests, and **employing certified asphalt technicians** to ensure the quality of road construction materials.



Panel Discussions

Panel Discussion IV: Integrating Quality Control (Q/C) Management and Geotechnical Insights



Moderated by Eng. Bashiir Guure, Director of Quality Control Department at the Puntland Highway Authority (PHA), this combined panel for Sessions 1 and 2 focused on integrating quality control (Q/C) management with geotechnical insights to improve road construction practices in Puntland. Panelists discussed the importance of robust quality assurance processes, the role of geotechnical investigations in enhancing road durability, and the need for advanced testing methods. The session emphasized actionable strategies to ensure compliance with international standards and enhance the long-term sustainability of Puntland's road infrastructure. The panelists included:

1. **Eng. Ali Afrah**, Director of TTN Construction Co.
2. **Eng. Mohamed Abas**, Quality Control Engineer in Bossaso Port
3. **Eng. Ismail Sheikh Abdikadir Ali**, Project Engineer in Gara'ad Port
4. **Eng. Said Mohamed**, Lead Engineer, Puntland Highway Authority (PHA)

Key Discussion Points:

Fundamentals of Quality Control in Road Construction:

The discussion emphasized the importance of thorough site investigations to understand soil types, geological conditions, and other factors affecting road stability and performance. Participants highlighted that road designs must account for traffic loads, environmental conditions, drainage systems, and pavement layers to ensure durability and safety. They also stressed the need for robust quality control measures, including Request for Inspection (RFI) protocols, to ensure compliance with design specifications and prevent defects during construction.

Soil Types and Their Impact on Road Construction:

Participants discussed the characteristics of different soil types and their impact on road construction. They noted that sand offers good drainage but lacks cohesion, while silt retains moisture and can expand or shrink under varying conditions. Clay, with its high plasticity and poor drainage, poses challenges in wet conditions. They emphasized that proper compaction is critical for road strength and stability, requiring regular testing of soil density and moisture content.

Role of the Puntland Highway Authority (PHA):

The discussion highlighted that PHA has qualified staff and equipment to oversee quality control but requires government support in terms of policy backing and resource allocation. Participants emphasized that roads are the backbone of economic infrastructure, and without proper maintenance, goods cannot be transported efficiently, leading to economic losses.

Challenges in Quality Control:

Participants identified several challenges in quality control, including financial constraints that limit the purchase of equipment, hiring of skilled personnel, and investment in modern construction methods. They noted that a lack of adequate equipment for on-site testing and quality checks hampers compliance with standards. Political instability disrupts road projects and affects the consistency of quality control efforts, while natural disasters like frequent floods and droughts damage roads, requiring repeated repairs and stretching limited resources. Geographical challenges, such as Puntland's large and diverse terrain, make it difficult to monitor and control quality in remote areas. Aging roads, poorly maintained and in need of significant rehabilitation, further complicate the situation. Additionally, engineers and quality control staff lack regular training on modern techniques and practices, and there is an insufficient availability of certified and experienced engineers, affecting the quality of road construction and maintenance.

Proposed Solutions to Quality Control Challenges:

Participants proposed several solutions to address quality control challenges. They recommended enhancing financial capacity by increasing government budget allocations and securing funding from international partners to invest in modern equipment and quality control. They also suggested developing and implementing regular training programs to upgrade the skills of engineers and quality control staff. Hiring certified engineers in relevant fields, particularly in road design, construction, and material testing, was highlighted as essential. Additionally, they proposed using portable laboratories for on-site testing in remote areas to ensure timely and accurate results.

Legal Reforms and Institutional Changes:

The discussion emphasized the need for legal reforms and institutional changes to improve quality control. Participants recommended incorporating hydrologists into the planning process to ensure accurate geometric designs that account for water flow, drainage, and soil conditions. They also suggested establishing a robust and centralized road data system to collect, store, and manage critical road data for better planning and monitoring. Stronger quality control measures, such as withholding contractor payments until quality checks are completed and verified, were also proposed.

Private Sector Contribution:

Participants highlighted the role of the private sector in improving quality control. They recommended that private firms invest in staff training and certification to meet specific standards, ensuring high-quality infrastructure projects. Certification fosters a culture of excellence, motivating private companies to prioritize staff training and professional development.

Achieving International Standards:

The discussion emphasized the importance of achieving international standards in road construction. Participants recommended ensuring that road designs are developed by competent and certified engineers. They also suggested adopting international standards such as AASHTO and ASTM, adapted to fit the local context, to ensure consistency and efficiency. Strengthening company laws to regulate operations, enforce standards, and ensure accountability in road development projects was also highlighted as a key step.

KEY OUTCOMES & RECOMMENDATIONS:

key Outcomes



* IMPORTANCE OF QUALITY CONTROL IN ROAD CONSTRUCTION:

The conference emphasized that quality control is essential for ensuring the durability, safety, and cost-effectiveness of road infrastructure. Proper quality control prevents defects such as potholes, cracks, and premature failures, reducing long-term maintenance costs and enhancing road performance.

* ROLE OF GEOTECHNICAL INVESTIGATIONS:

The discussion highlighted the importance of geotechnical investigations, such as soil stability assessments, moisture content analysis, and compaction tests, in ensuring that roads are built on solid foundations. Systematic geotechnical investigations reduce structural failures and improve long-term road performance.

* CHALLENGES IN ROAD QUALITY CONTROL:

Participants identified several challenges, including financial constraints, inadequate laboratory facilities, political instability, natural disasters, and a lack of trained personnel. These issues hinder the effectiveness of quality assurance measures and limit the delivery of high-quality road infrastructure.

* ADVANCEMENTS IN ASPHALT MIX DESIGN:

Participants compared the Marshall and Superpave asphalt mix design methods, noting that Superpave offers superior performance by considering traffic loads and environmental factors. Transitioning to Superpave in Puntland could enhance road durability, particularly on heavily used transport routes.

*** PROGRESS AND ACHIEVEMENTS BY PHA:**

The Puntland Highway Authority (PHA) has made progress in improving quality control, including upgrading laboratory equipment, improving testing procedures, and developing quality control documentation. However, stronger enforcement mechanisms are needed to ensure compliance across all road projects.

*** NEED FOR COLLABORATION AND CAPACITY BUILDING:**

The panel emphasized the importance of collaboration between the government, private sector, and other stakeholders to improve quality control. Capacity-building initiatives, including training programs and hiring certified engineers, are essential for enhancing technical expertise and ensuring high-quality road construction.



KEY RECOMMENDATIONS:

> Strengthen Quality Control Measures:

Enforce rigorous material testing standards in compliance with international road construction standards. Implement third-party audits to verify compliance with design and material specifications, reducing the risk of substandard road construction.

> Adopt Advanced Asphalt Mix Design Methods:

Transition from the Marshall method to Superpave for asphalt mix design to enhance pavement quality, particularly for major roads. Ensure that road designs are developed by competent and certified engineers.

> Develop Training Programs:

Implement regular training programs to upgrade the skills of engineers and quality control staff. Focus on modern techniques and practices in road design, construction, and material testing.

> Promote Stakeholder Collaboration:

Foster collaboration between the government, transporters, local authorities, and communities to ensure effective implementation of traffic laws and axle-load regulations. Engage stakeholders in decision-making processes to build trust and cooperation.

> Invest in Modern Equipment and Laboratories:

Upgrade PHA laboratory facilities by investing in modern testing equipment and expanding laboratory capacity to conduct asphalt, concrete, and soil testing efficiently. Use portable laboratories for on-site testing in remote areas to ensure timely and accurate results.

> Enhance Financial Capacity:

Increase government budget allocations and secure funding from international partners to invest in modern equipment, quality control, and infrastructure projects.

> Incorporate Geotechnical Insights:

Integrate hydrologists into the planning process to ensure accurate geometric designs that account for water flow, drainage, and soil conditions. Conduct systematic geotechnical investigations to reduce structural failures and improve road performance.

> Establish a Centralized Road Data System:

Create a robust and centralized road data system to collect, store, and manage critical road data for better planning and monitoring.

> **Promote Private Sector Contribution:**

Encourage private firms to invest in staff training and certification to meet specific standards, ensuring high-quality infrastructure projects. Foster a culture of excellence and accountability in the private sector.

> **Implement Performance-Based Contractor Evaluation:**

Develop a performance-based contractor evaluation system, where contractors are assessed based on project outcomes to ensure they meet required standards before receiving further contracts.

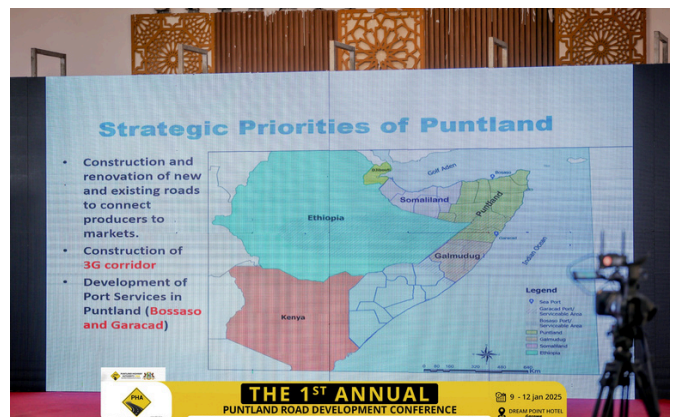
> **Adopt International Standards:**

Adapt international standards such as AASHTO and ASTM to fit the local context, ensuring consistency and efficiency in road construction. Strengthen company laws to regulate operations, enforce standards, and ensure accountability.



Thematic Area IV: Improving Puntland Road Procurement and Enhancing Public-Private Partnership (PPP) Model

Thematic Area IV, Improving Puntland Road Procurement and Enhancing Public-Private Partnership (PPP) Model, focused on advancing the frameworks and strategies essential for effective road project procurement and the successful implementation of PPPs. This thematic area examined key focus areas, including innovative procurement models, policy frameworks, tendering processes, financial resource allocation, and the role of advocacy in road construction and maintenance.



Through three targeted sessions, experts and participants explored challenges, innovations, and opportunities to improve transparency, efficiency, and collaboration in road development projects, providing actionable recommendations for Puntland's road sector.





ENHANCING TENDERING AND PROCUREMENT PROCESSES FOR ROAD INFRASTRUCTURE DEVELOPMENT



Mr. Abdirisak Ahmed Nur, **Procurement Specialist, Puntland Highway Authority (PHA)**, presented a detailed analysis of the challenges, innovations, and opportunities in enhancing tendering and procurement processes for road infrastructure development in Puntland. His presentation aimed to critically examine Puntland's public procurement system, with a particular focus on the infrastructure tendering process, and provide recommendations for improvement.

Mr. Abdirazak Nur

Procurement Specialist, PHA

Key Highlights in the Presentation:

* STUDY AIM AND METHODOLOGY:

Mr. Abdirisak Ahmed Nur began by outlining the aim of the study, which was to critically examine Puntland's public procurement system, particularly the infrastructure tendering process. The study focused on the legal framework of Puntland's procurement system, specifically the Puntland Tender Board Procurement Law (Law No. 11, 2000), and conducted a comparative analysis with international procurement guidelines such as those from the World Bank, African Development Bank, and UNCITRAL Model Law. The methodology involved a qualitative approach, using secondary data from legal documents and road project reports.

* STUDY FINDINGS:

Mr. Abdirisak presented the findings of the study, which identified several challenges in Puntland's public procurement system. These challenges included legal framework issues such as lack of clarity in the criteria for board establishment, procurement methods, thresholds, domestic preference margins, dispute resolution, sustainability, and capacity building. Additionally, institutional constraints such as insufficient legal framework, limited skilled workforce, lack of training programs, and insufficient budget allocation for procurement activities were highlighted as significant barriers to effective procurement.

*** EFFECTIVE PUBLIC PROCUREMENT:**

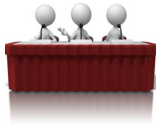
Mr. Abdirisak emphasized the importance of effective public procurement for the success of infrastructure projects. He highlighted the key principles of effective procurement, including open competition, transparency, efficiency, and accountability. He explained that these principles ensure that the right contractors are selected, information is accessible, value for money is achieved, and compliance with regulations is maintained.

*** GLOBAL BEST PRACTICES IN PUBLIC PROCUREMENT:**

Mr. Abdirisak discussed global best practices in public procurement, drawing insights from successful systems in Kenya, Germany, China, and South Africa. He highlighted that Kenya's procurement system, governed by the Public Procurement Regulatory Authority (PPRA), emphasizes e-procurement and competitive bidding. Germany's adherence to EU guidelines ensures high standards in procurement management, while China's centralized system includes anti-corruption mechanisms and regular contractor performance evaluations. South Africa's South African National Roads Agency Limited (SANRAL) oversees road infrastructure projects with competitive procurement processes and innovative financing models like public-private partnerships (PPPs) and toll roads.

Recommended:

Mr. Abdirisak concluded with several recommendations to improve Puntland's public procurement system. He suggested revising the legal framework to align with international standards such as the World Bank guidelines, African Development Bank guidelines, and UNCITRAL Model Law. He also recommended institutional strengthening by restructuring the Public Procurement Authority and building the capacity of procurement entities through regular training programs and the implementation of e-procurement systems. Additionally, he emphasized the need to enhance transparency through public disclosure of procurement activities and audits, and to reduce political interference by establishing independent oversight bodies. Finally, he proposed the integration of smart technologies such as e-procurement, AI & data analytics, IoT, and blockchain to automate bidding processes, predict risks, optimize contractor selection, and ensure secure contract management.



Panel Discussions

Panel Discussion V: Enhancing Transparency, Efficiency, and Innovation in Procurement



Moderated by Mr. Ibrahim Abdirahman Soofe, this panel discussion focused on improving transparency, efficiency, and innovation in procurement processes for road infrastructure development in Puntland. Panelists discussed best practices for fair and competitive tendering, the role of digital tools in enhancing transparency, and the importance of aligning procurement frameworks with international standards. Emphasis was placed on fostering collaboration between public institutions and private stakeholders to ensure efficient resource allocation and accountability. The panelists included:

1. **Mr. Abdirizak Ahmed Nur**, Procurement Specialist, Puntland Highway Authority (PHA)
2. **Eng. Abdikadir A. Farah**, Director General, Puntland State Minister of Planning, Economic Development, and International Cooperation
3. **Mr. Mohamed Jama**, Director General, Puntland State House
4. **Mr. Abdullahi Ali Nur**, Head of Procurement and Project Management, Puntland State Ministry of Public Works, Housing & Transport

Key Discussion Points:

01 Definition and Importance of Public Procurement:

The discussion highlighted that public procurement is a broad concept involving the government acquiring goods, services, and works in the public interest. It ensures fairness, transparency, and integrity in the use of public funds. Participants emphasized the critical role of institutions such as the Tender Board and procurement entities in managing public resources, ensuring fair treatment of stakeholders, and safeguarding public funds.

02 Challenges in Establishing an Effective Procurement and Tendering System:

Participants identified several challenges in quality control, including financial constraints that limit the purchase of equipment, hiring of skilled personnel, and investment in modern construction methods. They noted that a lack of adequate equipment for on-site testing and quality checks hampers compliance with standards. Political instability disrupts road projects and affects the consistency of quality control efforts, while natural disasters like frequent floods and droughts damage roads, requiring repeated repairs and stretching limited resources. Geographical challenges, such as Puntland's large and diverse terrain, make it difficult to monitor and control quality in remote areas. Aging roads, poorly maintained and in need of significant rehabilitation, further complicate the situation. Additionally, engineers and quality control staff lack regular training on modern techniques and practices, and there is an insufficient availability of certified and experienced engineers, affecting the quality of road construction and maintenance.

03 Impact of Lack of Transparency in Tendering:

The discussion underscored the negative impact of a lack of transparency in tendering processes. Participants noted that contracts are often awarded to entities without the necessary capacity to execute projects effectively, leading to poor infrastructure outcomes. They also highlighted accountability issues, as the absence of robust mechanisms exacerbates inefficiencies and results in wasted public funds. To address these challenges, participants recommended that infrastructure contracts, especially for road development, should be publicly advertised to reduce opacity and favoritism, ensuring that contracts are awarded to qualified entities.

04 Collaboration Between Policymakers, Businesses, and Government Agencies:

Participants discussed successful models of collaboration, such as Public-Private Partnerships (PPPs), which have proven effective in Puntland. For example, the collaboration between the Puntland Water Agencies and private sector entities has successfully addressed public water supply needs. They emphasized the importance of stakeholder engagement, noting that policymakers, businesses, government agencies, and other stakeholders must work together to improve procurement processes, ensuring that they are transparent, efficient, and serve the public interest.

05 Recommendations to Address Procurement Challenges:

Participants proposed several recommendations to address procurement challenges. They emphasized the need for strong political will to support procurement reforms and ensure their successful implementation. They also recommended enforcing procurement laws to improve transparency and accountability. Strengthening institutions such as the Tender Board and procurement entities with the necessary resources and capacity was highlighted as essential for effective procurement management. Additionally, participants stressed the importance of safeguarding public funds to prevent financial losses and deliver essential services to citizens.

06 Modernizing Public Procurement and Tendering Processes:

The discussion emphasized the need to modernize public procurement and tendering processes. Participants recommended updating and reforming the existing procurement law (Law No. 11 of 2000) to align with international best practices. They also suggested fostering a strong and competitive private sector to enhance procurement processes and expanding the use of Public-Private Partnerships (PPPs) to leverage private sector expertise and resources. Engaging in joint ventures with international firms was highlighted as a way to bridge capacity gaps and introduce global expertise to local projects.

KEY OUTCOMES & RECOMMENDATIONS:

key Outcomes



* CRITICAL ROLE OF PUBLIC PROCUREMENT:

The conference underscored the importance of public procurement as a mechanism for ensuring fairness, transparency, and integrity in the use of public funds. It plays a vital role in managing public resources, safeguarding funds, and delivering high-quality infrastructure projects.

* GLOBAL BEST PRACTICES AS A BENCHMARK:

The discussion highlighted successful procurement models from countries like Kenya, Germany, China, and South Africa, which emphasize transparency, accountability, and innovative financing strategies. These examples provide valuable insights for reforming Puntland's procurement system.

* NEED FOR MODERNIZATION AND INNOVATION:

Participants stressed the importance of modernizing procurement processes through legal reforms, capacity building, and the integration of smart technologies such as e-procurement, AI, and blockchain to enhance transparency and efficiency.

* CHALLENGES IN PROCUREMENT PROCESSES:

Participants identified significant challenges in Puntland's procurement system, including outdated laws, lack of institutional capacity, financial delays, and insufficient transparency. These issues lead to inefficiencies, poor infrastructure outcomes, and wasted public funds.

* IMPORTANCE OF COLLABORATION AND STAKEHOLDER ENGAGEMENT:

The panel emphasized the need for collaboration between policymakers, businesses, government agencies, and other stakeholders to improve procurement processes. Successful models, such as Public-Private Partnerships (PPPs), demonstrate the potential for effective collaboration in addressing public infrastructure needs.



KEY RECOMMENDATIONS:

> **Revise the Legal Framework:**

Update and reform the existing procurement law (Law No. 11 of 2000) to align with international standards, incorporating clear guidelines on procurement thresholds, competitive bidding, and dispute resolution mechanisms.

> **Enhance Transparency and Accountability:**

Publicly disclose procurement activities and implement regular audits and monitoring mechanisms to ensure accountability and minimize corruption risks. Ensure that infrastructure contracts, especially for road development, are publicly advertised to reduce opacity and favoritism.

> **Modernize Procurement Processes:**

Integrate smart technologies such as e-procurement, AI, blockchain, IoT, and data analytics to modernize contractor selection, enhance transparency, and optimize resource allocation.

> **Engage in International Collaboration:**

Partner with international firms and organizations to bridge capacity gaps, introduce global expertise, and adopt best practices in procurement and infrastructure development.

> **Strengthen Institutional Capacity:**

Invest in capacity-building programs, workforce training, and the adoption of e-procurement systems to enhance the skills and knowledge of procurement officials. Empower institutions like the Tender Board with the necessary resources to manage procurement processes effectively.

> **Foster Collaboration and Stakeholder Engagement:**

Encourage collaboration between policymakers, businesses, government agencies, and other stakeholders to improve procurement processes. Expand the use of Public-Private Partnerships (PPPs) to leverage private sector expertise and resources.

> **Safeguard Public Funds:**

Ensure that public funds are used efficiently and transparently to prevent financial losses and deliver essential services to citizens. Strengthen enforcement mechanisms to hold contractors and officials accountable for project outcomes.



ENHANCING ROAD CONSTRUCTION PROJECTS IN PUNTLAND THROUGH PUBLIC-PRIVATE PARTNERSHIPS (PPPS)



Mr. Abdulaziz Abdulkadir Jama (Seerar), **Senior Lecturer, International Trade and Marketing Expert and Economics Officer at Salaam Development Centre**, presented a detailed analysis of the role of **Public-Private Partnerships (PPPs)** in enhancing road construction projects in Puntland. His presentation aimed to evaluate the condition of Puntland's national highway, assess the progress made by the **Puntland Highway Authority (PHA)**, and explore how PPPs can provide innovative solutions for overcoming infrastructure challenges.

Mr. Abdulaziz Serar

International Trade and Marketing Expert

Key Highlights in the Presentation:

* CURRENT CONDITION OF PUNTLAND'S ROAD INFRASTRUCTURE:

Mr. Abdulaziz began by outlining the current condition of Puntland's road infrastructure, which faces several challenges, including **limited connectivity, inadequate maintenance, infrastructural gaps, and limited resources**. He noted that many regions remain disconnected from major economic hubs, limiting access to markets, healthcare, and education. Additionally, infrastructure deterioration, including damaged roads and culverts, has led to severe road degradation, while the lack of reliable drainage systems and bridges exacerbates road damage during heavy rains. Puntland also struggles to mobilize sufficient resources for large-scale infrastructure projects.

* CURRENT PROGRESS AND ACHIEVEMENTS:

Mr. Abdulaziz highlighted the progress made by the **Puntland Highway Authority (PHA)** in improving road infrastructure, including successful rehabilitation and construction projects that have improved critical transportation routes. He noted that the Puntland government has prioritized road infrastructure, with substantial financial allocation and strategic planning. However, he emphasized that there is still a long way to go to achieve the targeted road development due to limited resources.

* PUBLIC-PRIVATE PARTNERSHIPS (PPPS) AS A SOLUTION:

Mr. Seerar proposed **Public-Private Partnerships (PPPs)** as a solution to overcome Puntland's infrastructure challenges. He defined PPPs as agreements between the government and the private sector for the provision of public goods and services, involving private financing, construction, and management of key infrastructure. He discussed various PPP models, including **Build-Operate-Transfer (BOT)**, **Build-Own-Operate (BOO)**, **Operate and Maintain (OBM)**, **Build-Lease-Transfer (BLT)**, and **Concession Models**.

* WHY USE PPPS IN ROAD DEVELOPMENT IN PUNTLAND:

Mr. Abdulaziz explained that PPPs make projects more affordable, provide better value for money, increase efficiency in procurement, and enable faster project delivery. He emphasized that PPPs can deliver certainty of budget and outcomes, improve asset utilization, and provide social and economic benefits. Additionally, PPPs allow the public sector to pay only when services are delivered and inject private sector capital into infrastructure projects.

* CHALLENGES IN APPLYING PPPS IN PUNTLAND:

Mr. Abdulaziz outlined the challenges of applying **PPPs in Puntland**, including limited PPP legal framework, unclear responsibilities due to overlapping mandates among government entities, **weak infrastructure**, **political instability**, **financial constraints**, **security issues**, **skill gaps**, **unclear risk sharing**, and **trust issues** between the public and private sectors.

* PRINCIPLES AND FEATURES OF PPPS:

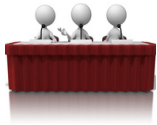
Mr. Seerar outlined the principles of PPPs, including **output-based specifications**, **long-term contractual arrangements**, **value for money**, **risk transfer**, **market competition**, and **whole-life costing**. He highlighted the features of PPPs, such as service orientation, innovation, risk allocation, long-term relationships, and resource sharing between the government and private sector.

* SUCCESSFUL GLOBAL CASE STUDIES:

Mr. Abdulaziz shared successful global case studies of PPPs in road infrastructure development, including the **Indiana Toll Road (USA)**, where private companies manage the road and collect tolls to recoup costs under a 75-year lease. He also discussed the **Gauteng Freeway (South Africa)**, where road upgrades were funded and operated by a private consortium under a long-term concession agreement, and the **Autopista del Sol (Costa Rica)**, where the private sector built and operates the road under a **20-year** agreement.

* RECOMMENDATIONS:

Mr. Abdulaziz concluded with several recommendations to enhance PPPs in Puntland. He suggested **developing a comprehensive legal framework for PPPs**, strengthening **existing projects** like the **Garacad Port** to attract investment, and engaging stakeholders such as the private sector, business community, Puntland diaspora, and donors in PPP projects. He also recommended encouraging private investment through incentives such as tax breaks and revenue-sharing agreements, and building trust between the public and private sectors to ensure successful collaboration.



Panel Discussions

Panel Discussion VI: Public-Private Partnership (PPP) Implementation Strategies and Stakeholder Roles



Moderated by **Mr. Abdirisak Ahmed Nur**, Procurement Specialist at the Puntland Highway Authority (PHA), this panel discussion explored strategies for implementing **Public-Private Partnerships (PPPs)** in **Puntland** and the critical roles of various stakeholders. Panelists discussed the benefits of PPPs in addressing infrastructure gaps, the need for clear regulatory frameworks, and the importance of fostering collaboration between public institutions and private sector partners. The session highlighted successful models from other regions and provided actionable recommendations to enhance PPP adoption in Puntland's road infrastructure projects. The panelists included:

1. **Dr. Abdifitah Sugulle**, CEO of Puntland Highway Authority (PHA)
2. **Mr. Ahmed Abdullahi**, Dean of Social Science and Economics, East Africa University
3. **Mr. Abdikhaliq Ahmed**, Researcher, Lecturer, and Business Development Manager at Himilo Microfinance
4. **Mr. Abdulaziz Abdulkadir Jama (Seerar)**, Senior Lecturer, International Trade and Marketing Expert, and Economics Officer at Salaam Development Centre

Key Discussion Points:

01 Definition of PPP:

The discussion defined Public-Private Partnerships (PPPs) as a collaborative framework between the government and the private sector, designed to address public infrastructure needs while leveraging private sector investment and expertise. Participants highlighted that PPP provides an alternative to traditional public funding, loans, or investments, allowing the private sector to contribute to public projects while ensuring mutual benefits.

02 Suitable PPP Model for Puntland:

Participants emphasized that the most suitable PPP model for Puntland depends on the development of a clear legal framework that defines its structure and implementation. They also stressed the importance of thorough evaluations and community engagement to ensure that the chosen PPP model aligns with local needs and interests.

03 Aligning Private Sector Involvement with Public Service Delivery:

The discussion highlighted the distinct priorities of the private sector, which seeks a return on investment, and the government, which focuses on public service delivery. Participants noted that a well-structured roadmap and framework are needed to align these priorities. They also recommended capacity-building initiatives to encourage active participation from local businesses and communities.

04 Challenges in Implementing PPP:

Participants identified several challenges in implementing PPPs in Puntland. They noted that a lack of political will to prioritize PPP projects is a primary barrier. Additionally, inadequate institutional capacity to develop and implement a PPP framework poses significant challenges. Unclear prioritization of projects was also highlighted as a factor that hinders the successful implementation of PPPs.

05 Ensuring Mutual Success and Public Interest:

The discussion emphasized that success in PPP relies on a mutual benefit approach, where both the government and private sector gain value from the partnership. Participants stressed the importance of clear agreements, transparency, and accountability to safeguard public interest while ensuring private sector returns.

06 Learning from International Models:

Participants recommended that before adopting international PPP models, Puntland must conduct an in-depth analysis of its unique needs and challenges. They suggested that once the local context is understood, successful PPP models from other countries can be adapted to Puntland's specific requirements.

07 Value of PPP for Road Development in Puntland:

The discussion highlighted the value of PPP for road development in Puntland, noting that it promotes self-reliance and fosters collaboration between the government and private sector. Participants emphasized that PPP provides a viable opportunity to mobilize local resources for road construction and maintenance, especially in the absence of external funding.

KEY OUTCOMES & RECOMMENDATIONS:

key Outcomes



* CRITICAL NEED FOR ROAD INFRASTRUCTURE DEVELOPMENT:

The conference highlighted the urgent need to address Puntland's road infrastructure challenges, including limited connectivity, severe road deterioration, and insufficient funding for maintenance and construction. These issues isolate communities, restrict economic growth, and hinder access to essential services.

* BENEFITS OF PPPS IN ROAD DEVELOPMENT:

Participants emphasized the benefits of PPPs, including cost-effective solutions, faster project delivery, improved resource allocation, and enhanced infrastructure regulation. PPPs also attract private investments, promote long-term economic sustainability, and ensure service accountability.

* POTENTIAL OF PPPS AS A SOLUTION:

Public-Private Partnerships (PPPs) were identified as a strategic solution to address Puntland's infrastructure gaps. PPPs leverage private sector investment and expertise, reducing the financial burden on the government while ensuring efficient project delivery. Flexible models such as Build-Operate-Transfer (BOT) and Build-Own-Operate (BOO) were discussed as viable options for Puntland.

* CHALLENGES IN IMPLEMENTING PPPS:

The discussion identified several challenges, including the lack of a comprehensive PPP legal framework, political and financial constraints, skill gaps, and trust issues between stakeholders. These barriers hinder the successful implementation of PPPs in Puntland.

* GLOBAL SUCCESS STORIES:

Examples of successful PPP-driven road projects, such as the Gauteng Freeway in South Africa and the Autopista del Sol in Costa Rica, demonstrated the viability of PPPs in infrastructure development. These case studies provided valuable insights for Puntland's road development efforts.

* IMPORTANCE OF STAKEHOLDER COLLABORATION:

The panel emphasized the need for collaboration between the government, private sector, and other stakeholders to align priorities, build trust, and ensure the successful implementation of PPPs.



KEY RECOMMENDATIONS:

> Develop a Comprehensive PPP Legal Framework:

Establish a clear and enforceable legal framework for PPPs to provide a structured environment for private-sector involvement. This framework should define roles, responsibilities, and risk-sharing mechanisms.

> Encourage Private Investment:

Offer incentives such as tax breaks, revenue-sharing agreements, and risk mitigation measures to attract private investors. Create a favorable environment for private-sector participation in road development projects.

> Build Institutional Capacity:

Strengthen the capacity of government institutions to develop and manage PPP projects. Provide training programs for public officials and private-sector stakeholders to enhance their technical expertise in PPP implementation.

> Engage Stakeholders and Mobilize Resources:

Actively collaborate with the private sector, business community, diaspora, and international donors to mobilize resources for infrastructure projects. Foster partnerships to ensure transparency, efficiency, and mutual benefits.

> Start with Pilot Projects:

Implement small-scale PPP road projects to test the model, refine the approach, and build confidence among stakeholders before scaling up.

> Align Private Sector and Public Priorities:

Develop a well-structured roadmap and framework to align the private sector's focus on return on investment with the government's goal of public service delivery.

> **Adopt and Adapt International Best Practices:**

Conduct an in-depth analysis of Puntland's unique needs and challenges before adopting international PPP models. Adapt successful models from other countries to suit Puntland's specific requirements.

> **Promote Community Engagement:**

Involve local communities in the planning and implementation of PPP projects to ensure that road development aligns with their needs and priorities.

> **Ensure Transparency and Accountability:**

Establish clear agreements, transparency mechanisms, and accountability frameworks to safeguard public interest while ensuring private sector returns.

> **Leverage Local Resources:**

Mobilize local resources for road construction and maintenance, especially in the absence of external funding. Promote self-reliance and collaboration between the government and private sector.

Session 10:



THE IMPACT OF ROAD INFRASTRUCTURE IMPROVEMENTS ON ECONOMIC DEVELOPMENT



Eng. Abdikadir A. Farah, **Director of General, Puntland State Ministry of Planning, Economic Development and International Cooperation**, presented a detailed analysis of the impact of road infrastructure improvements on economic development in Puntland. His presentation aimed to highlight the importance of road infrastructure in driving economic growth, the challenges faced, and the government's interventions to address these issues.

Eng. Abdikadir A. Farah
DG of Ministry of Planning

Key Highlights in the Presentation:

* IMPORTANCE OF ROAD INFRASTRUCTURE IN ECONOMIC GROWTH:

Eng. Abdulkadir emphasized the critical role of road infrastructure in Puntland's economic development. He highlighted that the construction and maintenance of roads significantly reduce travel time and costs for transporting agricultural products and livestock, boosting trade in these sectors.

The Puntland Ministry of Planning has noted increased interest from investors in sectors like tourism, real estate, and agriculture due to improved road access. Roads connecting rural areas to urban centers allow families to reach health clinics and schools more easily, leading to better health outcomes and educational attainment. Farmers in agricultural areas have benefited from better road access, allowing them to sell their crops in larger markets in main Puntland cities like Garowe, Galkacyo, and Bosaso, leading to increased sales and profitability. Additionally, roads linking coastal towns to major markets help fishermen sell their catches quickly, reducing spoilage and increasing profits. Road construction projects have also provided thousands of jobs for local laborers, improving livelihoods and contributing to economic stability. The road from Puntland to Somaliland, South Somalia, and the Ethiopian border improves trade routes and fosters regional economic cooperation. Isolated communities have seen improved social cohesion and reduced conflict due to better access to resources and services. The development of roads to scenic beaches in Puntland opens up opportunities for eco-tourism, contributing to the local economy.

* CHALLENGES AND THEIR IMPACTS ON THE ECONOMY:

Eng. Abdulkadir outlined the key challenges hindering effective road infrastructure development in Puntland. He highlighted that existing main tarmac roads require routine maintenance, and limited access to rural and remote areas remains a significant issue. High transportation costs further exacerbate the problem, reducing trade efficiency and limiting access to markets, education, and healthcare. These challenges have hindered private sector development and slowed economic growth in the region.

* KEY ROAD PROJECTS FOR PUNTLAND:

Eng. Abdulkadir discussed several proposed initiatives to improve road infrastructure in Puntland. These include upgrading major highways connecting Bosaso, Garowe, and Galkayo, expanding rural road networks to improve agricultural access, and constructing roads linking Puntland to neighboring regions. Funding strategies for these projects include government budgets, international development aid, and public-private partnerships (PPPs). These initiatives are expected to generate short-term gains such as employment in construction and maintenance and a boost in local business activities. In the long term, they are expected to increase trade and investment, improve the quality of life for residents, and contribute to sustainable economic growth.

* CONCLUSION AND RECOMMENDATIONS:

Eng. Abdulkadir concluded by reiterating the importance of investing in road infrastructure in Puntland State for economic growth, enhancing trade, attracting investment, and improving access to essential services. He emphasized that these improvements are essential for sustainable development and long-term prosperity in the region. To achieve these goals, he recommended prioritizing strategic road projects, fostering partnerships with international donors and private investors, and establishing long-term maintenance programs for sustainability.

* GOVERNMENT INTERVENTIONS IN ROAD INFRASTRUCTURE IN PUNTLAND:

Eng. Abdulkadir presented the government's strategic priorities for road infrastructure development in Puntland. These include the construction and renovation of new and existing roads to connect producers to markets, the development of the 3G corridor, and the improvement of port services in Bossaso and Garacad. Additionally, the government is working on improving services and systems at Puntland airports and completing the construction and renovation of ports. These interventions aim to enhance regional and international trade, reduce transportation costs and time, improve access to markets and services, encourage foreign and local investment, and create jobs during and after construction.

* CHALLENGES AND RISKS:

Eng. Abdulkadir highlighted potential issues that could arise during the implementation of road infrastructure projects, including high project costs and funding gaps. To mitigate these risks, he recommended efficient planning and budgeting, involving local communities in decision-making, and ensuring security and environmental safeguards. These strategies are essential to ensure the successful implementation of road infrastructure projects and their long-term sustainability.

Closing Remarks "



The **1st Annual Road Development Conference** in Puntland concluded with closing remarks from **Dr. Abdifitah Sugulle**, CEO of Puntland Highway Authority (PHA), and **Mr. Mohamed Jama**, Director of General, Puntland State House. The Guest of Honor, **H.E. Farah Awad**, Minister of Public Works, Transport, and Housing, officially closed the conference. In his remarks, he reaffirmed the government's commitment to advancing road infrastructure development and ensuring sustainable, well-planned projects across Puntland. He also emphasized the importance of collaboration, innovation, and long-term planning to address the region's infrastructure challenges, while reiterating the government's dedication to implementing the recommendations discussed during the conference.



Dissemination of the Report

The Puntland Highway Authority (PHA) will disseminate this comprehensive report and supporting materials to conference participants, government agencies, private sector stakeholders, and development partners. Additionally, the report will be made publicly available on the official PHA website: www.pha.pl.so. This ensures that the findings, recommendations, and outcomes of the conference can be accessed, referenced, and utilized by all stakeholders invested in Puntland's road infrastructure development.

Acknowledgment

Dr. Abdifitah Sugulle, CEO of Puntland Highway Authority (PHA), and his **Deputy, Mr. Abdirazak Mohamed Hayir**, extend their heartfelt gratitude to all government officials, engineers, researchers, private sector representatives, and development partners who participated in the **1st Annual Road Development Conference in Puntland**. Special appreciation goes to the conference speakers, panelists, and moderators for their valuable insights and contributions.



Abdifitah Sugulle
CEO, PHA



Abdirazak Hayir
Deputy CEO, PHA

This conference was organized and fully sponsored by **Puntland Highway Authority (PHA)**, demonstrating the organization's commitment to advancing Puntland's road infrastructure development. Puntland Highway Authority (PHA) acknowledges the dedication of its employees, whose hard work and coordination made this event possible. Their efforts in planning, logistics, and execution ensured a successful and impactful conference.

Additionally, Puntland Highway Authority (PHA) extends its gratitude to the note takers for their diligent efforts in capturing key discussions and documenting presentations. A special appreciation is also given to the report writer, Eng. Sahal Jama Yusuf whose meticulous work in compiling and structuring this comprehensive report has ensured that the insights, recommendations, and commitments made during the conference are accurately recorded and accessible for future reference.





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Thank You

The 1st Annual Road Development Conference in Puntland

"Building Resilient Road Networks for
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