Draft Final Report

Decision Support System for Road Infrastructure Projects

Planning & Development Department
Government of Balochistan

Context:

Balochistan lacks an integrated approach towards planning. Its current approach is distinctly sectoral/departmental and at times wasteful. For example, the Provincial Education Department has focused on building more schools to enhance literacy, while disregarding the fact that 70% of children aged 5-16 in Balochistan (compared to the national average of 44%) are not even in school, not necessarily for lack of a building.

Moreover, the province suffers from a high dropout rate. In this context, building more schools would have little impact on literacy in the province unless the reasons that stop children from attending school, and dropping out (when they do) are also addressed. Some commonly cited reasons include high frequency of diarrheal illness amongst children which in turn is often linked to inadequate drinking water and sanitation facilities. This is a classic case of how investments in one sector (water and sanitation) can improve outcomes in another sector (education) and need an integrated policymaking process for implementation. This kind of analytical decision making, along with the tools required to undertake such thinking, becomes even more critical when resources and capacity are limited.

The absence of a well thought-out medium and long-term strategic planning framework to guide public investments and policymaking has made existing resource constraints worse. The last detailed economic report for Balochistan was prepared in 2008, as a joint effort by the World Bank, Asian Development Bank and the Government of Balochistan (GoB). This was followed by a Comprehensive Development Strategy (2013-20) by the GoB with support from UNDP. While comprehensive in its coverage of issues, these reports were not accompanied by any time-bound spatial plan or institutional framework to help departments implement programs and had limited success in linking public investments to the development needs of the province as they were not based on a tool that allows integration of existing data or creates avenues to generate new data. Many of these reports also lacked a consultative approach, and hence generated limited policy traction or ownership for the recommendations put forth.

In the absence of a spatially anchored data-driven planning framework, public spending in Balochistan remains ad-hoc, discrete, inefficient and weakly aligned with actual development needs of the province. A new approach towards Balochistan's future development that links public spending with territorial and spatial realities can help address the province's core development challenges. Spending decisions that are based on a such a framework are more likely to be inclusive and integrated. This approach will not only help Balochistan's policymakers make the right decisions for the relevant regions but also help in identifying the most optimum use of resources to achieve intended outcomes, especially in a fiscally constrained environment.

Rational for this study

The Government of Balochistan aims to develop a **Spatial Development Strategy** to guide its development priorities and to maximize the efficiency of its natural, human, and capital resources towards overall development of the province. The development and use of ***Balochistan Spatial Strategy (BSS)*** to support economic growth and improve the quality of investment decisions, towards better outcome indicators, is a key priority for the Government of Balochistan (GoB).

The GoB requested the IGC (International Growth Centre) to provide technical support in developing the BSS. IGC engaged a team of researchers and experts to help the GoB execute this. Technical support was provided in three phases. Firstly IGC Pakistan responded to the GoB's earlier request for support in developing the contours of a spatial strategy underpinned by a spatial framework to guide the province's budgetary allocations and development priorities while reflecting Balochistan's needs and strengths. This work has helped set the context for a new framework for growth in Balochistan based on a spatial and data-driven approach and is now forming the basis of the governments on-going negotiations with the World Bank to finance a full-fledged Spatial Strategy for the province. The context and justification for such an approach presented as an outcome of the first (Spatial Planning Framework) SPF has been extremely useful for the Strategic Planning and Reforms Cell (SPRC), our direct counterparts, operating under Balochistan's Planning & Development Department, that would be leading the development of such a strategy and approach.

The team also helped the Strategic Planning and Reforms Cell, at the Planning and Development Department, GoB, develop the project PC1 - a document essential to earmark government funds towards – which was then approved by the government.

This work identified two key components a spatial strategy must entail. One is a data development framework - The basic foundation must rest upon an extensive, comprehensive and well-planned & integrated data inventory. This can include both spatial (imageries, maps and map-related) as well as non-spatial (alpha numeric and text) data across all departments, sectors and districts. A second key element to support and supplement data collection and analytics, is an IT-based Decision Support System to make use of this data, with the objective of supporting evidence-based and responsive decision-making.

A Decision Support System (DSS) would be critical as it can provide real-time integrated data for multiple sectors. Integrated data sets improve decisions regarding future investments in development schemes. It also discourages politically driven investments and help align public investments with real development needs across different regions and sectors. An advanced level of DSS, in addition to the provision of real time data, can further help in predictive and prescriptive data analytics by building scenarios, providing options and sensitivity analysis, towards an optimum investment decision.

This was the focus of the current project - to ensure traction and uptake of the proposed spatial strategy, the provincial government made a specific request to IGC to pilot such a decision support system that can be used by government departments to help them make investment decisions across various sectors.

Methodology and approach

The SDSS for infrastructure was built using multiple data from multiple data sources where most of the data was open source or from already developed/existing datasets**.** Typically, spatial analysis starts with a base map, or layer, upon which multiple other layers are applied. For the purpose of this strategy, this base layer were the borders of the Balochistan province, on top of which layers showing administrative boundaries at the district, tehsil, electoral constituencies and where possible, mauza level, were applied.

Visualizing data points such as population, income, housing stock, connectivity, industrial and agricultural growth, and the spread of public services such as health and education allow policymakers and planners to effectively gauge how the region is evolving, what is holding

back economic and social development, and how future changes might affect inhabitants. More complex analysis can also be performed.

Overlaying population data with the layers such as housing, health, education will further help the government develop appropriate strategies for service provision, infrastructure development, and long-term consolidation/growth. Likewise, a population growth map with projected population figures, segregated by age can also support the government's planning efforts.

The system can allow users to see different data points on a map so policymakers can visually see how services are being distributed across the province.

Its most important contribution is provision of data or evidence to simplify the process of decision-making by policymakers around investment decisions linked to road infrastructure projects. It does so by assigning a score to a potential scheme across a list of criteria.

The system: a) integrates existing and relevant spatial and non-spatial data sets from both private and public sources b) visually highlights pockets of inequities in terms of access to roads, transport etc through enabling an accessibility analysis by rural/agriculture location with pockets of markets and existing road infrastructure c) is integrated with outcome indicators, d) features a basic construction progress monitoring system and be integrated with the outcome indicators available in Multi Indicator Cluster Survey (MICS) & other surveys e) the system will hence enable relevant departments to make data-driven, timely and transparent decisions to maintain supply chains.

The key counterpart for this engagement was the provincial government's Strategic Planning & Reform Cell (SPRC). Balochistan Government at the Planning & Development Department has set a small but well capacitated unit, SPRC, to reform the development planning in the province.

Expected Policy impact:

This work will help the government of Balochistan to operationalise its spatial strategy, build buy-in for evidence to inform policy and help the government in making key policy decisions. This pilot DSS can be easily extended to include other sectors and is dynamic to changing needs and priorities of the province. Development decisions that come from a system based on a spatial strategy are inclined to be more inclusive and focused on integrated solutions, unlike what is achieved in a sectoral or departmental decision-making process. This web-GIS based road Infrastructure Spatial Decision Support System will assist GoB in infrastructure planning, centered around connecting rural markets to urban centers. Using the information policymakers will be able to make data-driven and transparent decisions such as a) prioritizing districts for road infrastructure planning on the basis of socio-economic status / need b) planning a new road: by performing spatial contextual analysis of the proposed road alignment and prioritizing development investment.

The entire system has been shared with the government of Balochistan and their team multiple times, they will be trained on how to use it as well. This work had direct support of the government and was developed in direct consultation with their core team.

In the long run a DSS will help develop an Economic Development Framework for Balochistan. This tool will inform public investments related to connectivity infrastructure, urbanization and the development of industrial zones, schools, hospitals, and other facilities, making these

investment decisions in an objective, efficient, and economic manner. The province's Planning and Development (P&D) Department wishes to use the BSS as a means to:

- Realize the true growth potential of the province and to enable it to catch up with other provinces of Pakistan in terms of growth and socio-economic development.
- Utilise the increased fiscal space available to the province after the 7th National Finance Commission (NFC) award
- Harness the potential of the opportunities presented by the China-Pakistan Economic Corridor (CPEC) and other expected Foreign Direct Investments.

Challenges for Development Planning in Balochistan

There are several challenges in public sector planning within the province as highlighted above. Some of these include:

Lack of an overall Development Framework:

Bureaucracy: The development planning at the provincial level is drafted by the civil servants, under the overall guidance of the political leadership. Most of the time, this entails a closed-door departmental approach, where each section works in isolation, with little integration. Progress and success of projects is measured in terms of only input indicators and hardly any linkage with the outcome or impact studies is factored in.

Politicians: The chief Minister, the cabinet and the elected representatives set the province's development agenda. Unfortunately, in most of the cases, this decision making, and agenda setting is tainted with less than objective criteria and at times, outright some interest-based prioritization.

Citizens: Unfortunately, the citizens of the province i.e., the real stakeholders in the development planning have very little role in any kind of decision making. They are indirectly represented by their elected representatives and how far they are effective is open to discussion. Once an objective data driven system is implemented, transparency and citizen feedback can be effectively managed.

Scarce Resources:

A significant number of development schemes in the Annual Development Plan (ADP)[1] are sponsored by local politicians, and hence reflect their local interests, as opposed to objective data driven analyses and long-term strategic plans. Many social sector facilities like schools, hospitals and Basic Health Units (BHUs) etc. are planned with little field data available, and hence their utility remains sub optimal. The result is that a province which is already lacking in quality infrastructure and services ends up wasting much of its meagre development resources.

[1] The Annual Development Plan is a key policy instrument used to provide a strategic roadmap for the growth and development of a province and achieve the development targets set forth by the Federal and Provincial governments.

Low Population Density:

Unlike other provinces, Balochistan faces a unique problem. On top of the instability stemming from conflicts, one of the largest obstacles for growth for the province is its extremely low population, which in turn is spread out over a very large area of land. The low population density has increased the per unit cost of service delivery while its difficult terrain has made provision of basic public services across all settlements challenging. As a result, any development that has taken place has been unequal, and has added to the regional inequality. The only major city in the province is Quetta, which now faces rapid and unsustainable urbanization due to an increase in migration into the city. The Spatial Strategy and evidence-based decision making is critically important for the province, to address these unique challenges.

Inequitable distribution of Infrastructure & Services:

Some of the challenges enumerated above have resulted in an inequitable distribution of scarce financial resources, creating issues of regional inequality within the province. This inequality and disparities have been documented in various studies, due to opaque and personalised investment decisions, rather than developing an objective evidence-based criterion.

Lack of credible Data:

The public sector in the country has always been low on data collection and its availability for decision making. Within the federating units, Balochistan is perhaps at the lowest end, as far as quality data is concerned, for various reasons. The challenges of collecting and maintaining spatial data in such a large province are in any case more serious than others. This lack of capacity & to some extent even lack of appetite for data is one of the serious challenges influencing the public sector development decision making. Even if there is data collected, it is scattered, mostly non-spatial and paper based, hardly ever available at the Planning & Development Department (P&DD), for project prioritization or planning.

The need for a DSS:

There is no integrated spatial plan for the province, that can guide / determine / support in planning towards an integrated development plan. Many a times, infrastructure development is not problem oriented, rather solution driven, as departments plan their facilities in isolation. This subjective approach towards planning as against data driven decision making is a key hurdle in rapid development planning which is need of the hour. Data, even if available with the departments, is not easily available to the decision-making forum (Provincial Development Working Party (PDWP) or Departmental Development Working Party (DDWP) etc.) at the time of decision-making, hence the need for an integrated Decision Support system is critical. To support a spatial strategy, a province-wide data set and an GIS / IT based ***decision support system*** (DSS) will also be useful to not only assist the provincial government, but also the local governments in project identification and need-based planning, as these entities typically lack in-house technical capacity to undertake such projects on their own. This GIS based data driven decision support system (DSS) forms the foundation on which the analytical tools of Spatial strategy would lead to improved planning.

The GoPB has already approved a PC1 at the cost of close to PKR 280 million to achieve the development of a province wide integrated, GIS based Decision Support System, covering all sectors of the development. The project is a twenty month long exercised financed by the

World Bank, under its on-going Governance improvement Program. The DSS would be based on a comprehensive spatial and non-spatial data collection exercise and would be implemented through an external firm.

The Road Sector DSS (A pilot Project):

Objectives:

Improvements in transport and connectivity are critical components of the spatial strategy. Sectoral strategies should aim to improve accessibility through the development of mixed-use nodes and corridors, and investments in rail transportation, road infrastructure, bus networks, airports, seaports as required. At the city-level, sectoral strategies should support and facilitate investment in public transportation and improve walkability. Care should also be taken to ensure that land use, housing and transport policies are integrated to reduce long-term economic costs. The Balochistan Comprehensive Development Strategy (BCDS) 2013-20 primarily focuses on road infrastructure, proposing an outlay of around 18% for the road sector, being the largest single sector. This is particularly important as most infrastructure is in dire need of repairs, however, for long-term sustainability and growth, the scope of transport policies needs to be considerably widened to include other forms of transport infrastructure and mobility requirements as well. Finally, it is crucial for sectoral strategies to focus on improvements in rural connectivity and transport services and address rural marginalization and exclusion.

Having good road infrastructure is one of the prime investments, that in many ways lays the foundation for all other services, with improved access and mobility.

Developing a DSS requires a framework for assessing and prioritizing the development of new road schemes, using an objective criterion. This approach necessitates the following key elements:

1. **Identification of critical factors** that determine the economic value of a road / segment / link
2. **Data collection** to ensure that we have the data relating to these key factors
3. **A formula to calculate the cumulative score** of all these indicators for each of the road segments / links being proposed, as this cumulative score would provide an indicator for the economic utility of a road segment, thus making efficient project prioritization.
4. **Developing an IT based** system to automate this whole process, that can support the decision making, providing data and data analytical tools as and when required.

Methodology:

Considering the importance of this medium-term project, the P&D desired to develop a pilot DSS, only for the key sector of road infrastructure. The current assignment, sponsored by the IGC and implemented by the CDPR is aimed at developing the pilot DSS for the province, focusing only the road sector.

More specifically, the pilot DSS being developed under the current project will help prioritize and coordinate public investment decisions in the roads sector based on the economic impact that the schemes would have in the area.

In any province, there are a wide variety of roads that are developed by various agencies, departments and authorities. These include, Motorways & National Highways, Provincial Highways, Secondary Roads, Urban Roads, City Bypass roads, Farm to market roads, Rural

Roads, Access Roads, Link Roads, Shingle Roads, Tracks and Bridges[2], etc. Of these, the Motorways and National Highways are built and maintained by the National Highway Authority (NHA), which falls within the domain of the Federal government, hence not considered here for the purposes of provincial ADP. From other types, in order to keep the system simple, especially in the starting phase, only following categories of roads would be included for analysis. Later on, these types could be enhanced, and more detail could be added.

1. Provincial / Inter district Roads
2. Rural Roads
3. Urban Roads
4. Bye Pass Link Roads

Road development schemes in the ADP are essentially of 3 types:

- New Road construction
- Rehabilitation Schemes (of existing roads)
- Widening & Improvement Schemes.

All these schemes are development investment decisions and need to have an objective data driven decision framework. However, each type of scheme would require different types of data sets. For example, whereas new road construction would need to be justified as per the economic impact, based on infrastructure and services in the area of influence, the rehabilitation scheme would also need data on the quality of infrastructure, funds spent on M&R in the past and traffic counts etc. The widening schemes in addition would need more detailed data on the traffic volumes and land availability, to justify for additional lanes.

However, for the purposes of current Pilot DSS system for Road Infrastructure, only development of new roads would be included, which later on could be broadened to include other types of road sector schemes.

Scoring Criteria:

While the ADP is being prepared, there is a long list of proposals for new road construction, often proposed by elected representatives, as well as by the departments. As always, the budget is limited and the difficult task of short listing / prioritization is needed, for which the DSS would use objective criteria. The real worth / importance of a road is determined by the economic impact in the area of influence, and that in turn is dependent upon a number of factors:

I. Population served by the road.
II. Connectivity with other means of transport
III. Social services & public infrastructure
IV. Economic hotspots within the area of influence.

District Development Index:

In addition to these factors, the Government needs to consider factors of regional equity as well, as some of the districts / tehsils are less developed in terms of road infrastructure, while

[2] Different terminologies used in different provinces.

others are well endowed. This imbalance has been documented in various studies and the P&D would be using a simple criterion like:

Road length / sq. Km and Road length / 1000 population. This or a similar published data would be useful in calculating a District Development Index (Road Infrastructure). The development index can be converted into a multiplier factor for the scheme score, thus prioritizing the underdeveloped districts / tehsils[3].

Analytical Steps:

All shortlisted schemes will be prioritized based on the impact score calculated through the methodology shown in **Error! Reference source not found.**1. A buffer area[4] of on both side of the alignment is to be generated and value against each factor is calculated. In total scoring is to be made for all the mentioned in ANNEX – A. Sum of all factors is then calculated to obtain the total score. For the purpose of comparison, obtained score shall be divided by road length to calculate impact score per kilometre. Impact score of different schemes is to be compared for prioritization of schemes accordingly.

[3] The choice of area could be district, tehsil or National / provincial assembly constituency.

[4] The buffer area would vary along with the category of road, lowest for urban roads and highest for district roads.

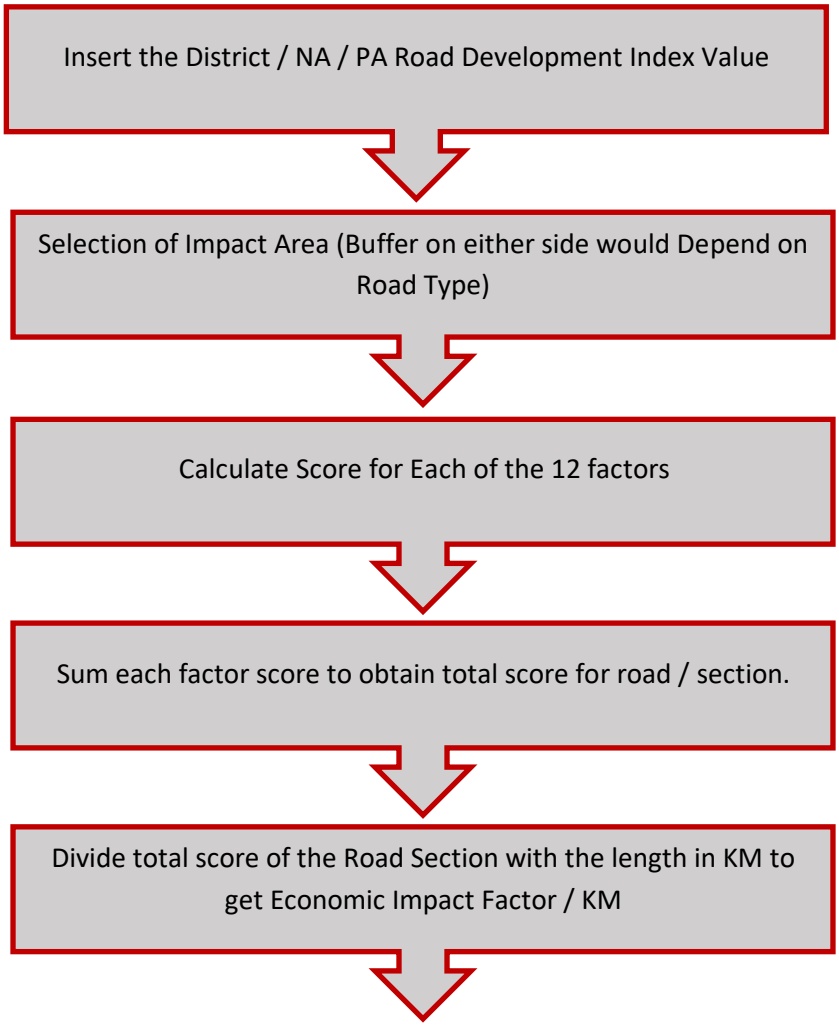


Figure 1: Methodology for Prioritization

The System outline:

The pilot DSS for the road sector has been designed to support the PnD in data driven decision making towards prioritization of new road construction. The system includes:

Data Layers: administrative boundaries, existing road network, existing facilities and services, as per the need for scoring criteria, enumerated in the annex.

Dashboard: The executive dashboard, provides a snapshot of all the data sets relating to road sector and allied services. This also provides a tabular, graphical & map based snapshot of the last ten years investment in the sector.

Analytical Tools: The system provides a comprehensive analytical tool that helps the decision makers in comparing the economic worth & efficacy of a road sector project, vis a vis its absolute value, as well as in caparison with another proposed similar scheme. This analytical tool shall minimize the personal bias and subjectivity, providing more objective and data driven investment decisions.

Consultations & Feedback

The system was developed in full and frequent consultation with the SPRC and the IGC and a number of presentations were made, first at the design stage (mock-up screens) and later at the scoring criteria stage and finally once the system was developed. There is planned to be a training session as well on the operations of the system and any de-bugging if needed once the pilot is implemented.

Constraints & Limitations:

Creating an ownership: The BSS and DSS, both are relatively new concepts in the province, and majority of the bureaucrats and political representatives are neither aware of the system, nor there is a culture of data driven decision making. Investing resources and amending the development decision making processes is something that requires commitment and motivation. Getting ownership from the leadership was quite challenging and was achieved by the SPRC team, with support from the consultants.

Data Limitations: The public sector in Pakistan and especially in Baluchistan is not very current on developing and maintaining data, especially spatial data. Developing a data-based decision making without many data layers is impossible. Gathering all the new data sets in a short time span and that too or a pilot is not feasible. The consultants supported the SPRC team, in developing some basic layers of data for the road sector DSS. However, the system is dynamic and would become enriched with each layer and component of data added. The *admin panel* of the system is flexible enough to allow the client in adding and updating data layers.

Covid Factor: The Covid pandemic in the country has been affecting the way discussions and consultations were held. As per plan, the consultants were supposed to travel to Quetta and present the system to the ACS PnD, the CS and the Chief Minister. However, due to Covid restrictions, all presentations and consultations were made remotely, which of course is not as good as the in-person discussions.

Way Forward:

The Road Sector DSS has been developed as pilot system for the main project of province wide integrated DSS, that the GoB has already approved for implementation. However, short of that the pilot system would be implemented and any issues arising out of this would be rectified and this would serve as a prototype for the main system.

The real value addition of the system would take a few months or a year, when the project identification and prioritization is appraised using this system. The ultimate goal would be improved economic development for the province.

ANNEX – A

Annex:

Balochistan Road Sector Decision Support System Scoring Criteria for Road Sector Development Projects									
Scoring Factors		**Criteria**	**Score**	**Weightage**	**Remarks**	**Rural**	**District**	**Urban**	**Bypass**
Basic	District Development Index	Road to Pop & Area	Inverse ratio	**20%**	Population density (70% weightage) Road density (30% weight)				
	Road density	Road length / district area			All roads to be included, 5 score for motorway, 4 for district roads, 3 score for urban roads, 1 score for rural roads. Weighted average for the entire road network in the district.				
	Population	1000 / sq km	Min 10 – max 100		Total population in the buffer, divided by KM of road length,				
	Right of Way	Existing or Not – User input	10 – 100 (pro-rata)		Existing right of way is advantageous,				
Connectivity	Linking other roads	Variable on Size of Road	10 for none 20 Point per Local Road 40 Point per Secondary Road 60 Point per Primary Road 80 Point per Highway		Connecting with other road network increases the value of a new segment.				

			100 Point per Motorway/ Expressway	**30 %**					
	Inter City Bus Terminal	Presence & Distance from road	10 for none 50 for presence + 50 for distance in Km(10/km) Gradual increase		Improves access to the public transport				
	Railway Station	Presence & Distance from road	10 for none 50 for presence + 50 for distance in Km(10/km)						
	City Center	Distance from city center	50 km -> 10 Increasing -> 100						
	Airport	Presence & Distance from road	10 for none 50 for presence + 50 for distance in Km(10/km)		Wont be counted in most of the cases, like rural roads etc				
	Dry Port	Presence & Distance from road	10 for none 50 for presence + 50 for distance in Km(10/km)						
	Agricultural area	Acres / Sq Km	10 for zero 20 for 100 acres 30 for 200	**30 %**					

Economic Hotspots			40 for 300… Max 100						
	Industrial Area	Min 10 workers per industry - Ind	10 for one unit 10 for each unit..max 100						
	Commercial Zone	Presence & Distance Min 10 Shops per commercial area	50 for presence 50 for distance (inverse)						
	Mines & Minerals	Area in acres / sqkm	10 for 10 sq KM Max 100						
Social Services	Education	Number & Distance	Depending upon the type ; max 70 30 for distance (inverse)	**20%**					
			10 for none 20 Point per 40 Point per 60 Point per 80 Point per 100 Point per						
	Health	Number & Distance	Depending upon the type; max 70 30 for distance (inverse)						

	Type of health facility		10 for none 20 Point per RHC 30 Point per BHU 50 Point per THQ 60 Point per DHQ 70 Point per TH						
	Entertainment / Sports Stadium	Number & Distance	10 per facility; max 50 50 for distance (inverse)						
	Public Offices	Number & Distance	Depending upon the type; max 70 30 for distance (inverse) 10 for none 20 Point per 40 Point per 60 Point per 80 Point per 100 Point per						
Total Score:				**100**					

• ***Note*:** Only relevant factors would be considered for each type of road (Rural, Urban, Distt, By pass)….and for each category of project (New, Widening & Rehabilitation). • Inter se weightage would remain the same… • Buffer variable per template				

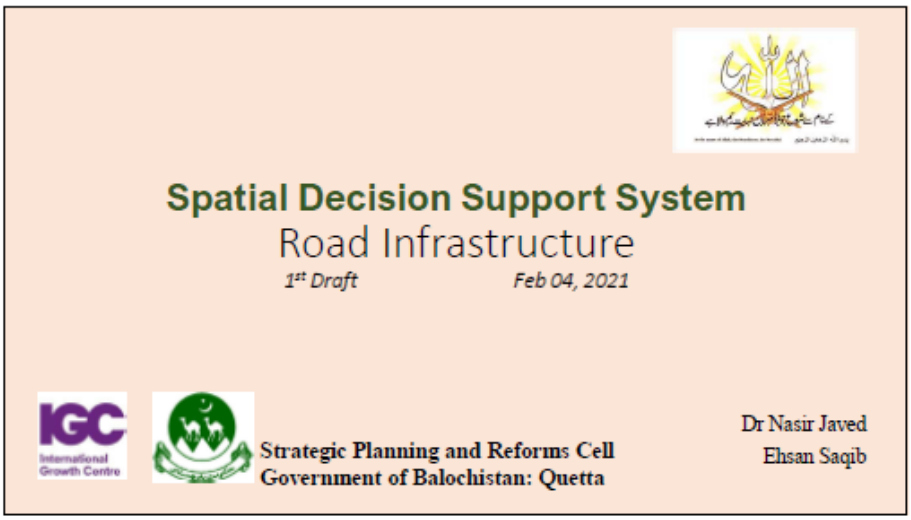
Impact Factor

$$Impact\ Factor: \frac{\sum F_i}{L_i}$$

Where,

F_i = Score of individual factor for scheme i,

L_i = Length in kilometre of scheme i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Road Infrastructure
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IGC
International Growth Centre
Strategic Planning and Reforms Cell
Government of Balochistan: Quetta
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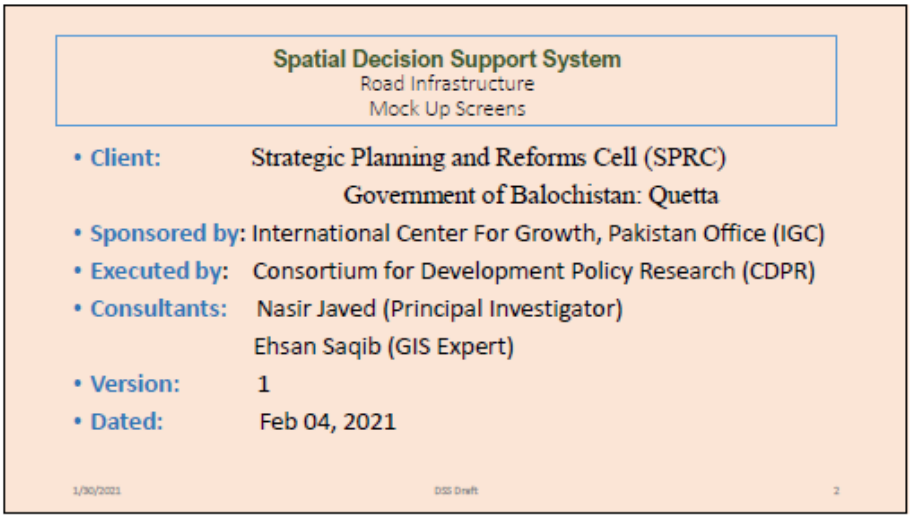
Spatial Decision Support System
Road Infrastructure
Mock Up Screens
• Client: Strategic Planning and Reforms Cell (SPRC)
Government of Balochistan: Quetta
• Sponsored by: International Center For Growth, Pakistan Office (IGC)
• Executed by: Consortium for Development Policy Research (CDPR)
• Consultants: Nasir Javed (Principal Investigator)
Ehsan Saqib (GIS Expert)
• Version: 1
• Dated: Feb 04, 2021
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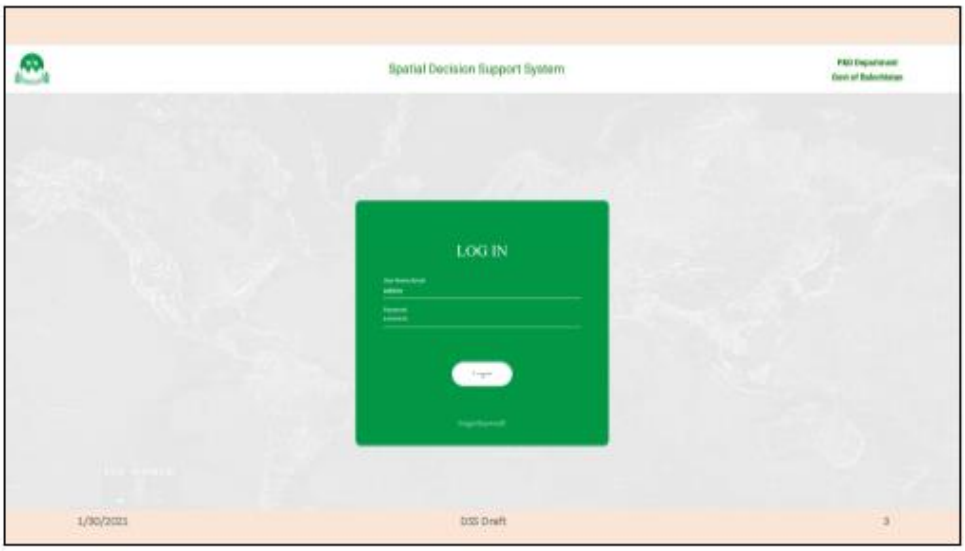
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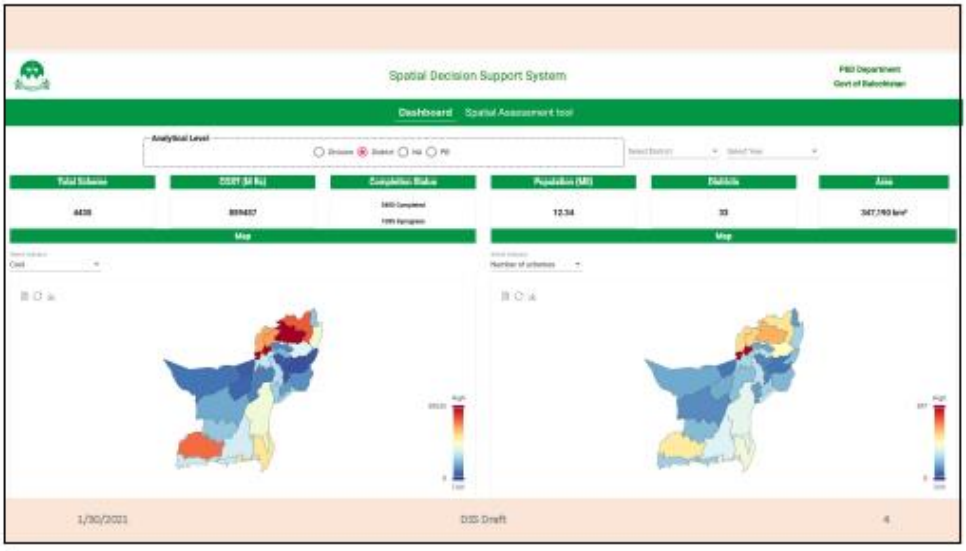
Spatial Decision Support System
Dashboard
Spatial Assessment tool
Map
Map
1/30/2021
DSS Draft

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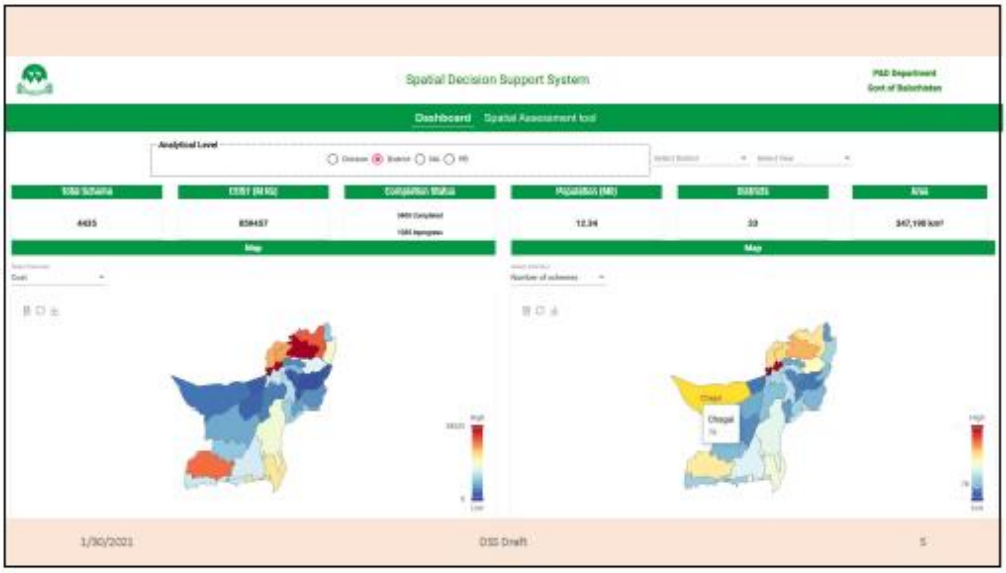
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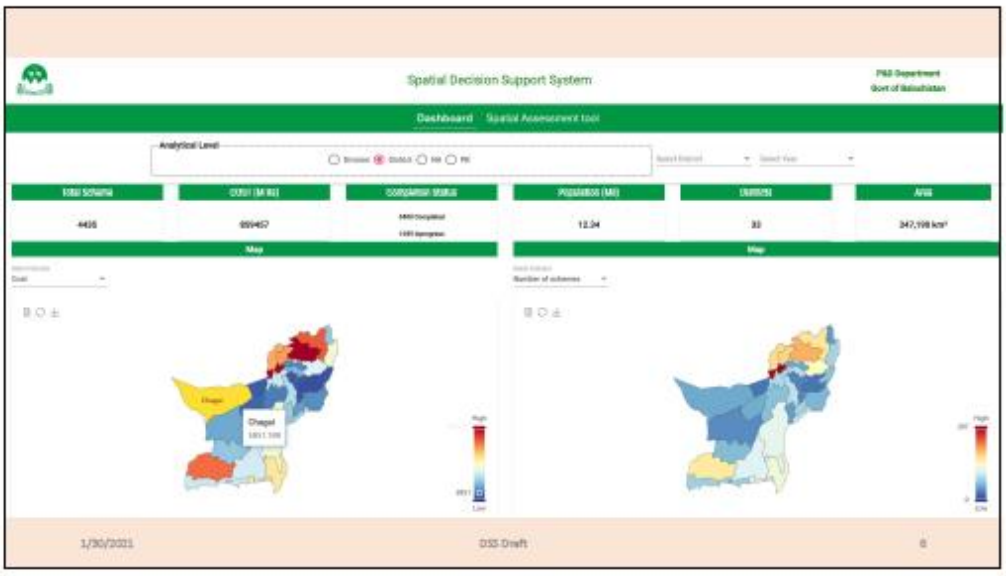
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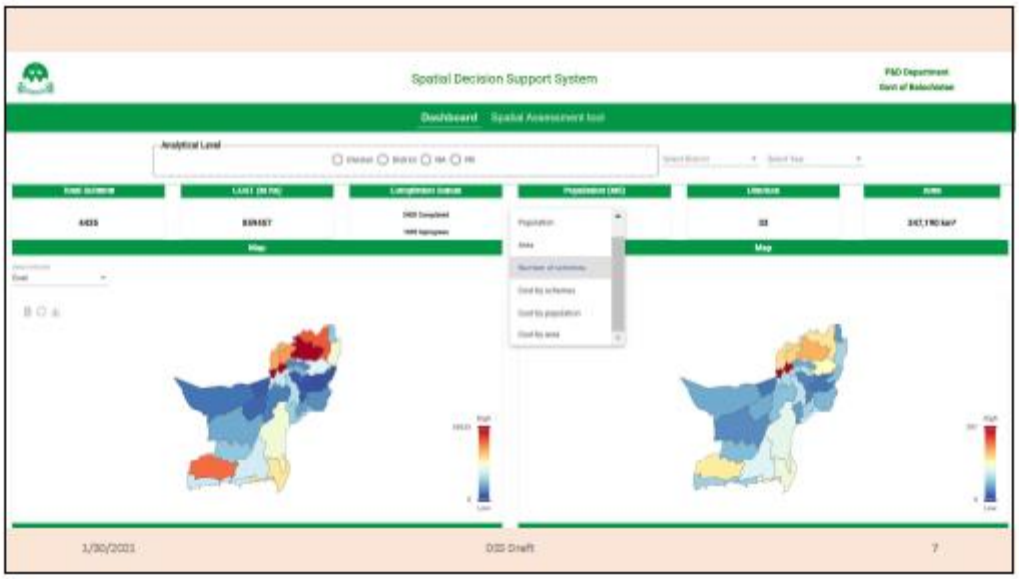
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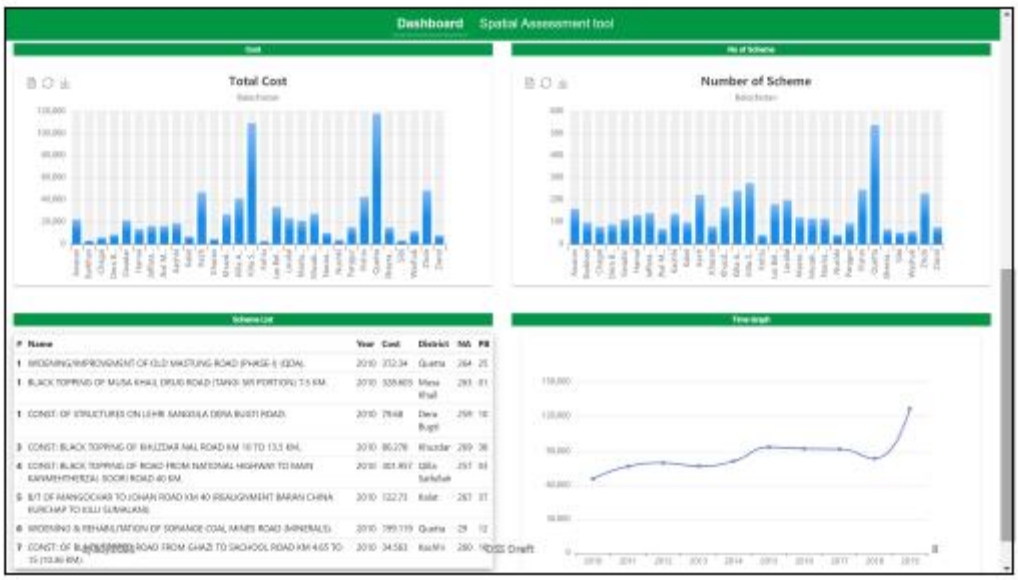
Dashboard
Spatial Assessment tool
Total Cost
Number of Scheme
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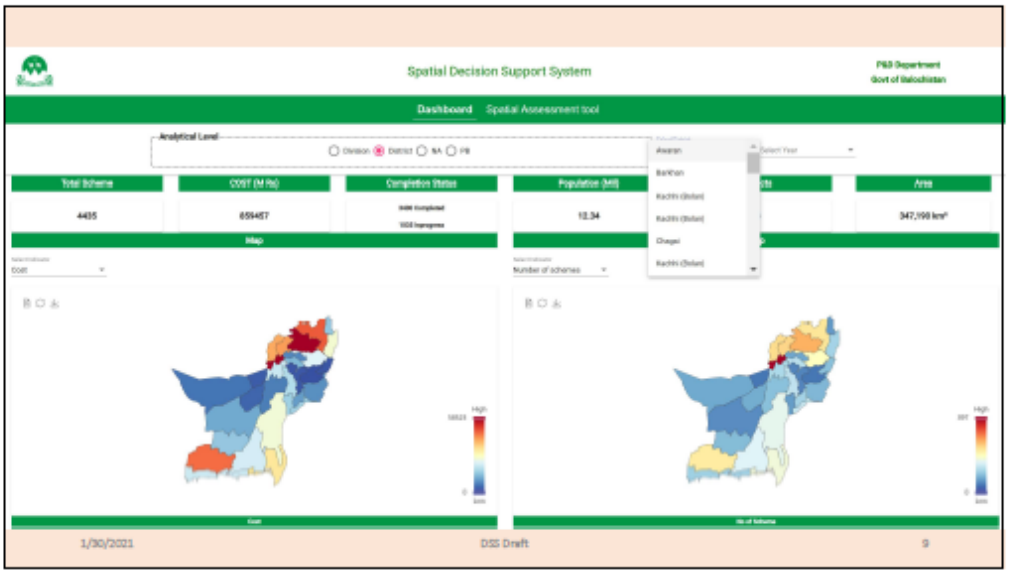
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COST (M Rs)
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Map
1/30/2021
DSS Draft
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Spatial Decision Support System
P&D Department
Govt of Balochistan
Dashboard
Spatial Assessment tool
Analytical Level
Total Scheme
COST (M Rs)
Completion Status
Population (Mil)
Area
4435
12.34
Map
1/30/2021
DSS Draft
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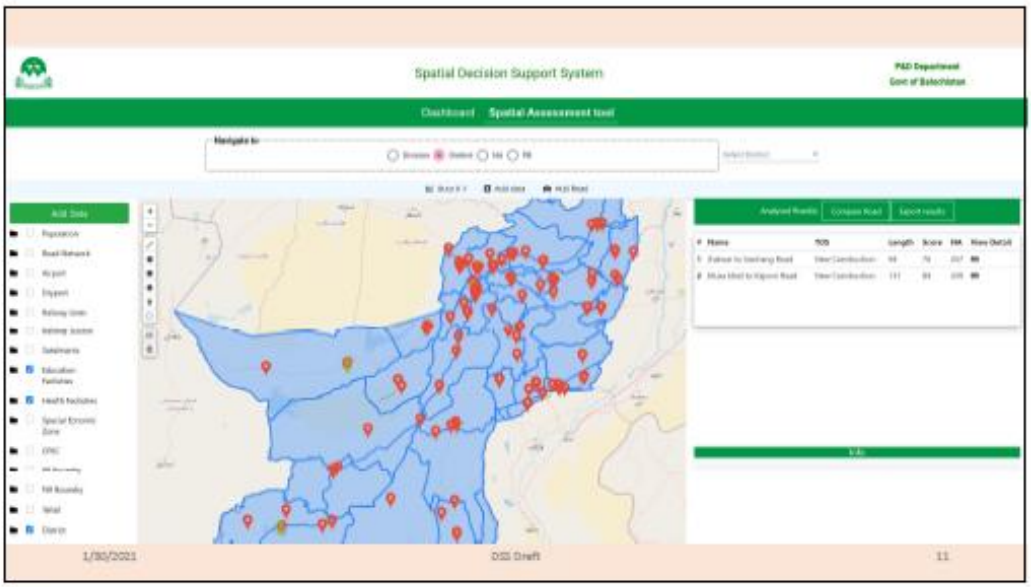
Spatial Decision Support System
Dashboard
Spatial Assessment tool
1/30/2021
DSS Draft
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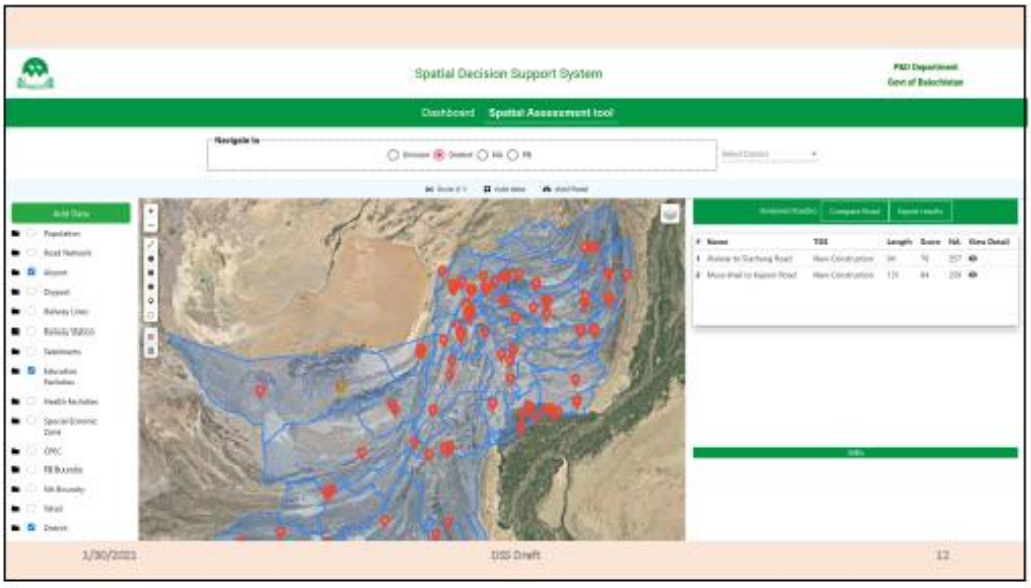
Spatial Decision Support System
Dashboard
Spatial Assessment tool
1/30/2021
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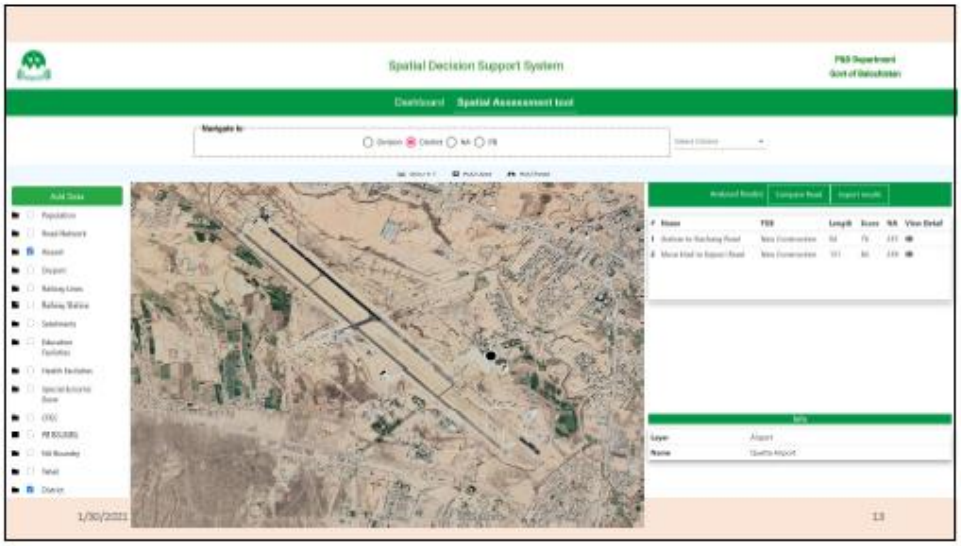
Spatial Decision Support System
Dashboard
Spatial Assessment tool
1/30/2021
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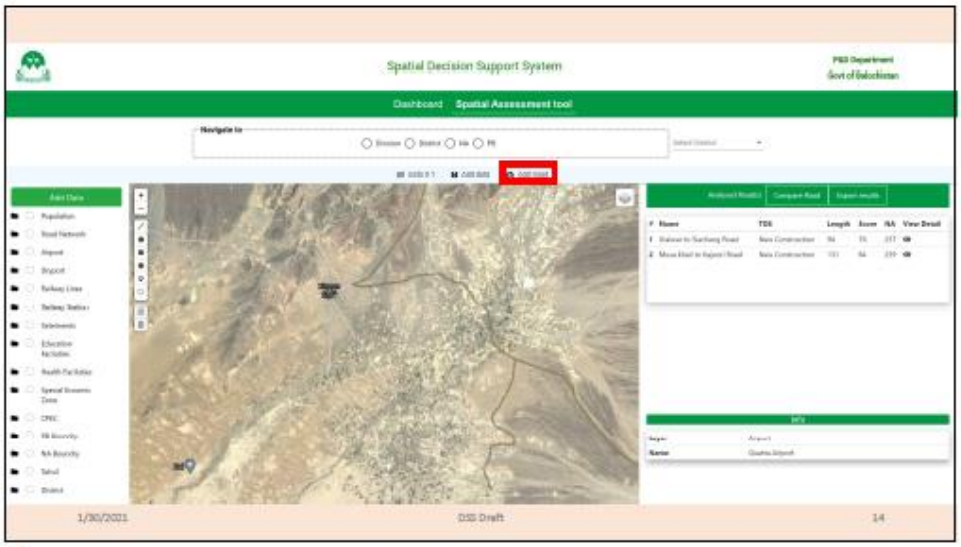
Spatial Decision Support System
Dashboard
Spatial Assessment tool
1/30/2021
DSS Draft
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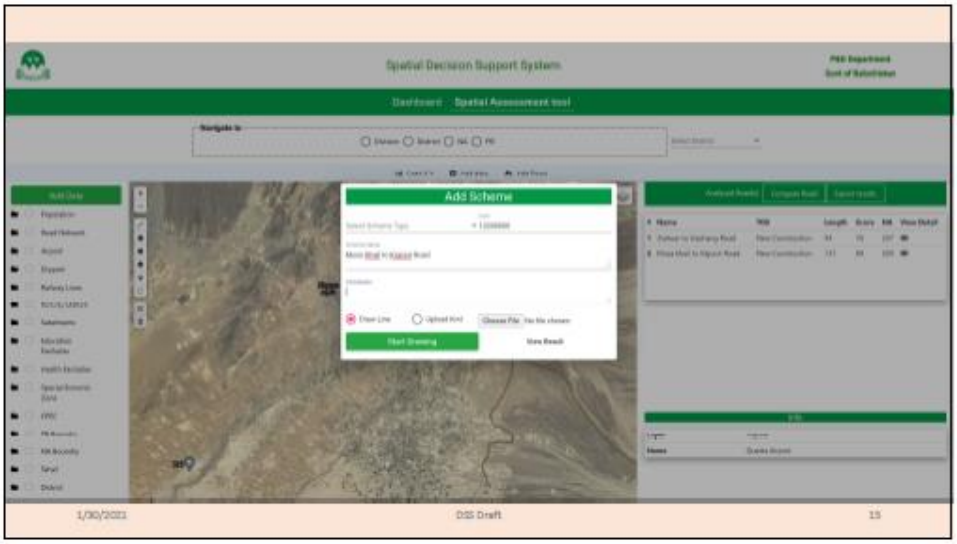
Spatial Decision Support System
Dashboard
Spatial Assessment tool
Add Scheme
1/30/2021
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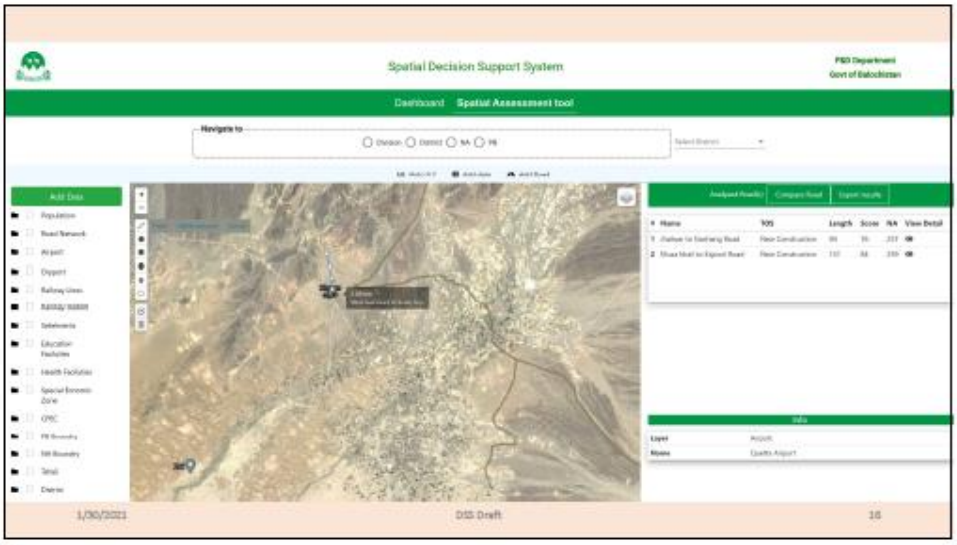
Spatial Decision Support System
Dashboard
Spatial Assessment tool
1/30/2021
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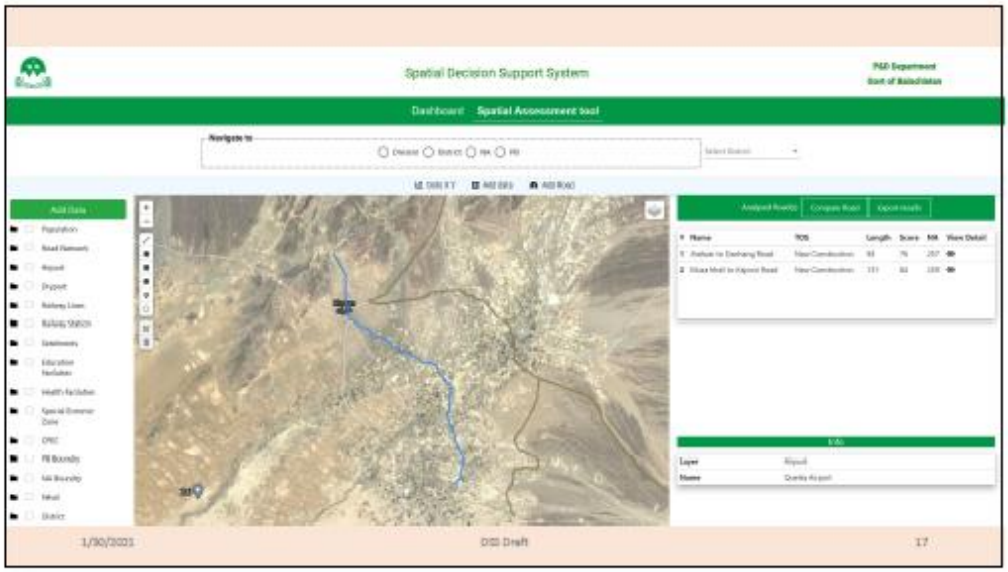
Spatial Decision Support System
Dashboard
Spatial Assessment tool
1/30/2021
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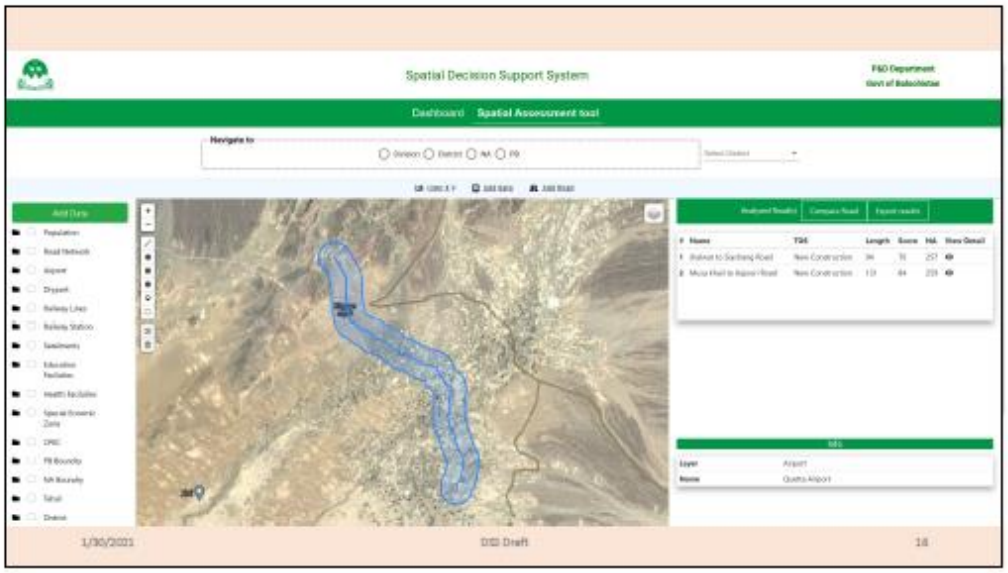
Spatial Decision Support System
Dashboard
Spatial Assessment tool
1/30/2021
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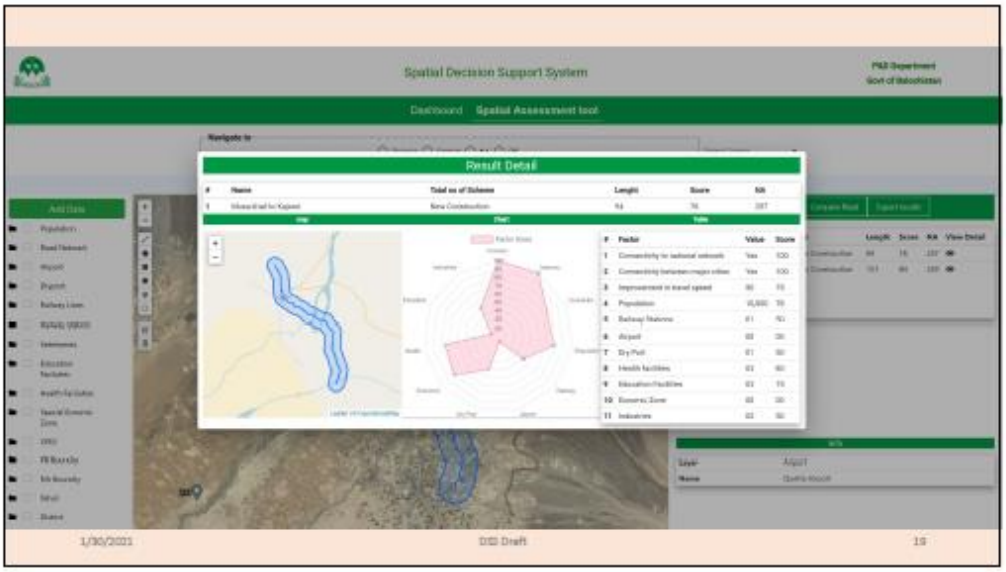
Spatial Decision Support System
Result Detail
1/30/2021
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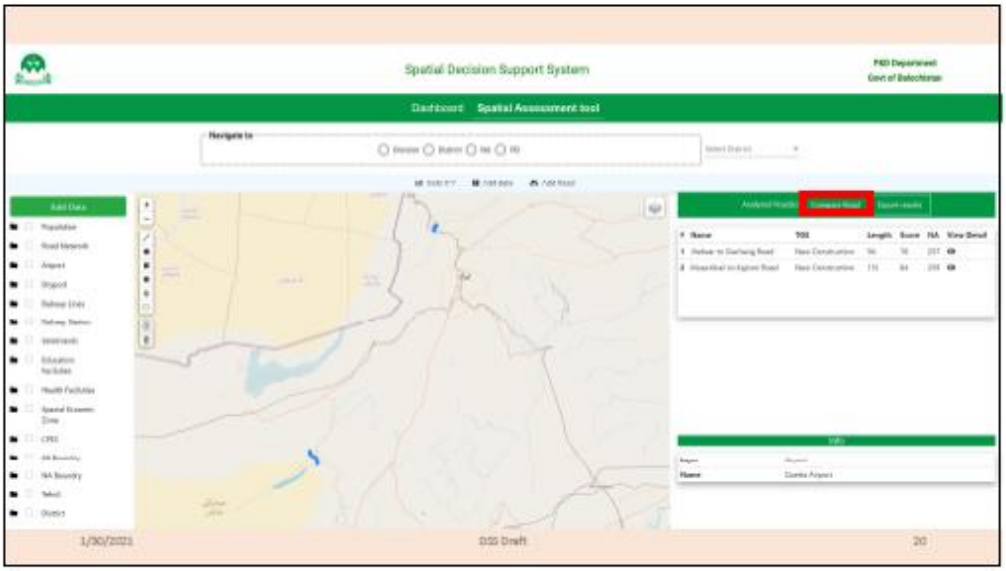
Spatial Decision Support System
Dashboard
Spatial Assessment tool
1/30/2021
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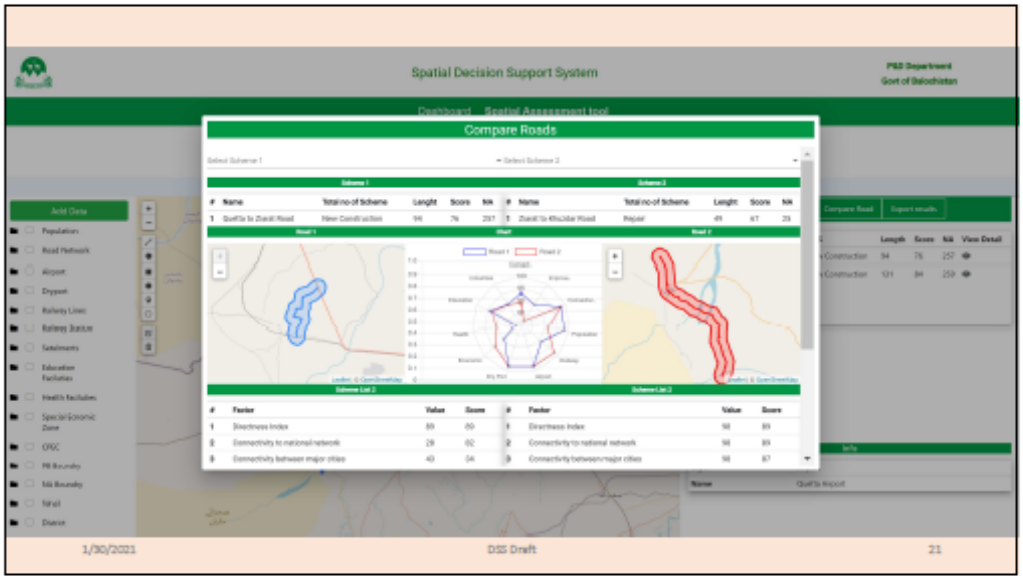
Spatial Decision Support System
Compare Roads
1/30/2021
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Thanks
• Pls share the feedback on these slides for finalization and approval, before system development;
• Nasir Javed: 0333 4265141 (dnj.nmc106@gmail.com)
• Ehsan Saqib: 0321 7929572 (ehsan.saqib@gmail.com)
• Hina Shaikh: (hina.shaikh@theigc.org)
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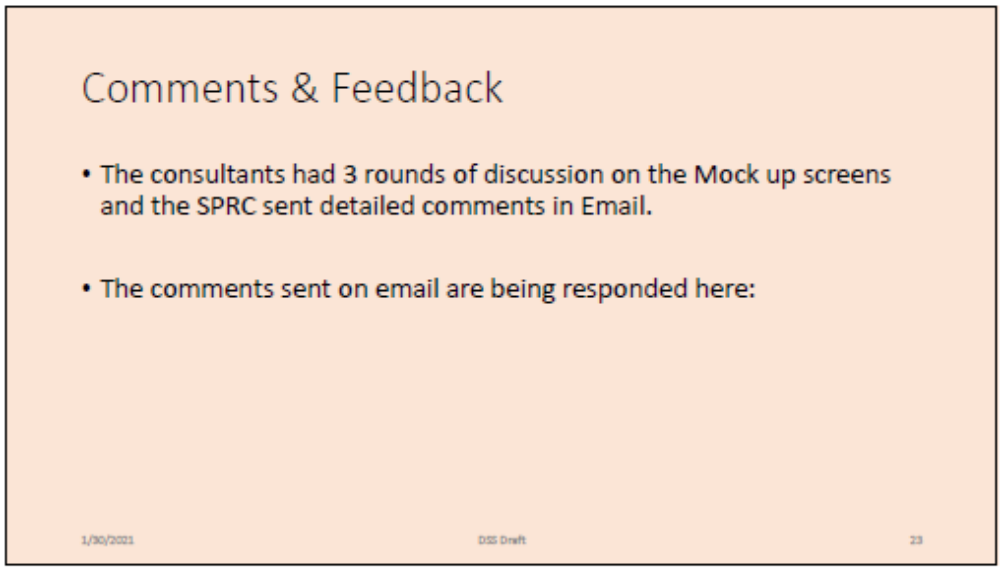
Comments & Feedback
• The consultants had 3 rounds of discussion on the Mock up screens and the SPRC sent detailed comments in Email.
• The comments sent on email are being responded here:
1/30/2021
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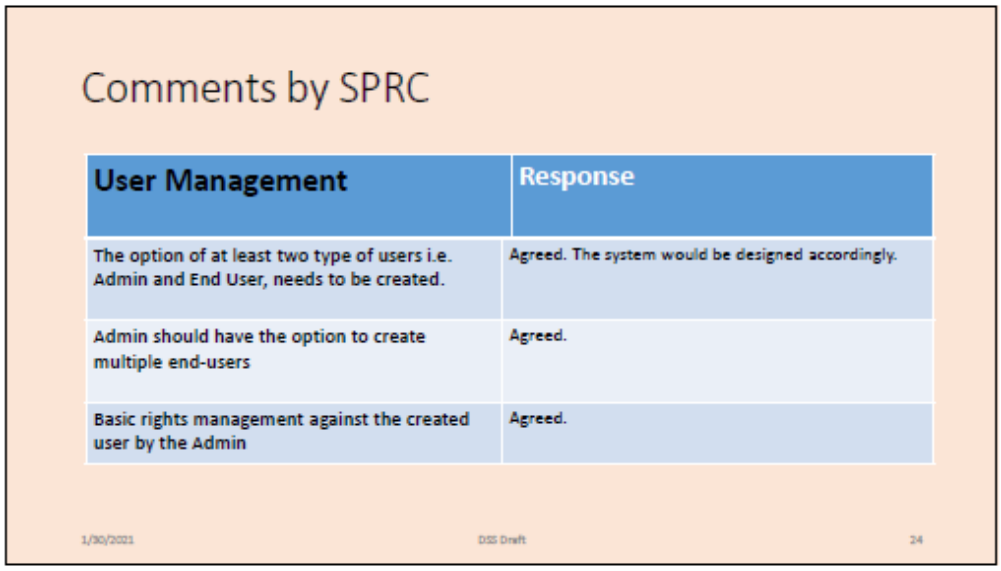
Comments by SPRC
User Management
Response
The option of at least two type of users i.e. Admin and End User, needs to be created.
Agreed. The system would be designed accordingly.
Admin should have the option to create multiple end-users
Agreed.
Basic rights management against the created user by the Admin
Agreed.
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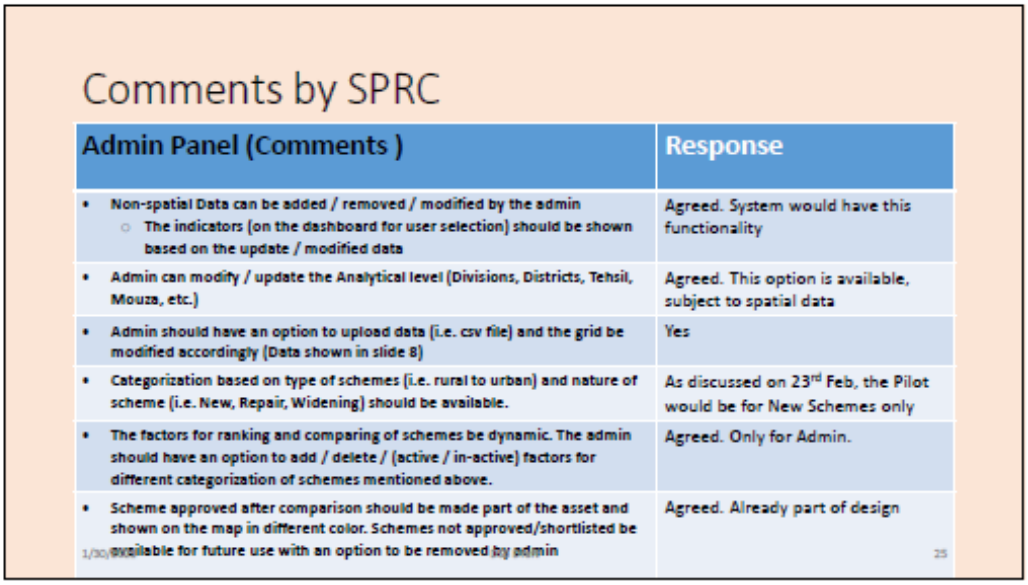

Comments by SPRC

Admin Panel (Comments)	Response
• Non-spatial Data can be added / removed / modified by the admin ○ The indicators (on the dashboard for user selection) should be shown based on the update / modified data	Agreed. System would have this functionality
• Admin can modify / update the Analytical level (Divisions, Districts, Tehsil, Mouza, etc.)	Agreed. This option is available, subject to spatial data
• Admin should have an option to upload data (i.e. csv file) and the grid be modified accordingly (Data shown in slide 8)	Yes
• Categorization based on type of schemes (i.e. rural to urban) and nature of scheme (i.e. New, Repair, Widening) should be available.	As discussed on 23rd Feb, the Pilot would be for New Schemes only
• The factors for ranking and comparing of schemes be dynamic. The admin should have an option to add / delete / (active / in-active) factors for different categorization of schemes mentioned above.	Agreed. Only for Admin.
• Scheme approved after comparison should be made part of the asset and shown on the map in different color. Schemes not approved/shortlisted be available for future use with an option to be removed by admin	Agreed. Already part of design

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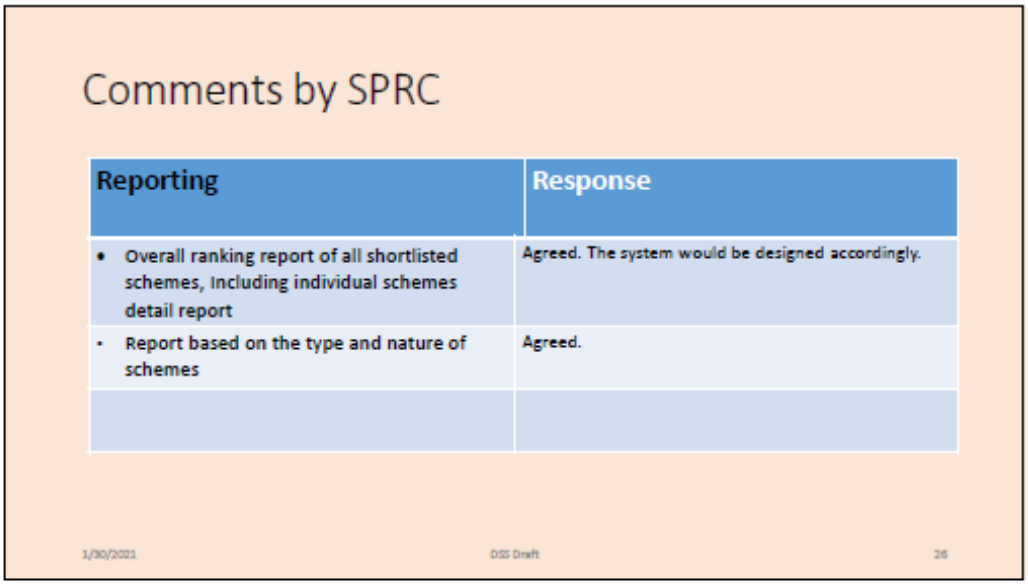

Comments by SPRC

Reporting	Response
• Overall ranking report of all shortlisted schemes, Including individual schemes detail report	Agreed. The system would be designed accordingly.
• Report based on the type and nature of schemes	Agreed.

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