

An Overview of Ramthal Drip Irrigation

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Abstract:

The Government of Karnataka launched Asia's largest drip irrigation program in 2017 under Stage-2 of the Ramthal (Marol) Lift Irrigation Project. This initiative forms a significant component of the Upper Krishna Project. The project was designed to utilize 5.84 TMC of backwater from the Narayanapur Reservoir to irrigate approximately 24,000 hectares of land. The estimated cost for the pilot project was ₹786.11 crore. Administrative approval for implementing a gravity-based micro-irrigation system was granted on June 16, 2012. It is expected to benefit around 15,000 farmers. Hence, efficient management and monitoring of the project are essential for its success.

Keywords: Drip Irrigation, Ramthal Project, Upper Krishna Project, Micro-irrigation, Sustainable Agriculture

Introduction

Jain Irrigation Systems Ltd. is building one of the most comprehensive and fully automated drip irrigation systems in the world. This ambitious project is being implemented by Krishna Bhagya Jala Nigam Limited (KBJNL), a unit under the Karnataka Water Resources Department. The project is located in Ramthal, a village in Hunagund Taluk of Bagalkot District, Karnataka. Ramthal hosts Asia's largest drip irrigation system, benefiting approximately 15,000 farmers across 60,000 acres of land. The efficient utilization of water through a well-planned canal-based drip irrigation system

in the command area is expected to enhance agricultural productivity and expand irrigation coverage. As part of Stage 2 of the Ramthal (Marol) Lift Irrigation Project, the Government of Karnataka officially launched this large-scale drip irrigation initiative in 2017.¹

Megha Engineering and Infrastructures Limited (MEIL) successfully completed the project originally conceptualized by Krishna Bhagya Jala Nigam Limited (KBJNL). The project was officially inaugurated by Shri M.B. Patil, the former Minister for Water Resources, Government of

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Karnataka. MEIL has also been entrusted with the responsibility of operating and maintaining the project for the next five years. As part of the ₹381.50 crore drip irrigation initiative, approximately 2,150 kilometers of pipeline have been laid to ensure efficient water distribution across the command area.

Project of Overview:

The Ramthal Lift Irrigation Scheme aims to utilize 5.84 TMC of water to irrigate approximately 26,200 hectares in Hunagund Taluk, Bagalkot District, Karnataka. The first headwork of the project, located in the backwaters of the Narayanapur Reservoir near Marol, has been completed². Under the first stage, the West Main Canal—covering Distributor No. 1 to 25 from km 0.00 to km 62.00—has been completed. Similarly, the East Main Canal, extending from km 0.00 to km 52.00 and covering Distributors No. 1 to 20, has also been completed, and water has been released for agricultural purposes. In the second stage, the headwork near Ramawadagi has been constructed, and administrative approval was granted on June 16, 2012, for the implementation of a gravity-based micro-irrigation (drip irrigation) system over 24,000 hectares as a pilot project. This stage was approved at an estimated cost of ₹786.11 crore (based on 2011–12 prices), with a three-year implementation period. The development of the drip irrigation infrastructure under this second stage has

now been completed, and irrigation began during the Kharif season.³

Table 1: Features of Project

1	Location	Off take from the Narayanapur Reservoir near Marol Village of Hunagund taluk.
2	River	Krishna
3	Utilization	5.84 TMC
4	Head work	1 st head work near Marol village. 2 nd head work near Ramwadagi village
5	Command Area	Under 1 st stage lift: 14,500 Hector (conventional irrigation). Under 2 nd stage lift: 24000 Hector (Drip irrigation).
6	Notified Area	38000 Hector
7	Special Feature of scheme	Drip irrigation system for 24000 Ha under 2 nd stage lift of lift irrigation scheme is largest to kind project in world. In this project 15000 farmers were benefitted under this scheme.
8	District and Taluk	Bagalkot, Hunagund
9	Cost	Rs 1035.00 crore
11	Cropping pattern	Kharif, Rabi and Biseasanal

Source: Final Environment Impact Assessment Report KBJNL vol-1

Table 2: Command Area

Sl. No	District	Taluk	Villages benefitting under conventional irrigation	Villages benefitting under Drip Irrigation
1	Bagalkot	Hunagund	Haavaragi	Belagal
2			Kongawada	Thimmapur
3			Koujaganuru	Hungund
4			Anapakatti	Bevinmatti
5			Indavaara	Hirebadwadagi
6			Odeyara Gonala	Banihatti
7			Kamaladinni	Rakkasagi
8			Chinta Kamaladinni	Chittawadagi
9			Gattiganuru	Honnarahalli
10			Konnuru	Nagur
11			Palthi	Yadalli
12			Manmathanaal	Aminagad
13			Pochapura	Sulibhavi
14			Dasabaala	Chickkarayankeri
15			Kesarapenti	Hirerayankeri
16			Pachapur	Ramavadagi
17			Amaravadagi	Iddalagi
18			Marola	Bisnalkoppa
19			Koppa	Dannur
20			Dannuru	Bisnal
21			Hullalli	Hadagali
22			Adihala	Medinapur
23			Yammetti	Kirasur
24			Eddalagi	Gangur

25			Medinapur	Chittaragi
26			Hadagali	Huluginala
27			Kirasuru	Kallugonal
28			Gangur	Madapur
29			Madapur	
30			Budhihaala	
31			Ramawadagi	
32			Kadivala	
33			Revadihaala	
34			Bekamaladinni	
35			Hagedal	
36			Hanagund	
37			Belagal	
38			Thimmapur	
39			Binjawadagi	
40			Turamari	
41			Islampur	
42			Jalakamaladinni	
43			Lolasara	
44			Hemaawadagi	
45			Bisanalakoppa	
46			Chittaragi	
47			Karadi	
48			Needasanur	
49			Benakanadoni	
50			Chinnapura S K	
51			Kamadatta	
52			Hiremagi	

53			Bevinala	
54			Hulaginala	
55			Enam Budihaala	

Source: Final Environment Impact Assessment Report -KBJNL Vol-1

Drip Technology:

The Ramthal (Marol) drip irrigation project, implemented by Krishna Bhagya Jala Nigam Limited in Bagalkot District, Karnataka, is based on advanced Israeli drip irrigation technology.⁴ Technical support for this initiative was provided by Netafim, a globally renowned Israeli company specializing in micro-irrigation systems. As part of the project infrastructure, pipelines were laid over a total length of 2,150 kilometers to ensure efficient water distribution across the command area. Prior to the project, farmers in the Ramthal region—especially those with landholdings on the periphery of the ayacut (irrigated area)—faced numerous challenges due to inconsistent and insufficient access to water resources. This drip irrigation initiative was designed to overcome such issues and promote sustainable agricultural development.

Megha Engineering and Infrastructures Limited (MEIL), which had earlier successfully completed the 'Pattisam' project in Andhra Pradesh, was entrusted with executing the Ramthal drip irrigation project.⁵ The entire irrigation system is fully automated and equipped with a Centralized Control and SCADA Monitoring System,⁶ allowing for efficient and real-time management of water distribution. As part of this system, each

farmer receives water through a specially installed cylinder in their individual farmland. This technology also allows farmers to mix fertilizers and insecticides directly into the system, improving crop management and reducing manual labor. Furthermore, the system is designed to **purify waste water** that flows into the backwaters of the River Krishna, thereby contributing to **water conservation** and minimizing wastage in the irrigation process.⁷

Drip to Market Agro Corridor (DMAC)

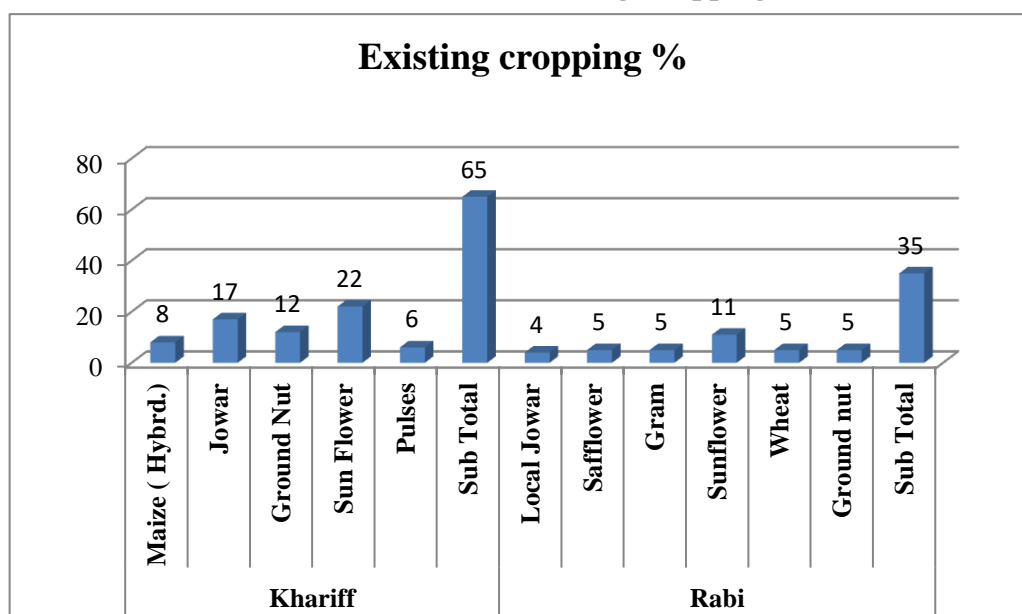
Government of Karnataka in 20-09-2017 “Providing 3 year consulting assignment to support the establishment of project implementation unit for Drip to Market Agro Corridor (DMAC) approach” Ernst & Young LLP assigned the work to him on 13-05-2019 for Rs 10.42 Crores and the work is progress.⁸ In collaboration with the Department of Agriculture, Horticulture, Water Resources, Government of Karnataka and 2030 WRG institutions, Corridor has been implemented to provide marketing for drip irrigated agricultural products in Karnataka.⁹ Also, steps have been taken to set up a project implementation unit to provide guidance, conceptualization and development of corridors providing marketing for Karnataka drip irrigated agricultural products.

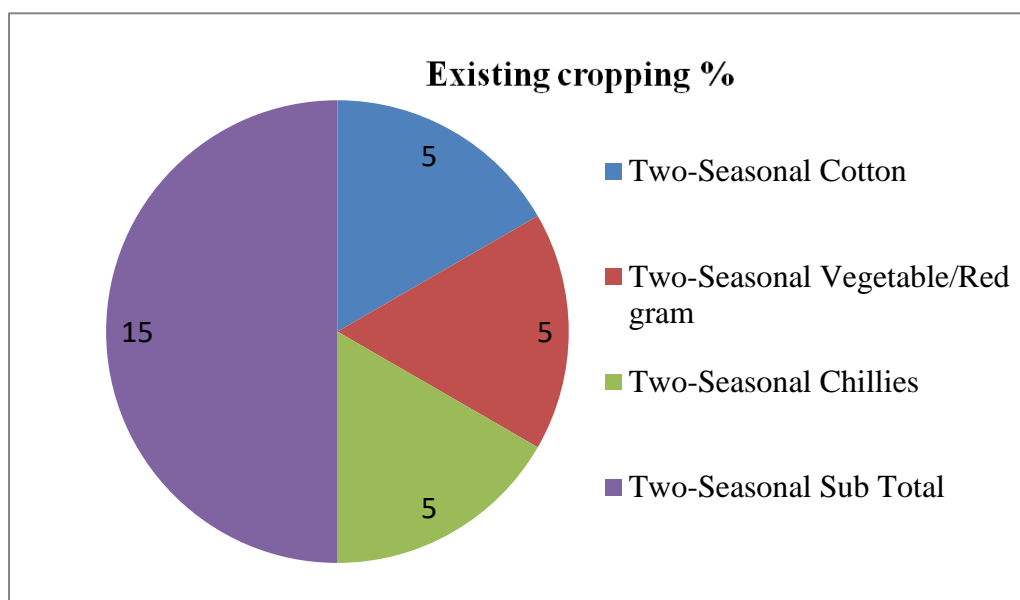
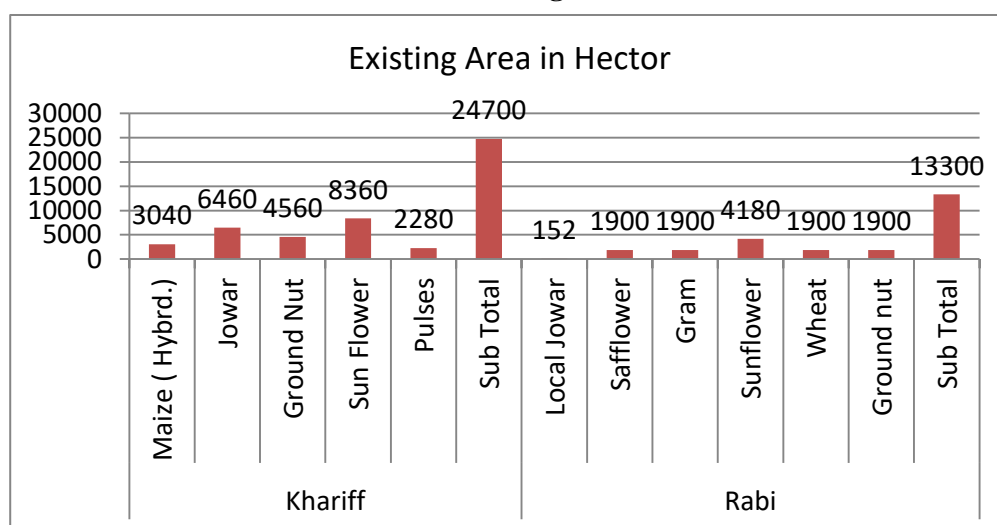
Cropping pattern:

The Ramthal drip irrigation project supports a diverse cropping pattern across different agricultural seasons. During the Kharif season, major crops grown include hybrid maize, jowar, groundnut, sunflower, and various pulses. In the Rabi season, farmers cultivate local jowar, safflower, gram, sunflower, wheat, and groundnut. Additionally, two-seasonal crops such as cotton, vegetables (including red gram), and chilies are commonly grown, taking advantage of the improved irrigation facilities made available through the project.

The details of cropping pattern with Irrigation intensity

With regard to cropping patterns, approximately 65% of the cultivated area is devoted to Kharif crops such as hybrid maize, jowar, groundnut, sunflower, and pulses, while 35% is used for Rabi crops including local jowar, safflower, gram, sunflower, wheat, and groundnut. These distributions are illustrated in Chart 1. Similarly, the percentage share of crops grown across both seasons is depicted in Chart 2. In terms of area, Kharif crops are cultivated over 24,700 hectares, whereas Rabi crops cover approximately 13,300 hectares, as shown in Chart 3. These figures reflect the impact of the Ramthal drip irrigation project on optimizing cropping intensity and seasonal distribution.

Chat 1: Details of Existing Cropping

Chat 2: Details of Existing Cropping in Two Seasonal**Chat 3: Details of Existing Area in Hector****Impact of Pattern:**

The implementation of the drip irrigation system under the Ramthal project has resulted in several transformative impacts. It has doubled the

number of project beneficiaries using the same amount of water resources, demonstrating the efficiency of the system. With just 2.77 TMC of water, the

project is now able to irrigate 24,000 **hectares** using drip irrigation, compared to only 12,571 hectares under traditional flood irrigation. This has significantly improved the standard of living of the beneficiaries and led to incremental financial returns for all project stakeholders. Furthermore, the project has achieved energy savings of up to 50%, contributing to environmental sustainability. Farmers have also benefited from a doubling of income and higher

profit margins due to improved water use efficiency and crop productivity.

Given its success, similar integrated micro-irrigation projects can be replicated in other states where canal-based or assured irrigation sources are available. Notably, the Government of Haryana is planning to implement a similar project, which will be powered by solar energy, further enhancing sustainability and energy independence.

Conclusion

Asia's largest drip irrigation system is located near Ramthal in Bagalkot District, Karnataka. The project utilizes 5.84 TMC of water to irrigate 34,000 hectares in the command area, significantly transforming agricultural practices in this drought-prone region. Officially launched in 2018 by the then Minister for Water Resources, Shri M.B. Patil, the project is based on advanced Israeli drip irrigation technology, with technical support

provided by the Israeli company Netafim. The execution of the project, originally conceptualized by Krishna Bhagya Jala Nigam Limited (KBJNL), was successfully completed by Megha Engineering and Infrastructures Limited (MEIL). The **Krishna River** plays a central role in supporting this initiative, which is expected to greatly benefit the farmers of Hunagund Taluk and surrounding villages by enabling the cultivation of a wide variety of crops through efficient water use and improved irrigation infrastructure.

Endnotes

1. The New Indian Express. (2018, January 28).
2. Government of Karnataka. (2020). *Progress Report of Upper Krishna Project*.
3. Government of Karnataka, Water Resources Department. (2021). *Annual Report 2020–21* (p. 26).
4. Business Line. (2018, January 30).
5. Ibid.
6. Government of Karnataka, Water Resources Department. (2021). *Annual Report 2020–21* (p. 27).
7. The Times of India. (2018, January 31).
8. Government of Karnataka, Water Resources Department. (2021). *Annual Report 2020–21* (p. 27).
9. Ibid.