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The Holding Company for
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National Rural Sanitation Strategy 2017 Summary

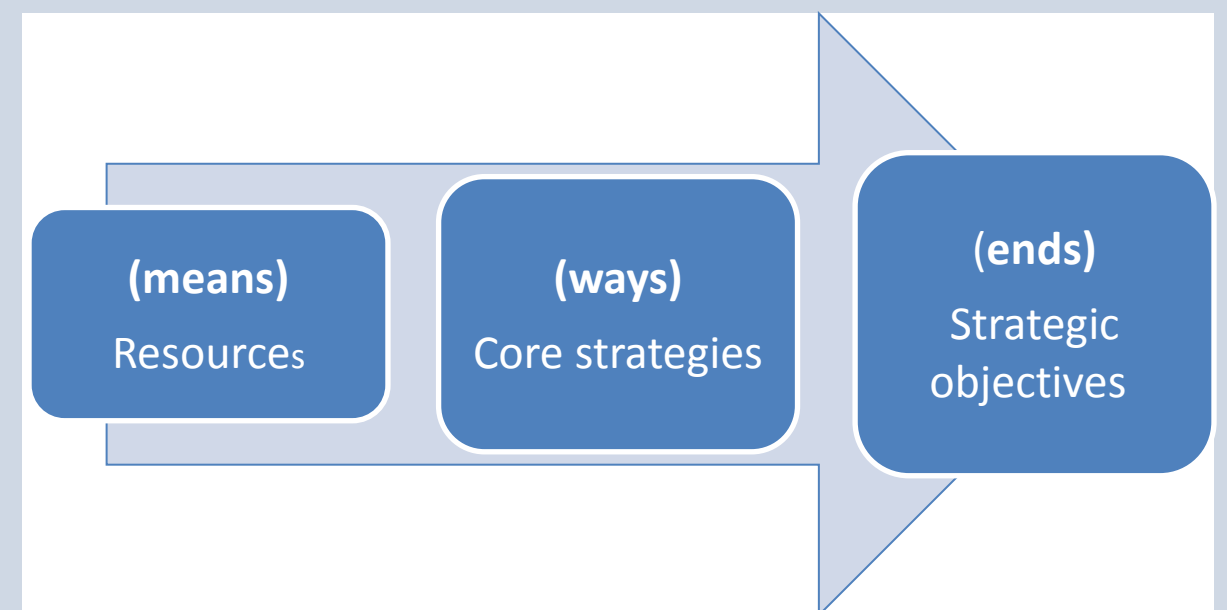
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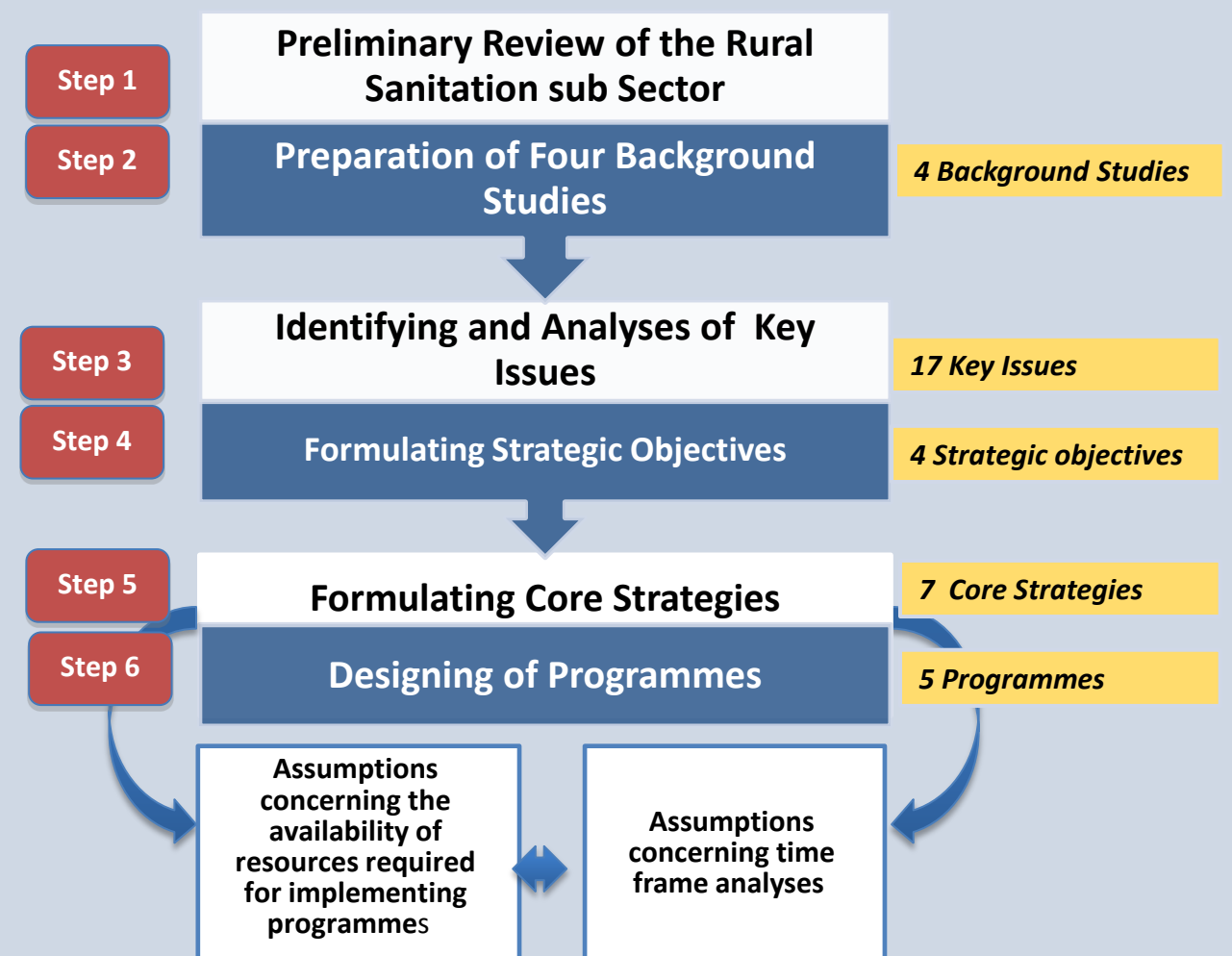
The National Rural Sanitation Strategy 2017: Summary

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The Theoretical Concept of strategy formulation



The National Rural Sanitation Strategy 2017 Process

1 Introduction

1. The importance of the rural sanitation problem is related to its immediate and direct link to the lives of more than fifty million inhabitants living in about 5 thousand villages and more than 30 thousand small rural settlements (Ezab and Naga) dispersed around them. Inadequate sanitation services are impacting the health of the rural population and contributing to deterioration of the built and natural environments in which they live. Surface water pollution caused by inadequate management of rural wastewater – at the strategic level – is linked to water scarcity of water resources at the national level.
2. The Government's vision to ensure universal access to sustainable rural sanitation services reflects high level national priorities entrenched in Egypt's Constitution 2014, Vision 2030, and commitment to Sustainable Development Agenda 2030 goals and targets.
3. The Government of Egypt has expressed its determination to implement the National Rural Sanitation Programme with an estimated investment cost of about LE 140 billion (2015 prices).
4. This National Rural Sanitation Strategy 2017 provides all parties responsible for planning and implementation as well as all concerned stakeholders a clear vision of the "strategies" that will be enabled to utilize the "Resources" available to achieve the "strategic objectives".
5. The Team responsible for formulating the Strategy Document, represented by the HCWW and the Consultant Firm, prepared four background studies of the rural sanitation strategic environment. The Background Studies contributed to the identification of seventeen Key Issues that compelled in-depth analyses prior to the formulation of the strategic objectives and the alternative strategies that need to be integrated in the planning, design and implementation of rural sanitation programmes and projects.

2 Governing Considerations

The NRSS has been prepared taking into consideration the following:

1. The rural sanitation is a sub sector of the Potable Water and Wastewater Sector in Egypt; accordingly it is governed by its policy, regulatory and institutional framework. The Sector's overall performance is closely linked to the capacity of local industry, consulting firms and contractors.
2. The Strategy's governing principles are effectiveness, efficiency, social equality, and accountability.
3. The specificities of ongoing transformations and expansion in the rural space during the past three decades, especially its continuous pressure on scarce land and water resources.
4. While visible progress has been achieved and Egypt at the aggregate national level reached MDGs targets on improved water and sanitation, there remain wide disparities between Upper and Lower Egypt governorates and among villages within the same governorate.
5. The strategy builds on the experience gained in the application of the Rural Sanitation Service Cluster (SSC) as the planning unit for rural sanitation projects, and recognizes limited experience in faecal sludge and solid waste management in Rural Egypt.
6. To address the rural sanitation problem there is growing recognition of the importance of strengthening and coordinating the efforts of the many actors involved including line ministries, different levels of government, and the wide range of stakeholders including research centres, the private sector, and local communities.
7. There is a growing need to implement green economy principles with a focus on maximizing returns on innovation, job creation, applying innovative financing mechanisms, and increasing resource efficiency with respect to energy, water, and materials.
8. The size and skills of the large pool of labor needed to implement the rural sanitation programmes demand long term commitment to the development of human resources.



3 Key Issues

Following are 17 key issues identified based on the findings of four background studies prepared by the Strategy Formulation Team composed of the HCWW and the consulting firm. Each key issue has been analyzed in detail.

#	Key Issue	Description
1	Limitations of the Institutional Structure	This issue relates to limitations in the W/WW institutional structure implicit in existing policies, laws and organizations all of which are undermining governance capacity and hence overall sector performance including the rural sanitation subsector.
2	Rural spatial characteristics and dynamic transformations	This issue pertains to undergoing major transformations in the rural settlement system in the Nile Valley and Delta, manifested in horizontal and vertical expansion and the rapid growth in the number of small rural settlements as well as dispersed development.
3	Limitations of the Village-Based Service Delivery Model implemented since the 1980s	The village based model used in the implementation of rural sanitation project since the mid-1980s only provides services to the built-up area of the village where sewer networks are extended and does not provide alternative options in un-served areas.
4	Unsustainable service provision due to inefficient operation and maintenance of existing utilities.	Many implemented rural sanitation projects suffer from operation and maintenance problems, and have not achieved the full benefits of ensuring sustainable access. Accordingly, they have contributed partially to public and environment health.
5	Poor consideration of equality in access to sanitation services at the national level	Equity in access has not been considered in the targeting of rural sanitation projects at the district and governorate level. Accordingly, there are wide disparities in coverage rates among governorates and villages
6	Lack of consideration to ensuring access of the poor to affordable rural sanitation services	There is a close link between poverty and lack of sanitation service. The poor and very most likely live in small rural settlements that are not targeted by rural sanitation projects and are left behind without alternative affordable and viable options.
7	Low Uptake of house connections and poor participation in FSM systems	This issue pertains to the reluctance of residents to connect to sewer networks (house connections) and unwillingness to participate in FSM services. Accordingly, unsafe disposal practices continue to threaten public health and the environment.

#	Key Issue	Description
8	Scarcity of Water resources and deteriorating water quality	This issue pertains to implications of water scarcity and the impact of deteriorating water quality in some drains, on the government's drainage water reuse strategy
9	Impacts of Inadequate solid waste management systems in rural Egypt	This issue highlights the link between inadequate solid waste management and water pollution. In response to poor SWM, households resort to unsafe practices that threaten public and environmental health, and degrade the built environment.
10	Low Levels of environmental awareness and community engagement	Low levels of environmental awareness are associated with unsafe practices that lead to water loss, and increased public and environmental health risks associated with wastewater and solid waste.
11	Child Health Indicators in Rural Egypt	This issue addresses the link between water borne diseases, and water and sanitation and poor hygiene and how it impacts child health in particular.
12	Public health and environmental damage costs due to inadequate rural sanitation services	The costs of environmental degradation are high and are expected to increase if wastewater management in rural areas is not given a high priority
13	Uncertainty concerning identifying adequate and timely availability of key resources	Information concerning availability of resources to implement rural sanitation programmes is not adequate to prepare work plans and time schedules with a high level of certainty. Resources include all consulting firms, contractors, land, and inputs for civil works, sewer networks, pumping stations, and treatment plants.
14	The need to apply Mega programme planning and management principles	Rural sanitation programmes over the past decades have not been planned as Mega Projects that are characterized by technical, financial, regulatory, and social complexities and high levels of uncertainties.
15	Status of Ezab and Naga that will not be served by sewerage networks	Defining the Ezab and Naga that will not be targeted by sewerage systems will be based on a demarcated population size in 2016
16	Uncertainty concerning identifying the carrying capacity of the Nile Valley and Delta in terms of population growth	Recent population growth trends and migration dynamics in Egypt shed great uncertainty on the ability to project future population growth (rural/urban) in the Nile Valley and Delta.
17	Technological challenges and options	This issue relates to keeping pace with technological progress and innovations in the design, implementation and operation of sanitation systems including FSM; identifying technological achievements and shortcomings in the implementation of rural sanitation projects over the last three decades; and establishing linkages with local and international research centres, and local industry.

4 Strategic Objectives

TQBLE SHOWS THE FOUR STRATEGIC OBJECTIVES THAT OUTLINE AN INTEGRATED HOLISTIC VISION OF THE NATIONAL RURAL SANIATION PROGRAMME

	Strategic Objective 1	Strategic Objective 2	Strategic Objective 3	Strategic Objective 4
NRSS Strategic Objectives	Enable an Institutional environment that enhances performance by building governance capacity of the rural sanitation sub sector and ensuing effective participation of the private sector and local communities	Ensure access to sanitation services to populations living in settlements that can be served by sewer networks, and provide alternative viable sanitation options to populations living in settlements that cannot be served by traditional sewer networks	Enhance human health and wellbeing and environmental sustainability in all rural settlements (villages, Ezab, Naga) located within identified sanitation service cluster.	Realize major improvements in water quality in agricultural drains within the watershed of main drains allowing for sustainable reuse.
Benefits	<ul style="list-style-type: none"> Enhanced effectiveness in the design and planning of national rural sanitation programmes Enhanced efficiency in the implementation, management and operation & maintenance of national rural sanitation programmes Sound monitoring of performance based on defined criteria to ensure that all resources and measures are in place so that all involved entities have the capabilities to carry out their functions efficiently, are held accountable for their performance, and are responsive to community needs and grievances to ensure trust and engagement. 	<p>All rural population enjoy the direct socio-economic and health benefits associated with access to sustainable sanitation services through:</p> <ul style="list-style-type: none"> Sewerage systems in areas that can be served by traditional sewer networks Traditional FSM systems in areas where vault evacuation frequency does not exceed once a month. Alternative on-site treatment systems in areas where vault evacuation frequency exceeds per month due to high subsurface water levels necessitating 	<ul style="list-style-type: none"> Public and environmental health benefits realized in the village built up area (houses and roads) and in all water ways passing through the built up area and surrounding agricultural land. . Socio-cultural benefits realized. Economic benefits realized such as increased land value, better housing conditions, etc. 	<ul style="list-style-type: none"> Direct health and economic benefit arising from improved water quality at the intake of potable water treatment plants realized. Direct health and economic benefits arising from improved irrigation water quality . Economic benefits arising from increased mix of agricultural drainage water with irrigation water in accordance with the Ministry of Irrigation and Water Resource Plans, realized.
Geographical scope	The central and local level	The built-up area of all villages, Ezab, and Naga.	The Sanitation Service Cluster (SSC)	The water shed of main drains
Type of projects needed to achieve objectives	<ul style="list-style-type: none"> Preparation of Institutional Development Plan for the rural sanitation sub sector within the overall Sector Institutional Development Framework that aims to develop policy, laws, and institutions including sector entities, the private sector and local communities. Implementation of an ID Programme with four main components. <ul style="list-style-type: none"> Component 1: Developing Policies and Laws Component 2: Enhancing the capacity of sector entities and concerned parties (consulting firms and contractors). Component 3: Developing and applying technological packages and systems Component 4: Enabling the efficient integration of all NRSS core strategies in programme planning and implementation. 	<ul style="list-style-type: none"> Construction of sewer networks in villages (single projects that aim at ensuring access to sewer networks in the village-built up area. Upgrading Sector Assets including all sewerage projects that have been implemented in the last three decades. Implementing projects to extend alternative options in areas that cannot be served by sewer networks. 	<ul style="list-style-type: none"> Construction of sewer networks in villages Provision of alternative sanitation options in areas not served by sewer networks. Establish an efficient system for domestic solid waste management (including transfer stations, sorting, and transport of the organic fraction to Integrated Treatment Facilities (ITF). Implement public and environmental health awareness programmes to strengthen community engagement <p>Functional and spatial integration achieved at the SSC level as per NRSS 2008.</p>	<ul style="list-style-type: none"> Construction of sewer networks in villages Provision of alternative sanitation options in areas not served by sewer networks. Establish an efficient system for solid waste management (including transfer stations, sorting, and transport of the organic fraction to Integrated Treatment Facilities (ITF). Implement public and environmental health awareness programmes to strengthen community engagement Industrial pollution abatement projects to ensure compliance of industries located within the water shed of main drains with environmental laws and regulation to protect water resources from industrial pollution.
Examples of Performance Indicators	<ul style="list-style-type: none"> New Water Policy endorsed Modified laws issued. Funding for programme implementation secured New Technological packages & management systems endorsed 	<ul style="list-style-type: none"> Number of population with house connections in areas served by sewer networks. Number of population with alternative sanitation options in areas not served by sewer networks. 	<ul style="list-style-type: none"> Number of population with house connections Number of population with alternative sanitation options Volume of domestic solid waste collected, recycled and treated per day Level of community engagement 	<ul style="list-style-type: none"> Number of population with house connections Number of population with alternative sanitation options Volume of domestic solid waste collected, recycled and treated per day Level of community engagement Quantity of drainage water that has reached acceptable quality standards allowing for reuse in different purposes.

5. Explaining the Concept of Progressive Provision of Four Sanitation Service Levels.

The NRSS 2017 introduces a new concept pertaining to Service Provision including four Sanitation Service Levels as described in Table

Second Sanitation Service Level SSL1	Second Sanitation Service Level SSL2	Second Sanitation Service Level SSL3	Second Sanitation Service Level SSL4
<p>SSL 1 involves servicing the built-up area of the villages where all houses in the serviced area can connect to sewer networks through house connections, as well as the construction of pumping stations to transfer collected wastewater to wastewater treatment plants.</p> <ul style="list-style-type: none"> This is the level of services realized in all sanitation projects implemented in the past three decades. This level of services is also realized by the implementation of ongoing projects that target single villages or in some cases target a group of villages. 	<p>SSL 2 is realized through mandating the Affiliated companies ACs with the responsibility of upgrading all projects that have been implemented during the past three decades. Upgrading involves: sound asset management, implementation of rehabilitation and renewal projects, and expansion projects. The SSL 2 also aims at providing access to alternative viable and affordable sanitation options in areas that were no served by sewer networks in villages served by SSL 1, thereby extending spatial coverage to all population living in nearby small rural communities (Ezab and Naga).</p> <p>SSL 2 is realized by :</p> <ul style="list-style-type: none"> Upgrading existing WWTP to handle the additional flows from vault evacuation in accordance with technical delimitations. Providing on-site sanitation systems in areas where vault evacuation is not a feasible option. The effective provision of SSL 2 is dependent on strengthening community participation through public health and environmental awareness campaigns that focus on water conservation and foster community sense of ownership of public resources. Phasing out of to phase out all direct discharge of wastewater from vaults to groundwater through deep dug wells 	<p>The sanitation service cluster SSC is the spatial planning level of SSL 3 projects. SSL 3 aims at realizing major improvements in public and environmental health in villages and water ways located within the cluster.</p> <p>SSL 3 is realized by:</p> <ul style="list-style-type: none"> Extending sewer networks, pumping stations, gravity lines based on cluster optimization. Construction of Integrated Treatment Facility in each cluster with capacity to deal with the flow from all sewer networks as well as the increased flow from FS evacuated from un-served areas Achieving maximum energy efficiency and energy generation from anaerobic digestion of sillage mixed with the organic fraction of municipal solid waste. implementing treated wastewater reuse projects in areas with desert hinterland Implementing projects for extending alternative sanitation options in un-served areas (in drainage and evacuation areas, respectively). Establishing an integrated solid waste management system that utilizes the organic fraction of municipal solid waste in energy production. Implementing public health and environmental awareness programs at the level of the SCC (type A clusters) identified according to clear prioritization criteria regardless of location to watersheds of main drains. 	<p>The watershed of main drains is the spatial planning level for SSL 4 projects. SSL 4 aims at ensuring access to sanitation services and realizing major improvements in public and environmental health in villages and in the quality of water in agricultural drains.</p> <p>SSL 4 is realized by:</p> <ul style="list-style-type: none"> Implementing rural sanitation projects in all clusters type (B) located within the watershed of main drains and including sewer networks, pumping station, ITF with tertiary treatment of wastewater. Implementing in-situ treatment projects in heavily polluted drains within the watershed of main drains. Establishing and implementing an efficient FMS to in un served areas where vault evacuation is a suitable solution. Establishing an integrated solid waste management system that utilizes the organic fraction of municipal solid waste in energy production. Coordinate and collaborate with agencies responsible for ensuring the compliance of existing industrial establishments with environmental laws and regulations. Implementing public health and environmental awareness programs to strengthen effective community engagement. Achieving SSL4 is dependent on implementing rural sanitation projects in all SCCs (Cluster B) located in the watershed of main drains identified by the Ministry of Irrigation and water resources.



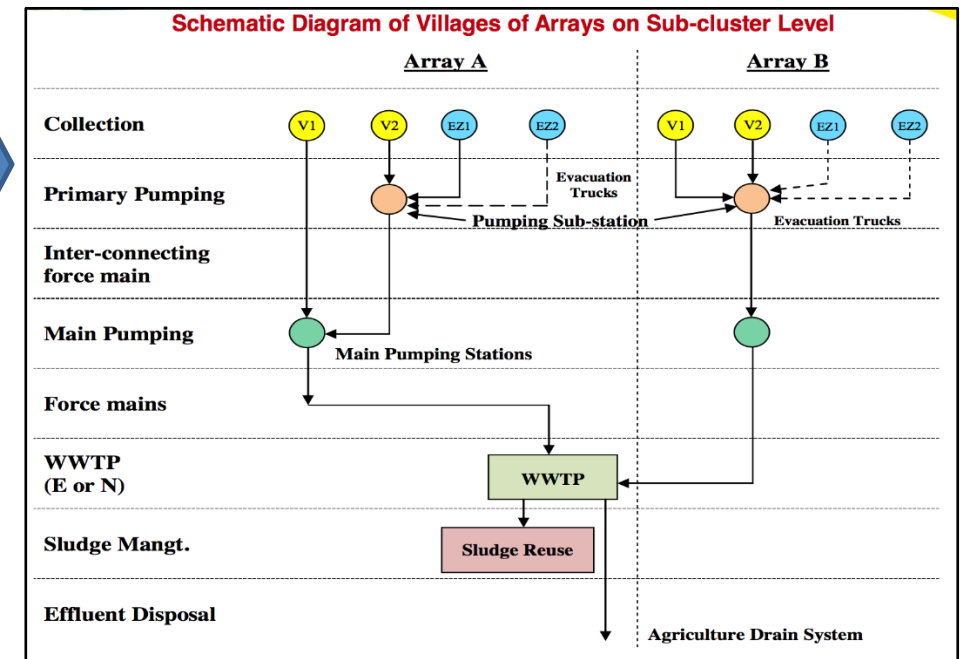
The Four Rural Sanitation Service Levels.

SSL 1

Implement sanitation projects at the village level (sewer network, PS, WWTP)

SSL 3

Implement integrated projects at the level of Type A Clusters



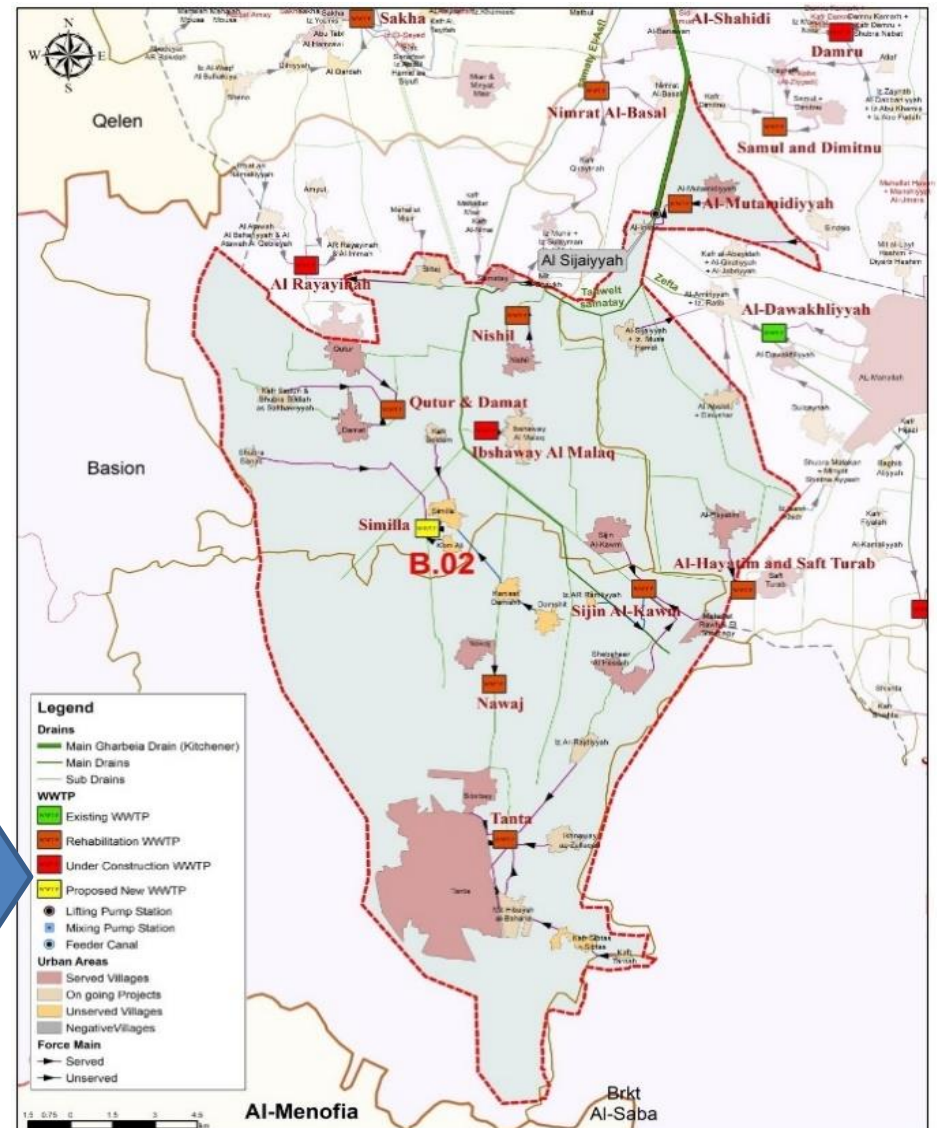
Sanitation Service Levels				
Component	SSL 1	SSL 2	SSL 3	SSL 4
Execute sewer networks, pumping stations and WWTP at the village level	X	X	X	X
Provide alternative viable options in Evacuation and Drainage areas		X	X	X
Outlaw direct discharge of bayara content into groundwater sources		X	X	X
Integrate wastewater and MSW management			X	X
Implement public and environmental health awareness programs		X	X	X
implement programs for protecting water resources from industrial pollution				X
Implement in-situ treatment programs in heavily polluted drains				X
Implement best solution (cluster optimization) for planning at the SSC			X	X
Implement best solution for planning at the watershed of main drains				X

SSL 2

R&H and increase capacity of RS projects and implement projects to extend, support and expand FSM services in Evacuation Areas.

SSL 4

Implement integrated projects at the level of water shed of main drains (Type B Clusters)



6. Formulation of the seven core strategies

The following table summarizes the seven core strategies, and respectively highlights for each core strategy, its purpose, expected benefits and enabling mechanism.

	<i>Building governance capacity at the subsector level to ensure effective, efficient and equitable rural sanitation services and the full engagement of the private sector and local communities</i>	<i>Enabling integrated multi-sectoral, multi-stakeholders models in the planning and implementation of rural sanitation programmes</i>	<i>Planning rural sanitation programmes to progressively provide four sanitation services Levels</i>	<i>Enabling functional, territorial, and project integration in the Planning of rural sanitation programmes</i>	<i>Integrating Technology Management and Streamlined and Standardized systems to drive sector's functionality and sustainability</i>	<i>Applying Green Economy Concepts in the planning of rural sanitation programmes</i>	<i>Realizing the full potential of economies of scale implicit rural sanitation programmes</i>
Description	<ul style="list-style-type: none"> According to this strategy institutional development in the Rural Sanitation Sub Sector is a fundamental precondition for achieving the NRSS goal and strategic objectives. Moreover, Institutional development at the sub sector is viewed as an integral component of the overall Sector Institutional Development process. This strategy views sector performance as the output of the governance model which includes three components: <ul style="list-style-type: none"> Governing policies Laws and regulations Institutional entities. This strategy aims at providing the enabling environment for enhancing performance, including the effective participation of the private sector and strengthened community engagement. 	<ul style="list-style-type: none"> CS 2 aims at enabling all key sectors and multi-stakeholders to carry out specific roles in planning and implementation of rural sanitation programmes. CS 2 calls for shifting to a new governance model to ensure consensus based decision making and efficient and accountable inter-agency and inter-sectoral coordination with clear responsibilities. CS 2 specifically aims at enabling a more active role of the private sector and local communities in the planning and implementation of rural sanitation programmes 	<ul style="list-style-type: none"> CS 3 introduces a new service delivery concept that enables the design of rural sanitation programmes to achieve four service levels, respectively: <ul style="list-style-type: none"> <i>First Sanitation Level SSL 1:</i> extending sewer networks, pumping stations and WWTP at the village level. <i>Second Sanitation Level SSL 2:</i> Improving SSL 1 to provide sanitation services to areas un-served by sewer networks. <i>Third Sanitation Level SSL 3:</i> extending integrated wastewater and solid waste management at the Cluster Level. <i>Fourth Sanitation Level SSL 4:</i> extending integrated wastewater and solid waste and industrial pollution management in all clusters located within the water shed of main drains. 	<ul style="list-style-type: none"> CS 4 is based on the recognition that strategic integration is a planning issue dependent on the capability of the Planner to design efficient and effective programmes that result in major economic savings. Accordingly, CS 4 aims at enhancing effectiveness and efficiency through: <ul style="list-style-type: none"> Applying the SSC, based on cluster optimization, to ensure optimal spatial integration in the planning of rural sanitation projects. Accordingly, major benefits from economies of scale in the execution of treatment plants are realized. Implementing the Integrated Treatment Facility concept allows for recovery of raw material, energy production from integrated treatment of Sludge, faecal sludge and the OFMSW. ITF can also be constructed in phases to accommodate capacity and resources needs. Maximize benefits from reuse of treated wastewater. Integration of old assets and new projects will maximize return on large investments targeted to sector assets built during the past three decades. Including an enabling Socio-Cultural Component in the design of rural sanitation programs, to ensure maximizing public and environmental health benefits. 	<ul style="list-style-type: none"> CS 5 realizes the importance of integrating a Technology management Component in the design of rural sanitation programmes. CS 5 stresses the benefits from streamlining and standardizing all relevant technological packages and management systems. Moreover, an effective system for ensuring adherence of all involved parties to established conditions and specifications in all projects. CS 5 aims at ensuring high quality of works over the whole project life cycle, specifically: <ul style="list-style-type: none"> Planning stage – ensuring that rural sanitation master plans at the level of SSC or the water shed of main drains are prepared is per established planning approach and standards. Project implementation stage including: scheduling and time management, quality management, HRD, financial management, procurement and contracting, internal and external communication management, and risk management. Project handing over and preliminary operation Project Operation Stage 	<ul style="list-style-type: none"> CS 6 reflects international developments towards quality oriented growth with more emphasis on the use of new and renewable resources, social inclusiveness and poverty reduction. Moreover, it highlights the potential of rural sanitation programmes to kick start the transition towards a green economy by: <ul style="list-style-type: none"> Applying green economic principles aims at: Achieving resource efficiency Improving environmental compliance Using of best available technology in rural sanitation projects Maximizing innovations and talents Achieving sustainable development by balancing the need for economic growth on one hand, and environmental impacts on the other, by building human capital and natural resources. 	<ul style="list-style-type: none"> Programmes 4 and 5 are characterized as mega project involving large investments and a long time framework. Accordingly, they offer many opportunities for capturing economies of scale and high returns on investments by cutting cost and saving time. Economies of scale principles are applied in this strategy through: <ul style="list-style-type: none"> The multiple replication opportunities in the various components necessitate preparing and applying standardized procedures and terms of references for systems and works over the whole project cycle. The large pool of employment required necessitates developing and implementing HRD according to long term Plans. The large amount of inputs and resources provide opportunities for cost saving by expanding local industry and suppliers. Negotiating bulk purchases for all works to achieve greater volume discounts.

6. Formulation of the seven core strategies (continued)

	<i>Building governance capacity at the subsector level to ensure effective, efficient and equitable rural sanitation services and the full engagement of the private sector and local communities</i>	<i>Enabling integrated multi-sectoral, multi-stakeholders models in the planning and implementation of rural sanitation programmes</i>	<i>Planning rural sanitation programmes to progressively provide four sanitation services Levels</i>	<i>Enabling functional, territorial, and project integration in the Planning of rural sanitation programmes</i>	<i>Integrating Technology Management and Streamlined and Standardized systems to drive sector's functionality and sustainability</i>	<i>Applying Green Economy Concepts in the planning of rural sanitation programmes</i>	<i>Realizing the full potential of economies of scale implicit rural sanitation programmes</i>
Benefits	<ul style="list-style-type: none"> Enhanced effectiveness in the design and planning of national rural sanitation programmes Enhanced efficiency in the implementation, management and operation & maintenance of national rural sanitation programmes Sound monitoring of performance based on defined criteria to ensure that all resources and measures are in place so that all involved entities : <ul style="list-style-type: none"> have the capabilities to carry out their functions efficiently, are held accountable for their performance, and are responsive to community needs and grievances to ensure trust and engagement 	<ul style="list-style-type: none"> Improved performance (effectiveness, efficiency) along all stages of planning, implementing and operating rural sanitation programmes and projects. Protection of water ways from solid waste pollution Industrial Pollution reduced. Enhanced community engagement leading to: <ul style="list-style-type: none"> Increased public and environmental awareness and participation in water conservation practices Communities responsible for protecting public properties assisting in solving problems related to acquiring land for PS and treatment plans. House connections implemented as a major component of projects along with cost-recovery mechanisms 	<ul style="list-style-type: none"> Sustainable sewerage services in areas served by sewer networks. Sustainable alternative affordable and viable options to populations living in areas not served with sewer networks. All populations enjoy public health and environmental benefits associated with access to sustainable sanitation services. Economic benefits arising from improved water quality in the main drains identified by the Ministry of Irrigation and Water Resource. Economic benefits arising from reuse of treated wastewater as per the Egyptian Code for reuse. 	<ul style="list-style-type: none"> Implementing projects based on best available technology with the highest economic and social returns. Environmental and economic benefits arising from energy production from Integrated Sludge, faecal sludge and the OFMSW treatment. Economic benefits arising from reuse of treated wastewater in accordance with the Egyptian Code for reuse. Improved water quality in agricultural drains Social Cultural Benefits arising from enabling community engagement and sense of social responsibility. 	<ul style="list-style-type: none"> Implementation of P 3, P 4 and P 5 by adopting the technological packages and management systems will result in major savings in cost and time and enhanced quality of executed project components. 	<ul style="list-style-type: none"> Major progress in potable water conservation practices at the SSC level realized. Maximum benefits from reuse of the outputs of treatment process including treated wastewater, energy and material recovery achieved. Maximum benefits from innovation in the design of projects and processes realized. Employment opportunities in local communities created. Innovative financing mechanisms adopted. 	<ul style="list-style-type: none"> Major economic benefits resulting from targeted savings. Enhance ability to reduce time necessary for project implementation and speed up completion of works Major development gains resulting from support to local industry and generation of local jobs, all of which improve livelihood and reduce poverty.
Enabling	<ul style="list-style-type: none"> Implement the Institutional Development Programme at the rural sanitation sub sector level 	<ul style="list-style-type: none"> Prepare Integrated Management Framework and memorandums of understanding to ensure : <ul style="list-style-type: none"> Communities are effectively engaged in addressing rural sanitation problems Local units are carrying out their roles in solid waste management. Ministry of Environment and its agencies undertaking their roles concerning industrial pollution abatement. Ministries of Health and population carrying out their role in raising public and environmental health awareness. Prepare and implement effective M&E systems 	<ul style="list-style-type: none"> The planning concepts set forth by this strategy adopted in the planning of rural sanitation programmes. Prepare Master Plan for P 3 at the level of each affiliated company. Prepare Master Plan for P 4 at the national level. Prepare Master Plan for P 5 at the level of prioritized main drains. 	<ul style="list-style-type: none"> The (ID) Programme at the rural sanitation sub sector level is responsible for preparing guidelines to ensure spatial, functional and project integration at the project level. Entities responsible for planning are committed to: <ul style="list-style-type: none"> The SSC is the planning and implementation unit in all RS programmes. Upgrading all WWTPs that are in service and under construction to Integrated Treatment Facilities. All planning at the SSC level carried out to ensure the integration of new projects, ongoing projects and operating projects. Integrating a Component for Community engagement in RSPs. 	<ul style="list-style-type: none"> The ID Programme at the rural sanitation sub sector level is responsible for preparing and approving all technological packages and management systems and securing necessary resources. The EWRA is responsible for preparing a M&E system to ensure compliance of all works with technological packages and systems. The ID Programme to include the establishment of a Specialized Unit for Knowledge Management in accordance with the proposed system outlined in the Strategy Document. 	<ul style="list-style-type: none"> The ID Programme at the rural sanitation sub sector level is responsible for preparing The Green Economy Framework and ensuring that all involved parties are committed to their application. 	<ul style="list-style-type: none"> The ID Programme at the rural sanitation sub sector level is responsible for preparing The Economies of Scale Framework Ensure that all parties involved in the implementation of rural sanitation programmes to prepare and implement a explicit Plan to maximize returns from economies of scale. Design and implement sound mechanisms for supervision and monitoring.

7. Programs and Decrees .

The NRSS 2017 includes 5 programmes, each with specific objectives, targets, expected benefits, components, and decrees as summarized in the following Table

	Programme 1: Developing the Institutional Framework for the Rural Sanitation Sector	Programme 2: Scaling-up Sound Rural Sanitation Infrastructure by completing all ongoing projects.	Programme 3: Increasing the capacity of existing assets to expand coverage and ensure access to sanitation services	Programme 4: Expanding coverage with Integrated rural sanitation services in all Type A Clusters	Programme 5: Expanding coverage with Integrated Rural Sanitation Services in all Type B Clusters located in the water shed of main drains
Objective	Enhancing an effective Institutional framework to realize the strategic objectives by building the capacity of all sector entities and concerned private sector organizations (consultants, contractors, etc.)	Realize Programme 2 Objective: Completion of on-going rural sanitation projects at the village level to achieve the first sanitation service level SSL 1	Realize Programme 3 Objective: extending SSL 2 to all villages with SSL 1	Realize Programme 3 Objective : Achieving SSL 3 in all SCCs.	Realize Programme 4 Objective : Achieving SSL 4 in all SCCs (Cluster B) located in the watershed of main drains identified by the Ministry of Irrigation and water resources.
Targets and beneficiaries	Programme targets the rural sanitation sector at the central and local level; with the whole rural population benefiting from improved performance.	With the completion of P2 sanitation services will be: 1. Extended to 959 villages with a total population of 13.4 million capita in 2017 reaching 19.9 by the year 2037. 2. Completing on-going projects for the construction of 117 WWTPs with a total capacity of 1,916 m ³ /day and the expansion of 14 WWTPs with a total capacity of 818 m ³ /day	Expand sanitation service coverage to: 1. All 1,642 villages serviced with sanitation infrastructure projects since the 1980s as well as those under P2 with a total population of 22.7 million capita in 2017 expected to reach 33.8 million capita by 2037 2. Provide alternative options in un-served small rural settlements estimated at 3.7 million capita in 2017 expected to reach 5.5 million capita by 2037	To extend sanitation service coverage to 1. 1,501 villages with an estimated population of ~11 million capita in 2017 including 46 villages with a population of 0.5 million capita who directly discharge untreated wastewater to drains and water bodies. The population targeted by P4 is expected to reach 16.3 million capita by 2037 2. un-served small rural settlements estimated at 2.8 million capita in 2017 expected to reach 4.1 million capita by 2037	To extend sanitation service coverage to: 1. 1,513 villages with an estimated population of ~10.7 million capita in 2017 including 284 villages with a population of 2.2 million capita who directly discharge untreated wastewater to drains and water bodies. The population targeted by P5 is expected to reach 15.9 million by 2037. 2. un-served small rural settlements estimated at 2.8 million capita in 2017 expected to reach 4.1 million capita by 2037
Benefits	<ul style="list-style-type: none"> ▪ A clear Plan for Rural Sanitation Institutional Development within the overall Sector institutional development Framework addressing the three components of policy, laws, and institutional entities developed. . ▪ Accountable Institutional entities with new public management skills and clear roles, responsibilities enabled. ▪ Financial resources and financing mechanisms established. ▪ Human resources development and new management systems established. ▪ Management systems including utility management and asset management approaches prepared and adhered to by all involved entities. ▪ Capacity built to achieve high level of stakeholder's engagement and efficient management of social conflicts. ▪ Measures for private sector participation and community engagement institutionalized 	<ul style="list-style-type: none"> ▪ Completion of ongoing projects will enable households to connect their houses to sewer networks and enjoy the health, social and economic benefits associated with safe and adequate access to sanitation services . ▪ Reduce regional inequalities in sanitation service coverage. ▪ Addition of newly constructed and sound infrastructure to the sector's assets ▪ Partial contribution to pollution reduction in nearby waterways and land 	<ul style="list-style-type: none"> • Major addition to the value of Sector Assets through upgrading and rehabilitation projects • Access to service expanded to include all small settlement not served by sewer networks. • Visible improvements in public and environmental health in villages with sanitation projects implemented over the past three decade. • The elimination of unsafe practices such as the direct discharge of untreated wastewater into drains and groundwater, and sillage into streets reducing pollution in waterways and on land. 	<ul style="list-style-type: none"> • Major public and environmental health benefits enjoyed by populations living in Cluster A service areas. • Major improvement in quality of water resource in Cluster A service areas. • Economic benefits realized from reuse of sludge (in energy production and organic fertilizers) and treated wastewater reuse. • Employment generation • Support to local industry expansion and private sector growth. 	<ul style="list-style-type: none"> • Major public and environmental health benefits enjoyed by populations living in Cluster B service areas. • Major improvement in quality of water in the watershed of main drains • Economic benefits realized from reuse of sludge (in energy production and organic fertilizers) and treated wastewater reuse. • Economic benefits realized from reuse water in main drains. • Employment generation • Support to local industry expansion and private sector growth.
Components	P1 includes two components/modules <ul style="list-style-type: none"> ▪ Component 1/1: Developing Policies and Laws Component 2/1: Enhancing the capacity of sector entities and concerned parties (consulting firms and contractors). ▪ Component 3/1: Developing and applying technological packages and systems ▪ Component 4/1: Enabling the efficient integration of all NRSS core strategies in programme planning and implementation. 	P2 includes two components/modules: <ul style="list-style-type: none"> Component 1//2: Completion of all construction works in all infrastructure project currently underway. Component 2/2: Provision of effective operation and maintenance services for completed infrastructure under component 1/2, and the establishment of a M&E for the provided service. 	P3 includes three components/modules: <ul style="list-style-type: none"> ▪ Component 1/3: Renewal and expansion of capacity of existing wastewater infrastructure in villages. ▪ Component 2/3: Provision of effective O&M services for completed infrastructure under component 1/3 and the establishment of a M&E system for the provided service ▪ Component 3/3: Provision of an enabling Social-Context for maximizing public and environmental health benefits from programme 3 implementation. 	P4 includes three components/modules: <ul style="list-style-type: none"> ▪ Component 1/4: Construction of sound infrastructure ▪ Component 2/4: Provision of effective O&M services for completed infrastructure under component 1/4 and the establishment of a M&E system for the provided service. ▪ Component 3/4: Provision of an enabling Social-Context for maximizing public and environmental health benefits from programme 4 implementation. 	P5 includes three components/modules: <ul style="list-style-type: none"> Component 1/5: Construction of sound infrastructure Component 2/5: Provision of effective operation and maintenance services for completed infrastructure under component 1/5 and the establishment of a monitoring and evaluation system for the provided service. Component 3/5: Provision of an enabling Social-Context for maximizing public and environmental health benefits from programme 5 implementation.

7. Programs and Decrees (continued)

	Programme 1: Developing the Institutional Framework for the Rural Sanitation Sector	Programme 2: Scaling-up Sound Rural Sanitation Infrastructure by completing all ongoing projects.	Programme 3: Increasing the capacity of existing assets to expand coverage and ensure access to sanitation services	Programme 4: Expanding coverage with Integrated rural sanitation services in all Type A Clusters	Programme 5: Expanding coverage with Integrated Rural Sanitation Services in all Type B Clusters located in the water shed of main drains
Relation to NRSS 2017 strategic objectives	This programme addresses SO 1: Enable an Institutional environment that enhances performance by building governance capacity of the rural sanitation sub sector and ensuing effective participation of the private sector and local communities. The satisfaction of SO 1 is a prerequisite for achieving the three other strategic objectives	P2 is in line with strategic objective 2 which allows for the provision of sanitation services to housing units in rural areas by connecting them to the centralised sewerage network as part of a holistic developmental framework aiming at modernising Egyptian villages	SO 2: Ensure access to sanitation services to populations living in settlements that can be served by sewer networks, and provide alternative viable sanitation options to populations living in settlements that cannot be served by traditional sewer networks SO 3: Enhance human health and wellbeing and environmental sustainability in all rural settlements (villages, Ezab, Naga) located within identified sanitation service cluster. SO 4: Realize major improvements in water quality in agricultural drains within the watershed of main drains allowing for sustainable reuse		
Core strategies integrated in the design and implementation of programmes	CS 1: Building governance capacity at the subsector level to ensure effective, efficient and equitable rural sanitation services and the full engagement of the private sector and local communities CS 2: Enabling integrated multi-sectoral, multi-stakeholders models in the planning and implementation of rural sanitation programmes CS 3: Planning rural sanitation programmes to progressively provide four sanitation services Levels CS 4: Enabling functional, territorial, and project integration in the Planning of rural sanitation programmes CS 5: Integrating Technology Management and Streamlined and Standardized systems to drive sector's functionality and sustainability CS 6: Applying Green Economy Concepts in the planning of rural sanitation programmes CS 7: Realizing the full potential of economies of scale implicit rural sanitation programmes				
Decisions/Decrees	<ol style="list-style-type: none"> 1. A Ministerial Decree that assigns the implementation of P1 to the responsible entity and stipulates the terms of reference for its work 2. The provision of technical assistance (PMC-P1) and the required resources to the Entity to enable the implementation of the four components of P1 	<ol style="list-style-type: none"> 1. Commissioning the PMU to review the status of all ongoing projects with support from implementing agencies and to put a plan in place for their timely completion, commissioning and handing over to ACs 2. Providing the financial resources required by implementing agencies 3. Providing the necessary support/tools for monitoring agencies to monitor P2 progress according to the plan for sub-programme completion 4. Creating an inventory of donor funded projects currently in the planning stage and examining the possibility of converting them from P2 (coverage with SSL 1) to P4 (coverage with SSL 3) 5. Investigating the financial and legal repercussions of modifying the aforementioned projects to SSL3 	<ol style="list-style-type: none"> 1. Preparing the terms of reference for contracting qualified consultancy firms (PMC-P3) capable of providing technical assistance to the HCWW and its ACs in creating plans, P3 project tender documents and supervising construction (timescale: 5 years) 2. Preparing project implementation plans in accordance with the NRSS of 2017 for each AC (23) 3. Preparing sample terms of references that embed the relevant core strategies in their design; taking into consideration standardisation and maximising the potentials of economies of scale 4. Securing the financial requirements for each AC for the full duration of the implementation plan 5. Implementing capacity building activities for HR in rural sanitation sector 6. Establishing a robust system for supervision and follow-up 7. Implementing NRSS 2017's recommended programme management, project management, asset management, utility management and knowledge management 	<ol style="list-style-type: none"> 1. Commissioning the responsible entity to manage P4 with support from relevant parties/agencies in the sector 2. Commissioning PMC-P4 to provide the required technical assistance 3. Developing the master plan for P4 in accordance with the six core strategies, determining the capital expenditure required and priority projects 4. Implementing technology packages developed under P1 during the planning, tendering and construction supervision of P4 5. Commissioning implementing agencies in the sector with the execution of the master plan and financial plan utilising the technical assistance provided by qualified consultants throughout the lifecycle of the project 6. Commissioning EWRA with supervision and follow-up of P4 implementation 	<ol style="list-style-type: none"> 1. Commissioning the responsible entity manage P5 with support from relevant parties/agencies in the sector 2. Preparing the terms of reference for contracting qualified consultancy firm (PMC-P5) to provide the required technical assistance and to develop P5 master plan 3. Developing the master plan for P5 in accordance with the six core strategies, determining the capital expenditure required and priority projects 4. Implementing technology packages developed under P1 during the planning, tendering and construction supervision of P5 5. Commissioning implementing agencies in the sector with the execution of the master plan and financial plan utilising the technical assistance provided by qualified consultants throughout the lifecycle of the project 6. Commissioning EWRA with supervision and follow-up of P5 implementation

8. Resources for Implementation Of Programmes

Characterisation of the Model Clusters

Model clusters have been developed for the Nile Delta and for Upper Egypt based on the national rural population and their distribution among different sized communities in 2006 as *projected to 2037* using an annual growth rate of 2%.

Community size by 2037 (capita)	Model Cluster for Nile Delta			Model Cluster for Upper Egypt			
	Number of villages	Total population/category (2037)	Status	Number of villages	Total population/category (2037)	Status	
15,000	20,000	2	30,000	Covered	3	46,200	Covered
10,000	15,000	1	10,100	Covered	1	10,500	Covered
		1	10,100	Uncovered	2	20,800	Uncovered
5,000	10,000	2	11,000	Uncovered	2	20,000	Uncovered
3,000	5,000	3	11,000	Uncovered	5	24,000	Uncovered
1,400	3,000	2	5,000	Uncovered	3	8,000	Uncovered
<	1,400	-	19,000	Uncovered ¹	-	21,500	Uncovered ¹
Total		11	96,200		16	151,000	

¹ These community clusters will be served by decentralised sanitation solutions/alternatives.

Characterisation of P2 & P3

P2 involves the completion of all ongoing rural sanitation infrastructure projects which currently encompass:

Ongoing projects under P2			
Project	Financing institution	Budget	Expected date of completion
ISSIP I	IBRD – GoE – Swiss government	200 M USD	2017
ISSIP II	WB - GoE	310 M USD	2017
IWSP I	KFW- EU- AFD- EIB - GoE	295 M EUR	2021
IWSP II	KFW- EU- AFD- EIB-SECO - GoE	303 M EUR	-
	Kafr El-Sheikh Wastewater Project	EIB-EU-EBRD	164 M EUR
Egyptian Utilities Management Agreement (EUM)	USAID	10.98 M USD & 163 M EGP	

Beneficiaries of ongoing projects under P2 (HCWW, 2017)

Region	Villages (#)	Population in 2017 (capita)
Nile Delta	537	6,228,275
Upper Egypt & Frontier governorates	422	7,175,909
Total	959	13,404,184

P3 involves the renewal (repair or rehabilitation) of exiting sanitation infrastructure as well as *actual* sanitation service provision for *nominally* covered communities

Targeted by P3 (HCWW, 2017)		
Region	Villages (#)	Population in 2017 (capita)
Nile Delta	518	8,733,545
Upper Egypt & Frontier governorates	165	4,277,047
Total	683	13,010,592

Model Cluster Calculation Information and Assumptions

- Total number of sanitation service clusters (SSCs): 662

Region	Nile Delta	Upper Egypt	Frontier governorates	Total
SSCs	412	215	35	662

- Average diameter of SSC: 5 km
- Number of communities/cluster: 11-16 (excluding those housing less than 1,400 capita by 2037)
- One crossing per community with a length of 20m
- A total number of 662 WWTPs serving rural communities including those in service, under construction and to be constructed (each SSC contains one WWTP).
- Average wastewater produced: 150 lpcd
- Number of pumps in each WWTP: 12
- One pumping stations for each community housing more than 1,400 capita by 2037
- Number of pumps in each pumping station: 3
- Average population density: 105 person/feddan
- Length of gravity sewer: ranges between 115 and 130 m/feddan
- Length of force mains: ranges between 2.5 and 5 km
- Household connections: length is estimated at 25% of gravity sewer network length
- Total capital expenditure cost for the construction of the 35 SSCs in frontier governorates are estimated to be equivalent to the cost of 12 of Upper Egypt's model clusters
- Key resource quantity requirements (cement and steel) as well as temporary labour requirements have been estimated based on similarly constructed projects during the past 5 years.
- Unit cost of gravity sewerage, force mains, house connection, pumping stations, WWTPs, provision of utilities, crossing costs, consultant and contractor fees have been estimated based on actual project documents using 2015 prices; which were converted to 2017 prices multiplying by a factor of 1.8
- Permanent labour requirements for the operation and maintenance (O & M) of the MCs in the Nile Delta is 156 employees while in Upper Egypt is 210 employees (this includes O & M of sewerage network, pumping station and WWTP).

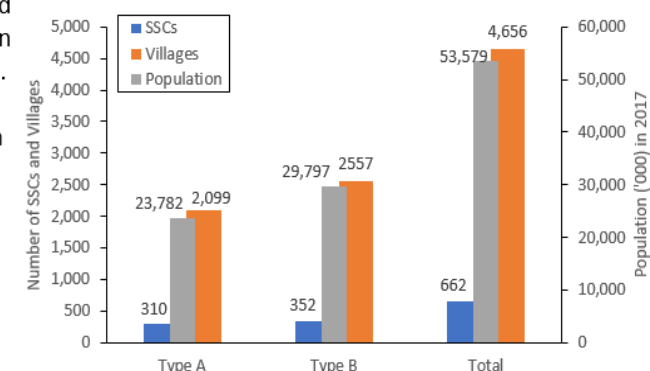
N.B.: All reported figures present estimates for the order of magnitude of costs and quantities for the construction and O & M of the NRSP.

Characterisation of P4 & P5

On a national scale, the villages, population and SSCs are classified as either Type A (not located in the watershed of a priority main drain) or Type B (located in the watershed of a priority main drain).

Fifteen watersheds of main drains linked to rural areas have been deemed a priority (MoWRI, 2016):

- Hados
- Kitchner
- Omar Bek
- Sobol
- Nobaraya
- El Bats
- Edku
- Rahawy
- Tala
- Serw
- Mahsama
- El Omom
- Bahr El Bakar
- Atsa
- El Wadi



Uncovered villages, population and SSCs Type A are targeted by P4 whereas Type B are targeted by P5

NRSP	Uncovered villages (#)	Villages directly discharging to drains (#)	Total villages (#)	Population in Uncovered villages 2017 (capita)	Population directly discharging to drains (#)	Total population in 2017
P4	1,455	46	1,501	13,219,483	518,162	13,737,645
P5	1,229	284	1,513	11,248,271	2,243,402	13,491,673
Total	2,684	330	3,014	24,467,754	2,761,564	27,229,318

8. Resources for Implementation Of Programmes (Cont'd)

Estimated Capital and O & M expenditure for sanitation service provision for P2, P3, P4 & P5

Sub-programme 1 (P1)	Reforming the institutional structure of the wastewater sector	Estimated Capital Expenditure (M USD)
PMC-P1	Provision of technical assistance by a qualified consultancy firm under the supervision of the responsible agency for each of the following four components: <ul style="list-style-type: none"> Component 1: Reforming sector legislation and policy Component 2: Reforming the institutional setup in addition to providing support to local consultants and contractors in the sanitation sector Component 3: Developing and implementing technological packages and system Component 4: Operationalising the NRSS 2017 	20
	Training programmes and capacity building: <ul style="list-style-type: none"> Planning, designing and implementing training programmes/packages for all sector employees over the 5 year time period. Planning, designing and implementing training programmes/packages for local consultants and contractors working in the field of sanitation. 	8
PMC-P3	Provision of technical assistance to HCWW and its ACs during the implementation of P3	2
PMC-P4	Provision of technical assistance during the development of the Master Plan for P4 and during the implementation of its projects	14
PMC-P5	Provision of technical assistance during the development of the Master Plan for P5 and during the implementation of its projects	16

Preliminary estimates for resource requirements for P2, P3, P4 & P5

NRSP	Land (feddan)	Key material requirements during construction				Key resource requirements during operation	
		Pumps (#)	Pipes (km)	Cement (M tons)	Steel reinforcement (M ton)	Permanent labour requirements ¹ (#)	Electricity requirements ² (MWh)
P2	-	4,770	23,930	1.00	0.05	43,330	100
P3	-	880	2,160	0.10	0.01		
P4	1,400 – 2,900	11,270	40,920	3.40	0.40	32,500	77
P5	1,400 – 2,900	11,270	40,920	3.40	0.40	32,500	77
Total	2,800 – 5,800	28,190	107,930	7.90	~0.90	108,330	254³

Estimated Capital and O & M expenditure for sanitation service provision for P2, P3, P4 & P5

NRSP	Population ^{1,2} (capita)		Beneficiaries of centralised service provision (capita) ²		Capital investment based on 2017 prices ^{3,4} (B EGP)	Cost/capita in 2017 (EGP/capita)		O& M expenditure based on 2017 prices (B EGP/year) ⁵
	In 2017	In 2037	In 2017	In 2037		In 2017	In 2037	
P 2	13,404,184	19,917,912	13,404,184	19,917,912	12.2 ⁵	--	--	3.2
P 3	13,010,592	19,333,055	9,320,566	13,849,871	7.0	--	--	
P 4	13,737,645	20,413,418	10,970,126	16,301,030	112.5	10,255	6,901	2.4
P 5	13,491,673	20,047,916	10,724,154	15,935,528	112.5	10,490	7,060	2.4
Total	53,644,094	79,712,302	44,419,030	66,004,342	244.2	--	--	8.0

¹Data for population was obtained from HCWW (2017) which is based on 2006 census data.

²The reported population and beneficiary data for P2 and P3 as supplied by HCWW (2017) represent nominal coverage data and actual coverage is estimated to be less by ~10%; correspondingly increasing the population and beneficiaries of P4 and P5.

³These costs do not include interventions addressing industrial effluent treatment and solid waste management.

⁴The estimates were calculated based on 2015 price information and have been converted to 2017 prices by multiplying by a factor of 1.8.

⁵12.2 B EGP represents the remaining CapEx requirements as of 2017 for the completion of ongoing projects (HCWW, 2017).

Alternatives for decentralized service provision for small communities with a population less than 1,400 by 2037

For all communities that will not be covered by a centralised sanitation system i.e. gravity sewerage network, P-Ss and WWTPs, a decentralised sanitation service will be provided.

- It is assumed that 60% of these communities evacuate their vaults less than once a month using evacuation trucks that transport the faecal sludge to the nearest PS or WWTP for treatment and disposal.
- The remaining 40% of these communities evacuate their vaults more than once a month thus, three options have been developed for sanitation service provision.
- Option 1:** Construction of septic tanks either (a) for each house/building or for (b) a group of 10 buildings. Effluent will be discharged directly to drains (needs regulation modification).

Two collection alternatives and two treatment options are presented in options 2 and 3 that can be used in any combination

- Option 2:** Construction of a small bore sewer network connected to decentralised conventional WWTPs (Type A).
- Option 3:** Construction of simplified sewerage network connected to decentralised locally produced and chemically enhanced WWTPs (Type B).

8. Resources for Implementation Of Programmes (Cont'd)

Capital expenditure for decentralized service provision for small communities with a population less than 1,400 by 2037

NRSP	Capex for 60% of population using evacuation trucks (B EGP)	Capex for 40% of population - requiring evacuation more than once a month (B EGP)			
		Option 1A (One septic tank/2 house & discharge to drain) ¹	Option 1B (One septic tank/10 houses & discharge to drain) ¹	Option 2 (Small bore sewer & WWTP type A)	Option 3 (simplified sewerage & WWTP type B) ^{2,3}
P3	0.9	4.8	2.5	3.9	2.4
P4	0.7	3.6	1.9	2.9	1.8
P5	0.7	3.6	1.9	2.9	1.8
Total	2.3	12.0	6.3	9.7	6.0

¹ Option 1 does not comply with current regulations and provides primary treated effluent

² These figures have been obtained from local manufacturers and are used as an illustrative example

³ Type B WWTP (chemically enhanced wastewater treatment) should be tested in at least 10 representative rural areas to ensure functionality and compliance with current laws & regulations

O & M expenditure for decentralized service provision for small communities with a population less than 1,400 by 2037

NRSP	Opex for 60% of population using evacuation trucks (M EGP/year)	Opex for 40% of population - requiring evacuation more than once a month (M EGP/year)			
		Option 1A (One septic tank/house & discharge to drain)	Option 1B (One septic tank/10 houses & discharge to drain)	Option 2 (Small bore sewer & WWTP type A)	Option 3 (shallow sewer & WWTP type B) ¹
P3	220	38	38	116	150
P4	170	29	29	87	113
P5	170	29	29	87	113
Total	560	96	96	290	376

¹ These figures have been estimated incorporating obtained information from local manufacturers and are used as an illustrative example

Preliminary estimates for resource requirements for sanitation service provision to decentralised served areas using evacuation trucks (60% of population < 1,400 by 2037)

NRSP	Evacuation trucks (#)	Permanent labour (#)
P2	1,850	7,400
P3		
P4	1,390	5,550
P5	1,390	5,550
Total	4,630	18,500

Capital expenditure allocation over the following three 5-year plans for the NRSP

NRSP	2017-2022	2023-2027		2028-2032		
	Centralised sanitation service provision	Decentralised sanitation service provision	Centralised sanitation service provision	Decentralised sanitation service provision ¹	Centralised sanitation service provision	Decentralised sanitation service provision ¹
P1 (M USD)	60.00	--	--	--	--	--
P2 (B EGP)	12.20	--	--	--	--	--
P3 (B EGP)	7.00	--	--	1.65	--	1.65
P4 (B EGP)	37.50	--	37.50	1.25	37.50	1.25
P5 (B EGP)	37.50	--	37.50	1.25	37.50	1.25
Total	60.00 M USD & 94.20 B EGP	0.00	75.00 B EGP	4.15 B EGP	75.00 B EGP	4.15 B EGP
Grand total	60 M USD & 94.2 B EGP		79.15 B EGP		79.15 B EGP	

¹ Capex allocation over the three 5-year plans is based on the selection of option 3 for decentralised sanitation service provision

9. Proposed First Five Year (2017-2022) Activities Time Schedule

ID	WBS	Task Name	Duration	2017				2018				2019				2020				2021				2022				2023			
				2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1	P1	البرنامج P1	day 2370																												
2	P1.1	صدور القرار الوزاري بتكليف الجهة المسؤولة عن إدارة البرنامج P1 وتحديد صلاحياتها	days 0																												
3	P1.2	توفير التمويل لتنفيذ البرنامج P1	mon 3																												
4	P1.3	اعداد الشروط المرجعية للمكتب الاستشاري المعاون PMC-P1	mon 3																												
5	P1.4	الطرح والترسية والتعاقد مع المكتب الاستشاري المعاون PMC-P1	mon 3																												
6	P1.5	تنفيذ المكون الأول: تطوير السياسات والقوانين	day 180																												
7	P1.5.1	اعداد ورقة السياسات	mon 6																												
8	P1.5.2	اعداد مقترح مشروع تعديل القوانين واللوائح ذات الصلة	mon 6																												
9	P1.6	اعتماد ورقة السياسات	days 0																												
10	P1.7	صدور القوانين واللوائح المعدلة	days 0																												
11	P1.8	تنفيذ المكون الثاني: تطوير الكيانات المؤسسية العاملة بالقطاع والجهات ذات الصلة (المكاتب الاستشارية وشركات المقاولات)	day 180																												
12	P1.8.1	تصميم برامج تطوير ودعم الكيانات المؤسسية العاملة بالقطاع	mon 6																												
13	P1.8.2	تصميم برامج تطوير الجهات ذات الصلة (المكاتب الاستشارية وشركات المقاولات)	mon 6																												
14	P1.9	اعتماد برامج تطوير الكيانات المؤسسية ذات الصلة	mon 3																												
15	P1.10	تنفيذ برامج تطوير ودعم الكيانات المؤسسية ذات الصلة	mon 52																												
16	P1.11	تنفيذ المكون الثالث: تطوير وتطبيق مجموعة الحزم التكنولوجية	day 180																												
17	P1.11.1	إعداد الحزم التكنولوجية والمنظومات (١٠) مع مراعاة تضمينها المفاهيم المحددة في الاستراتيجيات المحورية (٢-٧)	mon 6																												
18	P1.11.2	إعداد النماذج النمطية للمكونات الأساسية لمشروعات الصرف الصحي بالقرى	mon 6																												
19	P1.11.3	تحديد الإطار المؤسسي لتفعيل منظومة إدارة المعرفة (المنظومة ٩) كأحد مكونات البرنامج القومي لمشروعات الصرف الصحي بالقرى	mon 6																												
20	P1.12	تدريب الكيانات المؤسسية العاملة بالقطاع والجهات ذات الصلة علي استخدام الحزم التكنولوجية والمنظومات	mon 18																												
21	P1.13	إنشاء وتشغيل وحدة إدارة المعرفة	mon 76																												
22	P1.14	تحقيق الترابط مع الصناعة المحلية لإنتاج المكونات والنظم المطلوبة لتنفيذ النماذج النمطية	mon 76																												
23	P1.15	تنفيذ المكون الرابع: تفعيل الاستراتيجيات المحورية	day 90																												
24	P1.15.1	إعداد خطة تفعيل الاستراتيجيات المحورية السبعة خلال مراحل تخطيط وتصميم وتنفيذ وتشغيل البرامج والمشروعات	mon 3																												
25	P1.15.2	إعداد مقترح مذكرات التفاهم مع الجهات ذات الصلة	mon 3																												
26	P1.16	مناقشة خطة تفعيل الاستراتيجيات السبعة مع شركاء المصلحة	days 0																												
27	P1.17	اعتماد خطة تفعيل الاستراتيجيات السبعة مع شركاء المصلحة	days 0																												
28	P1.18	توقيع مذكرات التفاهم مع الجهات ذات الصلة: وزارة الري والموارد المائية، وزارة البيئة، وزارة التنمية المحلية، وزارة الصناعة، وزارة التعليم العالي والبحث العلمي	days 0																												
29	P1.19	متابعة تقدم العمل في تفعيل الاستراتيجيات السبعة وفق خطة التفعيل المعتمدة ومذكرات التفاهم الموقعة	mon 56																												

Project: NRS Plan

Task
Split

Milestone
Summary

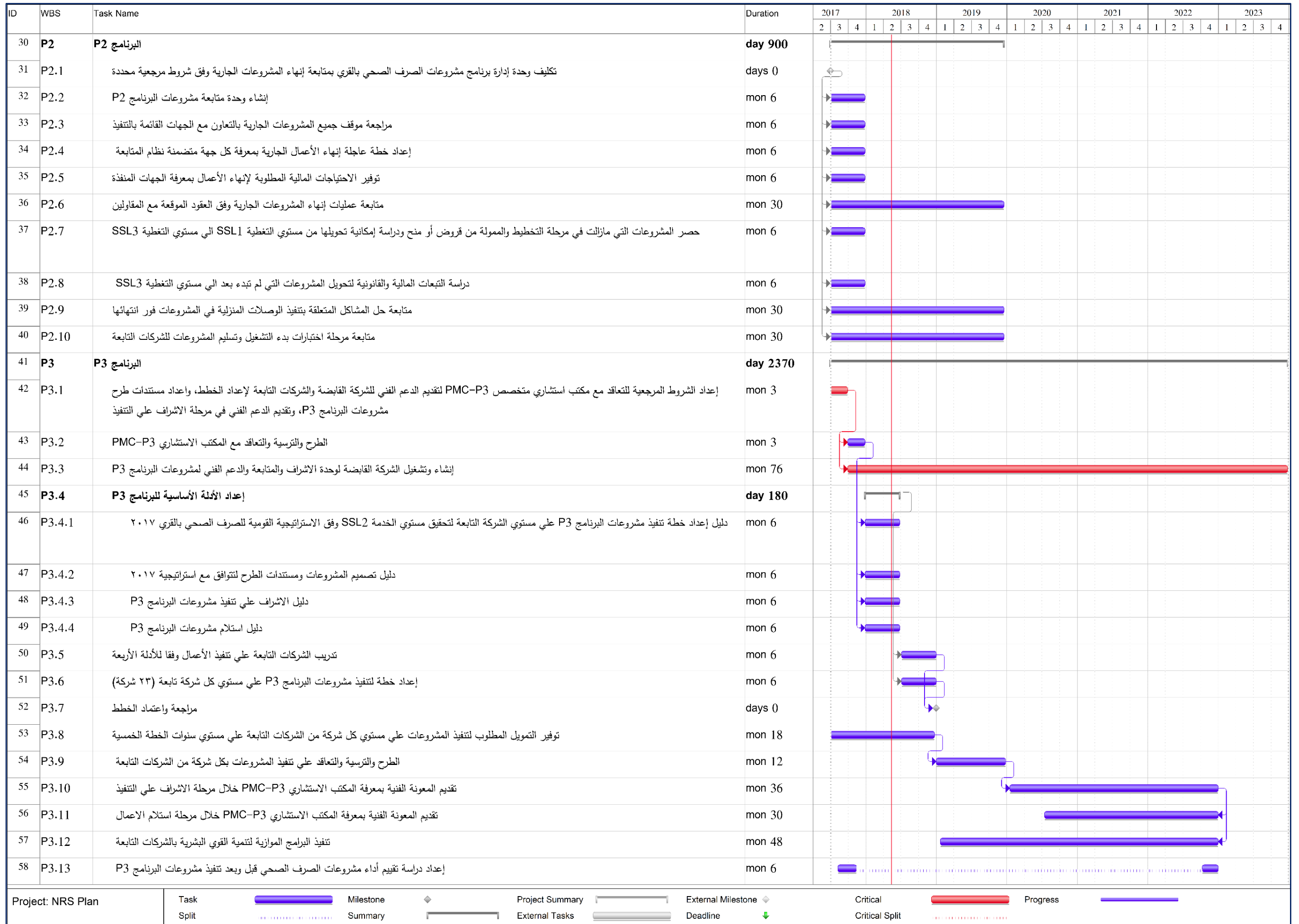
Project Summary
External Tasks

External Milestone
Deadline

Critical
Critical Split

Progress

9. Proposed first Five Year Activities (2017-2022) Time Schedule



10. Definitions

<i>Term</i>	<i>Definition</i>
Sanitation Service Cluster (SSC)	<p>It is the planning unit for sanitation service provision and is defined both from a geographical and an institutional perspective (NRSS, 2008):</p> <ol style="list-style-type: none"> 1. It is a geographically bound area that includes a group of villages/communities whose inclusion as one planning unit provides an optimum solution from a technical, economical, environmental and institutional view point. 2. It is an administrative unit in the rural wastewater sector which is part of the organisational structure of the Holding Company for Water and Wastewater (HCWW) and its Affiliated Companies (ACs). Responsibilities at the level of SSC management includes: <ol style="list-style-type: none"> i. Operation and maintenance (O & M) of sewers and pumping stations in served villages/communities ii. O & M for the wastewater treatment plants (WWTP) iii. Technical supervision of septage evacuation systems iv. Technical supervision of sewerage systems in villages that have projects at house or street levels v. Implementation of self-monitoring programmes <p>The SSC can be subdivided into two types:</p> <ol style="list-style-type: none"> 1. Type A: Located outside the geographical vicinity of priority watersheds of a main drain. They are identified based on pre-set selection criteria at each governorate level as part of sub-programme 4 (P4) of the NRSS. 2. Type B: Located within the vicinity of priority watersheds of a main drain. They are identified as part of sub-programme 5 (P5) of the NRSS.
Watershed of a main drain	<p>A geographical area surrounding a main drain that affects the quality of water in the drain. This area includes sub-basins of drains that flow towards the main drains as well as villages and cities located within its vicinity.</p> <p>SSC located within the boundaries of a watershed area are to be identified and are termed Type B SSCs.</p>
In-situ treatment for heavily/severely polluted drains	<p>In-situ treatment of all severely polluted drains within the watershed of priority main drains (identified by the MoIWR) involves the direct remediation of the waterbodies either using biological or chemical treatment technologies which include:</p> <ul style="list-style-type: none"> • Wetlands • Bioremediation/biological restoration • Microbial restoration • Circulators/solar aerators

<i>Term</i>	<i>Definition</i>
Reuse of treated municipal wastewater	<p>The reuse of treated municipal wastewater will be implemented in accordance with the Egyptian code for wastewater reuse. It is considered an integral part of sanitation projects with allocated land areas for wastewater reuse.</p>
Gravity sewerage at the village/comm unity level	<p>This component includes the planning, design and implementation of gravity sewerage, pumping stations and force mains at the village/community level by taking the following into consideration:</p> <ol style="list-style-type: none"> 1. Design work must include topographical surveys, geotechnical investigations, preparation of the final design drawings, tender documents including general conditions, technical specifications, bill of quantities and contract template. 2. In the case where faecal sludge has been evacuated from house vaults and is to be transported through the centralised sanitation service network, this should be taken into consideration during the design of the pumping stations 3. Part of the gravity sewerage network can be designed as a simplified sewage system for the provision of alternative (decentralised) sanitation services to small communities 4. The tender, award, contracting and implementation of all construction work must include household connections 5. Contracts to be signed with contractors shall follow the Design-Bid-Build contract model
Gravity sewerage at the sanitation service cluster level	<p>This component includes the planning, design and implementation of gravity sewerage, pumping stations and force mains at the village/community level located within the geographical boundaries of the SSC by taking the following into consideration:</p> <ol style="list-style-type: none"> 1. Preparation of the Master Plan for the sewerage network in all served communities/villages in accordance with the HCWW approved cluster optimisation model/ methodology 2. Design work must include topographical surveys, geotechnical investigations, preparation of the final design drawings, tender documents including general conditions, technical specifications, bill of quantities and contract template. 3. In the case where faecal sludge has been evacuated from house vaults and is to be transported through the centralised sanitation service network, this should be taken into consideration during the design of the pumping stations 4. Part of the gravity sewerage network can be designed as a simplified sewage system for the provision of alternative (decentralised) sanitation services to small communities 5. The tender, award, contracting and implementation of all construction work must include household connections 6. Contracts to be signed with contractors shall follow the Design-Bid-Build contract model

10. Definitions (Continued)

<i>Term</i>	<i>Definition</i>
<i>The evacuation system for house vaults</i>	<p>This component includes the planning and preparation of tender documents and concession contracts with the private sector, for the management and finance of faecal sludge systems (this involves faecal sludge collection from specific locations and disposal at designated areas such as pumping stations and WWTPs). The following must be taken into consideration:</p> <ol style="list-style-type: none"> 1. ACs contracting the private sector will do so in accordance with well-defined technical, financial and environmental specifications and conditions. 2. The authority responsible for the sanitation service monitoring at the SSC level will also be responsible for monitoring the implementation of the contract. 3. ACs shall be responsible for paying the private sector for the service and shall collect the bills from the beneficiaries; provided that the charge for the service is equal to the average charge of centralised sanitation service provision. 4. The Ministry of Finance shall subsidise the service i.e. shall pay for the difference between the amount charged by the private sector and that collected from the beneficiaries.
<i>Integrated wastewater treatment plant</i>	<p>This component includes the preparation of standardised tender documents for IWWTP construction using Design-build contracts, supervision of construction work and commissioning and handing over of completed infrastructure. The following should be taken into consideration:</p> <ol style="list-style-type: none"> 1. Influent quality standards in order to treat faecal sludge (technical limitations may apply) 2. Co-treatment of WWTP sludge with the organic component of MSW in order to produce electricity 3. Reuse of treated wastewater in accordance with the Egyptian code for the reuse of wastewater in designated areas 4. Effluent quality standards to comply with Egyptian regulations
<i>Sanitation service coverage alternatives for small communities where house vault evacuation is considered an unsustainable option</i>	<p>This component includes the planning, design, implementation and operation of alternative solutions for the provision to decentralised sanitation services to small communities that evacuate their vaults more than once a month. Alternatives include the use of simplified sewerage systems, submersible pumps, primary treatment of wastewater that is directly discharged to drains (requires the modification of the executive regulations of Law 48/1982). The following should be taken into consideration:</p> <ol style="list-style-type: none"> 1. Capitalising on local production opportunities while taking advantage of standardisation 2. Regular treatment of faecal sludge at the closest WWTPs

<i>Term</i>	<i>Definition</i>
<i>Preparation of the Master Plan for P3 at the AC level</i>	<p>This component includes the preparation of the Master Plan for the implementation of P3 at each AC level according to prepared guidelines.</p> <p>The Master Plan is to be prepared based on an evaluation of constructed sanitation projects during the past 30 years. It also includes the renewal (repair/rehabilitation) of constructed infrastructure in order to achieve Sanitation Service Level 2 (SSL2). The preparation of the Master Plan includes:</p> <ol style="list-style-type: none"> 1. Hiring a consultancy firm to provide technical assistance to the HCWW and its ACs for P3 implementation. 2. The consultant shall provide training to selected working groups from each AC for the preparation of the Master Plan at the AC level. 3. The consultant in coordination with HCWW shall review the Master Plans before their final approval.
<i>Preparation of the Master Plan for P4 on a national level</i>	<p>This component includes the preparation of a Master Plan for the implementation of P4 projects on a national level. The Master Plan is to be prepared based on creating an inventory of Type A SSCs, which are located outside the geographical boundaries of priority watersheds of main drains. The Master Plan for P4 should take the following into consideration:</p> <ol style="list-style-type: none"> 1. Creating the highest return on previously constructed sanitation infrastructure 2. Achieving Sanitation Service Level 3 (SSL3) in all SSCs part of P4 3. The incorporation of the seven core strategies of this NRSS 2017 4. Prioritising projects within P4 based on the developed prioritisation criteria
<i>Preparation of the Master Plan for P5 on a national level</i>	<p>This component includes the preparation of a Master Plan for the implementation of P5 projects in all priority watersheds of main drains as dictated by MoIWR on a national level. The Master Plan is to be prepared based on creating an inventory of Type B SSCs (which are located within the geographical boundaries of priority watersheds of main drains) for each priority watershed area in accordance with the Kitchner drain model. The Master Plan for P5 should take the following into consideration:</p> <ol style="list-style-type: none"> 1. Creating the highest return on previously constructed sanitation infrastructure 2. Achieving Sanitation Service Level 4 (SSL4) in all SSCs part of P5 3. The incorporation of the seven core strategies of this NRSS 2017 4. Prioritising projects within P4 based on the developed prioritisation criteria

10. Definitions (Continued)

<i>Term</i>	<i>Definition</i>
<i>Community support and participation component</i>	<p>The NRSS 2017 emphasises the need for community participation in the NRSP which can be accomplished through the involvement of the community, creation of discussion platforms especially with regards to project implementation plans and project prioritisation criteria. Community support can establish the following:</p> <ol style="list-style-type: none"> 1. Increasing environmental and public health awareness. 2. Provision of land for the construction of pumping stations and WWTPs. 3. Implementation of public awareness campaigns focussing on decreasing per capita water consumption and the proper/appropriate usage of the sewerage network i.e. not to dispose of animal manure and MSW in the network. 4. Aid in solving the faecal sludge management system i.e. evacuation of house vaults, in areas that not served by a centralised sanitation network. 5. Aid in solving the problem of illegal connections to groundwater aquifers
<i>Private sector participation</i>	<p>The most important private sector contracts include:</p> <ol style="list-style-type: none"> 1. Asset management contract for publically owned sanitation infrastructure such as that for the operation and maintenance of WWTPs 2. Finance, implementation and operation of assets with a pay back period ranging between 15 to 20 years such as the FEDEC BOT contract. The project lifecycle starts with the preparation of a feasibility study followed by the preparation tender documents. This process should be performed by an experienced consultancy firm. <p>Within the NRSP, private sector participation contracts can be:</p> <ol style="list-style-type: none"> 1. Concession contracts for the evacuation of house vaults at the SSC level in accordance with technical and financial conditions specified in the tender documents 2. BOT contracts for the finance, implementation and operation of IWWTPs at the SSC level

<i>Term</i>	<i>Definition</i>
<i>Research and development</i>	<p>The NRSS 2017 emphasises the role of research and development institutions/centres in solving sanitation challenges through the implementation of novel approaches that are tailored to local conditions. The NRSS, supports the reinstatement of a plan for research and development while specifying the fields of research to be investigated. This should be undertaken by local research institutions/centres in coordination with international counterparts. The NRSS species two streams for applied research:</p> <ol style="list-style-type: none"> 1. Applied research in the field of rural sanitation 2. Applied research for in-situ treatment of highly/severely polluted drains <p>It is recommended that HCWW prepare a plan for projects under the first stream whereas the MoIWR prepare a plan for projects under the second.</p>
<i>Technology packages</i>	<ol style="list-style-type: none"> 1. Technological packages for planning, construction, operation and maintenance 2. Finance and cost recovery package 3. Land acquisition package 4. Capacity building and HR development package 5. Monitoring and Evaluation package 6. Stakeholders/community engagement and hygiene education package 7. Local industry and research institution engagement package 8. Coordination with responsible agencies package 9. Dispute resolution package 10. Knowledge management package
<i>Knowledge management</i>	<p>Compiling and analyzing data and production of periodic reports showing that changes that will occur in parallel with progress in the implementation of programs and ensuring that that knowledge is make available and discussed with all concerned parties and stakeholders. Changes to be monitored include:</p> <ol style="list-style-type: none"> 1. Changes in environmental health and public health in villages 2. Social changes 3. Demographic and urban changes 4. Economic returns 5. Climate change impacts 6. Progress in relation with industry 7. Progress in relation with research institutions 8. Emerging new technology