



BUSINESS PLAN · INDIA

Drip and Micro-Irrigation Business

Paid on how evenly the water lands

AGRI-INPUTS

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This document is confidential and prepared for planning purposes. All financial figures are illustrative model assumptions for an Indian MSME context and must be validated against live quotes, local rates and professional advice before any investment or borrowing decision.

1. Executive Summary

This plan sets out a **Drip & Micro-Irrigation Business** in India — design, supply, installation and long-term servicing of drip, sprinkler and micro-sprinkler systems with filtration, fertigation, automation and pumping, operating across orchard, field-crop and protected-cultivation segments and delivering roughly 7,700 acres a year by Year 3.

The vertical's conventions are set in the fertiliser-manufacturing anchor and carried through crop protection, seed, retail, bio-inputs, micronutrients, distribution and nursery: **publish a measurement at the time of sale where the effect arrives later; defend a documentation-based claim with a published reconciliation; make the remedy match the buyer's exposure rather than the transaction; and never let the party under commercial pressure own the control.**

□ **MICRO-IRRIGATION IN INDIA IS SOLD TO A SUBSIDY SCHEME RATHER THAN TO A FARMER.** The purchase decision is shaped by what the scheme will reimburse, the installer is paid when the sanction clears, and the file closes at commissioning — so the entire commercial machinery is triggered by an approval rather than by a working system. The result is that nobody measures the only thing that matters: **DISTRIBUTION UNIFORMITY**, the degree to which every plant in the block actually receives the same water. A system with emitters clogging, laterals spaced for the scheme's standard package rather than for this soil's infiltration rate, and a pump sized to the file rather than to the head can pass inspection at 91% uniformity and be at 62% eighteen months later — visibly identical, silently useless at the far end of the block, and never checked again. The farmer sees uneven growth and blames his soil. So this business **MEASURES AND PUBLISHES DISTRIBUTION UNIFORMITY AT COMMISSIONING AND AGAIN AT 12 AND 24 MONTHS, WARRANTS A MINIMUM 85% AT 24 MONTHS AND RECTIFIES SHORTFALLS AT ITS OWN COST (₹1.12 crore in Year 3), AND TIES 15% OF EVERY CONTRACT'S VALUE TO THE MEASURED FIGURE** rather than to the sanction. **WHERE PAYMENT IS TRIGGERED BY A SANCTION RATHER THAN BY PERFORMANCE, THE ONLY HONEST STRUCTURE IS TO MEASURE PERFORMANCE AND PUT MONEY ON IT.**

□ **AND THE SUBSIDY CLAIM IS RECONCILED IN PUBLIC**, component by component. Per the vertical anchor's rule that a documentation-based claim must be defended with a published reconciliation, every installation's claim file is published against what was physically installed — pipe class and length, emitter type and count, filter capacity, valves and fittings, make by make. Where the two differ the difference is refunded to the scheme, and ₹22 lakh was refunded in Year 3. The gap between the sanctioned package and the delivered system is the single largest quiet margin in this industry, and closing it is expensive.

□ **AND THE SYSTEM IS DESIGNED TO THE SOIL AND THE WATER, NOT TO THE SCHEME'S STANDARD PACKAGE.** Emitter discharge, spacing and run length follow from infiltration rate, and filtration follows from what is actually in the water — iron, hardness, algae, sand. A standard package installed on a heavy clay or on high-iron borewell water is a system designed to fail slowly, and ₹2.40 crore of Year-3 revenue was declined where the scheme's package would not work on that field.

This plan models an operator requiring **₹5.80 crore** (₹2.20 crore investor + ₹1.80 crore working-capital facility + ₹1.10 crore promoter + ₹70 lakh term loan), moving from **₹14.00 crore revenue and a ₹78 lakh loss** to **₹64.00 crore revenue and ₹5.12 crore profit** by Year 3 — an 8.0% net margin, 39.4% return on capital, and 7,730 acres brought under micro-irrigation. (Micro-irrigation — figures illustrative.)

2. Business Description, Vision & Legal Structure

Concept: An irrigation company paid on how evenly the water lands.

Vision: To be the installer whose systems are still uniform in year three, and who can prove it.

Mission: Design from the water analysis and the infiltration rate; state every component by make on the handover; measure uniformity at commissioning and again at 12 and 24 months; warrant 85% and fix shortfalls at our cost; tie payment to the measurement; publish the subsidy reconciliation; and contract the flushing rather than advising it.

Legal structure

- **Private Limited** — recommended. Empanelment with state micro-irrigation agencies, principal dealerships, performance warranties and outside capital all assume it.
- **Proprietorship or partnership** — the trade's common form, and the reason a two-year performance warranty is rarely offered and almost never honoured.
- **A commissioning and audit function outside the installation line**, reporting to the promoter — **because the uniformity measurement that releases the final payment cannot be taken by the crew whose payment it releases.**

Regulatory anchor: a business whose revenue depends on a government scheme and whose product quality is governed by standards nobody enforces after handover. **Micro-irrigation is delivered largely under the Per Drop More Crop component of PMKSY and equivalent state schemes, with empanelment of suppliers, approved cost norms per hectare by system type, farmer contribution and a subsidy released against inspection and commissioning — which makes the sanction and the inspection the two events the whole industry is organised around. Components must carry BIS specifications and ISI marking for pipes, emitters and fittings, and the practical abuse is a compliant specification quoted in the file with a lower class or unmarked component installed in the field, since neither the farmer nor a one-day inspection can distinguish them. The performance obligation is contractual rather than statutory: no scheme requires a distribution-uniformity guarantee at 24 months, so offering one is a voluntary act that becomes enforceable only because it is written into the contract — which is precisely why the trade does not write it.** Then: groundwater extraction permissions where applicable; electrical and solar pump approvals and net-metering; GST including works-contract treatment; consumer-protection exposure on performance representations; and EPF/ESI, POSH and working-at-height and electrical safety for installation crews.

3. Promoter & Ownership

Led by a promoter with irrigation engineering, agri-equipment or rural project background. Three competences decide outcomes. *Hydraulic design judgement*, because the difference between a system that stays uniform and one that degrades is decided at design — pressure compensation, run length, filtration sizing and flushing provision — and it is invisible to everybody including the buyer. *Installation-crew management*, since a good design is destroyed by careless laying, unglued joints and buried laterals, and crews are paid by the acre. And *scheme literacy without scheme dependence*, because a business that can only sell what the subsidy sanctions has handed its product specification to a form. Ownership, equity & investor terms are editable inputs; **the commissioning audit reports to the promoter, and no installation crew or sales role may record its own uniformity measurement.**

4. Market Analysis — India

Micro-irrigation has enormous policy momentum and a poor field record, and the gap between the two is the opportunity.

Demand drivers

- **PMKSY Per Drop More Crop and state schemes** funding a large share of system cost.
- **Groundwater depletion** making water efficiency an economic necessity rather than a preference.
- **Horticulture expansion**, where drip and fertigation raise yield and quality measurably.
- **Labour scarcity** making flood irrigation increasingly impractical.
- **Solar pumping schemes** pairing naturally with low-flow micro-irrigation.
- **Replacement demand** from the first generation of systems installed a decade ago, most of which failed early.

Market sizing (illustrative framing)

Layer	Definition	Indicative scale
TAM	Irrigable area suitable for micro-irrigation in served states	Very large; penetration still low
SAM	Fields where a properly designed system will hold uniformity	Bounded by WATER QUALITY and SOIL, not by scheme sanction
SOM (Yr 1-3)	Acres installed and serviced	₹14cr → ₹64cr; 1,750 → 7,730 acres

Revenue mix and share (Year 3)

Stream	Share of revenue	Why it is there
Drip supply & installation — orchards and field crops	45.0%	Core; where uniformity is won or lost
Sprinkler, rain-gun & micro-sprinkler	20.0%	Field crops; lower value per acre
Filtration, fertigation & automation	12.0%	Filtration is what keeps uniformity alive
Pumps, solar pumping & conveyance	10.0%	Head and flow must match the design
Annual maintenance, flushing & chemical treatment	9.0%	The real business; hardware is the entry ticket
Design, water/soil testing, DU audits & documentation	4.0%	Selling the measurement

The last two rows are 13% of revenue and roughly 31% of gross profit, and they are the strategic core of this business rather than an aftermarket afterthought. A drip system is a consumable disguised as an asset: emitters clog, filters foul, laterals silt and chemistry deposits, and a system that is not flushed and acid- or chlorine-treated on schedule loses uniformity within two seasons regardless of how well it was installed. The industry's settled position is to hand the farmer a maintenance leaflet, which is a way of transferring an operating requirement to a party who has no equipment, no chemistry and no reason to believe it matters. Here it is a contracted service with an attach rate of 68%.

Constraints

- **Scheme disbursement timing**, which determines working capital more than any commercial factor.
- **Water quality**, which bounds where a system can honestly be installed.

- **Installation crew skill**, which is scarce and destroys good designs when it is absent.
- **Seasonality**, with installation concentrated between crop cycles.

5. Competition & Position

Competitor type	Strength	Weakness this plan exploits
Large micro-irrigation manufacturers	Brand, empanelment, dealer network, financing	Paid on sanction; service ends at commissioning
Local installers and dealer-installers	Low cost, fast, scheme paperwork expertise	Standard package regardless of soil; no measurement, no warranty
Turnkey agri-project contractors	Scale on large estates, integrated works	Little interest in smallholdings or long-term service
Government and cooperative supply channels	Price, official access, scheme integration	No design differentiation; no post-installation accountability
This plan	Uniformity measured and warranted to 24 months, payment tied to it, subsidy reconciliation published	Costs more; declines fields where the package will not work

The positioning is a direct attack on the industry's structural weakness, which is that its product is judged on the day it is easiest to pass. Every competitor's system performs well at commissioning; almost none is measured afterward, so no supplier has ever had to compete on durability. Offering a measured 85% uniformity at 24 months creates the comparison that has never existed, and it is defensible because a competitor cannot match it without redesigning how he specifies, installs and services — three years of change rather than a price response. Orchard and export-linked growers move first, because uneven water shows up in fruit size and grade, which they are paid on.

The cost of the honest position is stated in rupees rather than implied. Rectifying installations that fell below the warranted uniformity cost ₹1.12 crore in Year 3, borne here rather than argued about. Declining fields where the scheme's standard package would not hold up on that soil or water forfeited ₹2.40 crore of revenue. Publishing the subsidy reconciliation and refunding differences cost ₹22 lakh directly and an estimated ₹68 lakh of the package margin the industry ordinarily keeps. Tying 15% of contract value to a 12-month measurement defers ₹1.86 crore of cash into the following year, which on a working-capital-constrained business is a real cost rather than a timing note. Against that: an AMC attach rate of 68% against a trade norm near zero, referral-led sales at 61% of new acres, and 88% of Year-1 installations still above warranted uniformity at 24 months.

6. Paid on the Sanction, Judged on Nothing

This section describes the mechanism, because every commitment in the plan follows from it.

Event	Who is paid	What is verified
Scheme sanction issued	Nobody yet, but the deal is now certain	That the paperwork is correct
System installed	Installer, on completion	That components appear present

Inspection & commissioning	Subsidy released	That it runs on the day. Not how evenly
Season 1	—	Nothing
Season 3 — emitters clogging	—	Nothing. The farmer blames his soil

Read the right-hand column: the last verification of any kind happens on the day the money is released, and it verifies presence rather than performance. Distribution uniformity — whether the plant at the end of the lateral gets what the plant at the valve gets — is never measured at commissioning and never measured afterwards, so a system at 91% and a system at 68% are commercially identical from the day they are switched on. Since uniformity is expensive to design for and cheap to omit, and since nobody will ever know, the industry has converged where such industries always converge. The consequence is a decade of installed systems performing far below their design and a farmer population that quietly concluded drip does not work as promised — the same conclusion the bio-inputs plan traced in a different category, reached by the same route.

So a measurement is inserted where none existed and money is attached to it. Distribution uniformity is measured at commissioning by a function that does not report to the installation crew, and again at 12 and 24 months; 85% at 24 months is WARRANTED, shortfalls are RECTIFIED AT THIS COMPANY'S COST — 124 installations and ₹1.12 crore in Year 3 — and 15% OF EVERY CONTRACT'S VALUE IS RELEASED AGAINST THE 12-MONTH MEASUREMENT rather than against the sanction. The last of those is the one that changes behaviour, because a commitment that costs nothing until a claim is made is a promise, whereas a payment withheld against a measurement is an incentive. WHERE PAYMENT IS TRIGGERED BY A SANCTION RATHER THAN BY PERFORMANCE, THE ONLY HONEST STRUCTURE IS TO MEASURE PERFORMANCE AND PUT MONEY ON IT.

7. The Reconciliation, the Design and the Flushing

Three further commitments, each closing a gap the scheme leaves open.

□ THE SUBSIDY CLAIM IS RECONCILED IN PUBLIC, COMPONENT BY COMPONENT. The anchor's rule is that a documentation-based claim must be defended with a published reconciliation, and micro-irrigation is almost entirely a documentation-based claim: cost norms per hectare, an approved package, an inspection and a release. The gap between what the file says and what is in the ground — a lower pipe class, fewer emitters, a smaller filter, unmarked fittings — is the industry's largest quiet margin, and it is invisible because a one-day inspection cannot dig up a lateral. So every installation's claim file is published against the physical bill of materials, make by make, the difference is refunded to the scheme where one exists, and ₹22 lakh was refunded in Year 3. Every component is stated by make and BIS/ISI status on the handover document, which is what makes the reconciliation checkable rather than merely asserted.

□ THE SYSTEM IS DESIGNED TO THE SOIL AND THE WATER, NOT TO THE SCHEME'S PACKAGE. Emitter discharge, spacing and lateral run follow from the soil's infiltration rate and the crop's root zone; filtration follows from what the water actually contains — iron, hardness, algae, suspended sand — and a screen filter on high-iron borewell water is a system that will clog no matter how well it is laid. So no design is issued without a WATER ANALYSIS AND A SOIL INFILTRATION TEST, and where the scheme's standard package will not hold up on that field, the work is DECLINED rather than delivered to specification: ₹2.40 crore of Year-3 revenue. This is the vertical's recurring discipline — refusing the sale the diagnosis does not support — applied to an engineering decision instead of an agronomic one.

□ **THE FLUSHING IS CONTRACTED, NOT ADVISED.** A drip system is a consumable disguised as an asset: emitters clog with precipitates and biofilm, filters foul, and laterals silt, so uniformity decays within two seasons unless the system is flushed on schedule and acid- or chlorine-treated as its water chemistry requires. The trade hands the farmer a maintenance leaflet — a transfer of an operating requirement to a party with no pump-side chemistry, no dosing equipment and no reason to believe it matters, which per the crop-protection plan's rule is a liability transfer dressed as an instruction. Here it is a priced annual contract performed by this company's crews with the treatment recorded, at a 68% attach rate — and it is also the commercial answer to a hardware business with a 32% gross margin.

□ **AND THE MEASUREMENT IS NOT TAKEN BY THE PEOPLE IT PAYS.** Uniformity is measured by a commissioning and audit function reporting to the promoter, never by the installation crew whose completion payment it releases nor by the salesperson whose contract it closes. Control-independence has appeared in every plan in this vertical; here it is unusually literal, because a uniformity test is a set of catch-can readings that an interested party can influence in a dozen undetectable ways.

8. Operations Plan (test, design, install, commission, measure, service)

Assessment and design

- **Water analysis and soil infiltration test before any design**, with the results given to the farmer.
- **Design to the field** — emitter discharge, spacing, run length, pressure compensation and filtration derived from the tests.
- **Work declined where the scheme package will not hold up** on that soil or water, with the reason recorded.
- **Hydraulic calculations and expected uniformity stated in the proposal**, so the commitment exists before the sale.

Supply and installation

- **Every component stated by make and BIS/ISI status** on the quotation and the handover document.
- **Installation to the design**, with lateral depth, joint and anchoring standards checked before backfill.
- **Crew paid on installations that pass commissioning uniformity**, not on acres laid.
- **Photographic and measured as-built record** retained against the claim file.

Commissioning and measurement

- **Distribution uniformity measured at commissioning** by the audit function, not by the crew.
- **Re-measured at 12 and 24 months**, with results given to the farmer and published in aggregate.
- **85% at 24 months warranted**, with shortfalls rectified at this company's cost.
- **15% of contract value released against the 12-month measurement.**

Service and the subsidy file

- **Annual maintenance contract** covering scheduled flushing, filter service and acid or chlorine treatment to the water's chemistry.
- **Treatment recorded per system**, so a uniformity claim can be assessed against what was actually done.
- **Claim file published against the physical bill of materials**, component by component.
- **Differences refunded to the scheme** where the claim exceeded what was installed.

The operational hinge is the installation crew at the end of a long day with two hundred metres of lateral still to lay and a joint that is not quite seated. It will hold pressure today, it will pass the inspection, it will fail in eight months, and nobody will ever connect the two events — which is precisely why crews everywhere in this industry are paid by the acre. So payment here follows commissioning uniformity rather than acres laid, joints and lateral depth are checked before backfill by somebody who is not on the crew, and the 12- and 24-month measurements exist to make the eight-month failure visible to the people who caused it.

9. Scheme, Standards & Operating Compliance (India)

- **Company & tax** — Private Limited, PAN/TAN, GST including works-contract treatment, trade licence, godown registration.
- **Scheme framework** — PMKSY Per Drop More Crop and state micro-irrigation schemes: supplier empanelment, approved cost norms per hectare by system type, farmer contribution, and subsidy released against inspection and commissioning — **which makes the sanction and the inspection the two events the entire industry is organised around.**
- **Component standards** — BIS specifications and ISI marking for pipes, emitters and fittings; **the practical abuse is a compliant specification in the file with a lower class or unmarked component in the ground, since neither the farmer nor a one-day inspection can distinguish them — which is why every component is stated by make and marking status on the handover.**
- **Performance obligation** — **no scheme requires a distribution-uniformity guarantee at 24 months, so offering one is voluntary and becomes enforceable only because it is written into the contract, which is exactly why the trade does not write it.**
- **Water & power** — groundwater extraction permissions where applicable; electrical and solar pump approvals, net-metering and safety clearances.
- **Consumer protection** — performance representations made in the proposal are enforceable representations, which is the intended effect.
- **Workforce** — EPF/ESI, POSH, and electrical and trench safety training for installation crews.

10. Organisation & Manpower Plan

Function	Yr 1	Yr 3	Notes
Promoter / managing director	1	1	Owens the warranty and the audit function
Design & hydraulics	4	12	No design without water and infiltration tests
Installation crews & supervision	36	124	Paid on commissioning uniformity, not acres
Commissioning & DU audit	3	9	Reports to promoter; never to crew or sales
Service, flushing & chemical treatment	6	28	Contracted, not advised; 68% attach rate
Water & soil testing laboratory	2	6	Results given to the farmer
Sales, scheme documentation & reconciliation	7	22	Claim file published against the bill of materials
Stores, logistics, finance & admin	6	18	Component make and marking recorded
Total	65	220	Service function grows fastest — it is the business

The service function grows from 6 to 28 while installation grows three and a half times, and that ratio is the strategy. A micro-irrigation business that measures its systems at 24 months discovers immediately that installation quality and maintenance discipline determine everything, and that the second is the one it can keep selling. The commissioning audit at nine people is small, expensive relative to what it produces, and reports to nobody who benefits from a good reading — which is the only arrangement under which its readings mean anything.

11. Implementation Timeline & Milestones

Phase	Window	Milestones
Formation & empanelment	Month 0-6	Incorporation, state empanelment, principal tie-ups, first crews
Design & testing capability	Month 2-8	Water and soil laboratory, hydraulic design standards, proposal format
DU measurement programme	Month 5-12	Audit function, catch-can protocol, commissioning measurement live
Warranty & payment linkage	Month 9-16	85% at 24 months warranted; 15% of value tied to the 12-month reading
Service business	Month 12-24	AMC product, flushing crews, chemical treatment to water chemistry
Scale & reconciliation	Month 22-36	7,730 acres; claim files published; first 24-month cohort results

Training and competence

- **Hydraulic design** including when to tell a farmer the scheme package will not work on his field.
- **Installation craft** — joints, lateral depth, anchoring and flushing provision, with pre-backfill checks.
- **Catch-can uniformity measurement** to a documented protocol, with audit-function independence understood.
- **Water chemistry and treatment** for the service crews — acid versus chlorine, dosing and frequency.

12. Financial Plan (Illustrative)

All figures are illustrative model assumptions, not forecasts or guarantees. They exist to show the drivers of a micro-irrigation P&L and how measurement, warranty and service disciplines move them. Every input is editable. **The defining economics are that hardware carries a thin margin and is financed by a scheme that pays late, while service carries a high margin and recurs — so the working-capital cycle and the AMC attach rate, not the equipment price, determine whether this business works.**

12.1 Project cost & funding

Item	₹ lakh	Notes
Stores, yard & depot infrastructure	96	Pipe and component storage across territories
Installation fleet, trenching & tooling	148	Crew equipment; the largest fixed asset
Service fleet, flushing & dosing equipment	84	The AMC cannot be delivered by advice
Water & soil testing laboratory	42	No design is issued without it
DU audit equipment & measurement systems	28	Catch-can kits, pressure logging, records

Design software, ERP & claim reconciliation systems	36	Claim file against physical bill of materials
Opening component inventory	104	Seasonal; balance funded by the WC facility
Working capital & contingency	42	Scheme receivables are the real requirement
Total project cost	580	₹220L investor + ₹180L WC facility + ₹110L promoter + ₹70L term loan

12.2 Operating metrics

Metric	Yr 1	Yr 2	Yr 3
Distribution uniformity MEASURED and reported at commissioning / at 12 months / at 24 months (% of installations)	100% / 100% / n/a	100% / 100% / 100%	100% / 100% / 100%
Mean measured DU at commissioning / mean DU at 24 months / installations below the warranted 85% RECTIFIED AT OUR COST	91% / n/a / 46	92% / 84% / 88	93% / 88% / 124
Share of contract value released against the 12-month DU measurement / payment claimed on sanction alone / DU measured by the installing crew	15% / NIL / NIL	15% / NIL / NIL	15% / NIL / NIL
Subsidy claim files PUBLISHED against the physical bill of materials, component by component / differences refunded to the scheme (₹L) / components stated by make and BIS/ISI status on handover	100% / 8 / 100%	100% / 14 / 100%	100% / 22 / 100%
Designs preceded by a water analysis AND soil infiltration test / fields DECLINED where the scheme package would not hold (₹cr of revenue) / systems designed to the standard package regardless of soil	100% / ₹0.62cr / NIL	100% / ₹1.34cr / NIL	100% / ₹2.40cr / NIL
Acres installed / revenue per acre / AMC attach rate / referral-led share of new acres	1,750 / ₹71,400 / 34% / n/a	4,030 / ₹71,700 / 51% / 44%	7,730 / ₹72,000 / 68% / 61%

Row two is the row that makes this business different from every competitor, and the figure that matters is the second one: mean uniformity of 88% at 24 months, against a commissioning reading of 93%. No comparable number exists anywhere in the industry, because nobody returns to take it. Its third figure must not read zero — 124 installations fell below the warranted 85% and were rectified at this company's cost, and a warranty programme reporting no rectifications would mean the measurement had stopped being honest, per the library's rule that a gate with no rejections is not a gate. Row six's revenue per acre of ₹72,000 is a blended figure and is stated with its underlying per the library's rule — orchard drip with fertigation ₹1,04,000, field-crop drip ₹58,000, sprinkler and rain-gun ₹31,000 — since the blend moves with segment mix rather than with price.

12.3 Revenue build

Stream	Yr 1 (₹L)	Yr 2 (₹L)	Yr 3 (₹L)	Driver
Drip supply & installation	680	1,520	2,880	Core; orchard and field-crop acres
Sprinkler, rain-gun & micro-sprinkler	280	660	1,280	Field crops; ₹31,000 per acre

Filtration, fertigation & automation	150	380	768	Filtration sized to the water analysis
Pumps, solar pumping & conveyance	140	330	640	Head and flow matched to design
Annual maintenance, flushing & chemical treatment	105	280	576	68% attach; recurring and high margin
Design, testing, DU audits & documentation	45	130	256	Selling the measurement
Total revenue	1,400	3,300	6,400	Illustrative

12.4 P&L summary

Line	Yr 1 (₹L)	Yr 2 (₹L)	Yr 3 (₹L)
Revenue	1,400	3,300	6,400
Cost of components & materials	(994)	(2,277)	(4,352)
Gross profit	406	1,023	2,048
Installation crews & field operations	(158)	(268)	(424)
DU measurement & commissioning audit	(40)	(66)	(96)
Service delivery, flushing & treatment	(54)	(102)	(168)
Design, water & soil testing	(36)	(58)	(84)
DU warranty rectification at our cost	(42)	(72)	(112)
Subsidy documentation & reconciliation	(26)	(44)	(62)
Sales & channel	(108)	(178)	(268)
Admin, insurance & other	(84)	(128)	(186)
EBITDA	(142)	107	648
Depreciation & amortisation	(52)	(68)	(84)
Finance cost	(64)	(85)	(118)
Other income — component supplier volume support, scrap recovery & interest on retentions (disclosed)	148	202	236
PBT	(110)	156	682
Tax	32	(39)	(170)
PAT	(78)	117	512
Net margin	(5.6%)	3.5%	8.0%
ROCE	(11.6%)	10.4%	39.4%

Three observations belong in the open rather than in a reader's inference. The measurement, warranty and reconciliation lines total ₹2.70 crore — 13.2% of gross profit — and a competitor carries none of them while also keeping the package margin this plan refunds; his P&L on the same revenue is roughly ₹3.4 crore better,

and his systems are at 68% uniformity in year three. The other-income line is component supplier volume support and is disclosed separately per the library's commission rule, because a supplier rebate that quietly determines which make gets specified is precisely the conflict this vertical keeps finding; here it is reported and it does not enter the design decision, which is made from the water analysis. And finance cost at ₹1.18 crore against ₹5.12 crore of PAT reflects the real structure of the industry: the subsidy is released after the work, so the installer funds the government's share of every system for several months.

12.5 Break-even & sensitivity

Scenario	Yr 3 revenue	Yr 3 PAT	Comment
Base	₹64.0cr	₹5.12cr	As modelled
No DU measurement, warranty or reconciliation	₹66.4cr	₹8.54cr	The industry's economics, stated
AMC attach 68% → 30%	₹60.8cr	₹3.06cr	The service line is the business
Scheme disbursement slips by 90 days	₹64.0cr	₹3.88cr	Finance cost; the sector's chronic condition
Scheme norms cut or a state pauses the programme	₹41.6cr	₹42L	Policy concentration, stated plainly
DU rectification cost doubles	₹64.0cr	₹4.28cr	The warranty's downside, bounded

13. Funding Requirement & Bankability

Source	₹ lakh	Terms (indicative)
Investor equity	220	Growth capital; DU and AMC covenants
Working-capital facility	180	Scheme receivables and component inventory
Promoter contribution	110	Cash and equipment
Term loan	70	Fleet and service equipment; 5 years
Total	580	Illustrative structure

A lender should read this as a scheme-receivable business with a growing annuity attached, and should underwrite two numbers. The first is the AMC attach rate, because a 68% attach on an installed base that compounds is the only part of this business that is not exposed to next year's policy decision — and at 30% the model halves. The second is the 24-month uniformity figure, which is the leading indicator of everything: if it falls, rectification cost rises, referrals stop, and the AMC book that depends on the customer believing the service works goes with it. The dominant risk is policy concentration — a state pausing its programme takes Year-3 profit from ₹5.12 crore to ₹42 lakh — followed by disbursement timing, which is a chronic rather than an occasional condition of this sector.

- **Use of funds** — 26% installation fleet and tooling, 18% component inventory, 17% stores and depots, 14% service fleet and dosing equipment, 7% testing laboratory, 6% design and reconciliation systems, 5% DU audit equipment, balance working capital.
- **Repayment** — term loan from Year 2–3 cash flow; working-capital facility revolving against scheme receivables with drawing power tested on age rather than value alone.
- **Investor exit** — strategic sale to a micro-irrigation manufacturer integrating installation and service, an agri-services platform, or a water-infrastructure group; or promoter buyback.

14. Risk Analysis & Mitigation

Risk	Impact	Mitigation
Paid on the sanction, judged on nothing	The purchase is shaped by what the scheme reimburses, the installer is paid when the sanction clears, and the last verification of any kind happens on the day the money is released — and it verifies presence, not performance. Distribution uniformity is never measured, so a system at 91% and one at 68% are commercially identical from the day they are switched on; since uniformity is expensive to design for, cheap to omit and invisible forever, the industry converged where such industries always converge, and a generation of farmers quietly concluded drip does not work as promised	MEASURE DISTRIBUTION UNIFORMITY AT COMMISSIONING AND AGAIN AT 12 AND 24 MONTHS, report it to the farmer and publish it in aggregate; WARRANT 85% AT 24 MONTHS and RECTIFY SHORTFALLS AT OUR COST — 124 installations and ₹1.12 crore in Year 3; and RELEASE 15% OF EVERY CONTRACT'S VALUE AGAINST THE 12-MONTH MEASUREMENT rather than the sanction, because a commitment costing nothing until a claim is made is a promise, while a payment withheld against a measurement is an incentive. WHERE PAYMENT IS TRIGGERED BY A SANCTION RATHER THAN BY PERFORMANCE, MEASURE PERFORMANCE AND PUT MONEY ON IT
The measurement taken by the party it pays	A uniformity test is a set of catch-can readings that an interested party can influence in a dozen undetectable ways — and in every competitor the reading, where taken at all, belongs to the crew whose completion payment or the salesperson whose contract it releases	Uniformity measured by a COMMISSIONING AND AUDIT FUNCTION REPORTING TO THE PROMOTER, never by the installing crew and never by sales; a documented catch-can protocol with pressure logging; and crew payment tied to installations that PASS commissioning uniformity rather than to acres laid — so the crew's incentive points at the same outcome the measurement records
The file and the ground differ	Micro-irrigation is almost entirely a documentation-based claim — cost norms, an approved package, an inspection, a release — and the gap between the specified pipe class, emitter count, filter capacity and fittings and what is actually buried is the industry's largest quiet margin, invisible because a one-day inspection cannot dig up a lateral	Every claim file PUBLISHED AGAINST THE PHYSICAL BILL OF MATERIALS, component by component and make by make, per the vertical anchor's published-reconciliation rule; every component stated by MAKE AND BIS/ISI STATUS on the handover document, which is what makes the reconciliation checkable rather than asserted; differences REFUNDED TO THE SCHEME — ₹22 lakh in Year 3 — plus an estimated ₹68 lakh of package margin forgone
Designed to the scheme, not to the field	Emitter discharge, spacing and lateral run follow from soil infiltration and root zone, and filtration follows from what the water contains — a screen filter on high-iron borewell water will clog however well the system is laid, and a standard package on heavy clay is a system designed to fail slowly	NO DESIGN ISSUED WITHOUT A WATER ANALYSIS AND A SOIL INFILTRATION TEST, with results given to the farmer; hydraulic calculations and expected uniformity STATED IN THE PROPOSAL so the commitment predates the sale; and the work DECLINED where the scheme's package will not hold on that field — ₹2.40 crore of Year-3 revenue refused, with the reason recorded. This is the vertical's refuse-the-unsupported-sale discipline applied to an engineering decision

The maintenance leaflet as a liability transfer	A drip system is a consumable disguised as an asset — emitters clog with precipitates and biofilm, filters foul, laterals silt — and uniformity decays within two seasons unless flushed and acid- or chlorine-treated to its water chemistry. Handing the farmer a leaflet transfers an operating requirement to a party with no dosing equipment, no chemistry and no reason to believe it matters	FLUSHING AND TREATMENT CONTRACTED, NOT ADVISED: a priced annual maintenance contract performed by this company's crews, with treatment RECORDED PER SYSTEM so a uniformity claim can be assessed against what was actually done; 68% attach rate against a trade norm near zero; and the service line at 9% of revenue and a third of gross profit is also the commercial answer to a 32% hardware margin
The joint that is not quite seated	At the end of a long day with 200 metres of lateral still to lay, a joint that holds pressure today will pass inspection and fail in eight months, and nobody will ever connect the two events — which is exactly why crews across this industry are paid by the acre	Crew payment follows COMMISSIONING UNIFORMITY rather than acres laid; joints, lateral depth and anchoring CHECKED BEFORE BACKFILL by somebody not on the crew; photographic and measured as-built records retained against the claim file; and the 12- and 24-month measurements exist precisely to make the eight-month failure visible to the people who caused it
Policy concentration and scheme disbursement	A state pausing its programme takes Year-3 profit from ₹5.12cr to ₹42 lakh; a 90-day disbursement slip takes it to ₹3.88cr, and the installer funds the government's share of every system in the meantime	Operating across more than one state and scheme so a single policy decision does not carry the book; a growing AMC annuity (9% of revenue, compounding on the installed base) that is not exposed to next year's sanction; non-scheme private and estate work developed deliberately; and working-capital drawing power tested on receivable AGE rather than value alone
Installation crew skill and scarcity	A good design is destroyed by careless laying, and skilled crews are scarce in the short installation season	Crews retained across seasons through the service business rather than hired and released, so skill accumulates; pre-backfill inspection catching the errors that surface later; commissioning-linked payment aligning crew incentive with durability; and design standards that reduce the number of field judgements a crew must make

15. SWOT Analysis

Strengths • Uniformity measured at commissioning, 12 and 24 months • 85% warranted at 24 months; 124 rectifications at our cost • 15% of contract value tied to the measurement, not the sanction • Subsidy claim published against the physical bill of materials • Flushing contracted, not advised — 68% attach rate	Weaknesses • Costs more than a standard-package installer • Declines fields where the package will not hold • Working capital hostage to scheme disbursement • Payment deferral of ₹1.86cr into the following year
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Opportunities	Threats
• Replacement demand from a decade of systems that failed early • Orchard and export growers paid on fruit size and grade • Solar pumping paired with low-flow micro-irrigation • A compounding AMC annuity on the installed base • Selling DU audits on other suppliers' systems	• A state pausing or cutting its scheme • Disbursement delays lengthening further • Competitors pricing against an unmeasured product • Skilled installation labour scarcity in the season

16. Recommended AiSevak Tools for This Business

- **Distribution uniformity register** — commissioning, 12-month and 24-month readings by installation, with rectification outcomes.
- **Design gate** — no design released without a water analysis and soil infiltration result on file.
- **Claim reconciliation** — subsidy file against the physical bill of materials, component and make by make.
- **Component & marking record** — make and BIS/ISI status stated on quotation and handover.
- **AMC scheduler & treatment log** — flushing and chemical treatment recorded per system.
- **Crew payment on commissioning uniformity** — acres laid tracked separately from acres passed.
- **Revenue and contribution per acre dashboard** — by segment, never blended alone.

17. Key Assumptions & Notes

- **All financials are illustrative model assumptions, not forecasts, projections or guarantees.** Revenue, acres, revenue per acre, uniformity readings, rectification counts, attach rates and headcount are editable inputs; actual outcomes depend on scheme policy, disbursement timing, water quality and crew skill. Figures are in Indian rupees.
- **The central integrity finding is that micro-irrigation in India is sold to a subsidy scheme rather than to a farmer.** The purchase is shaped by what the scheme will reimburse, the installer is paid when the sanction clears, and the file closes at commissioning — so the last verification of any kind happens on the day the money is released, and it verifies presence rather than performance. **Distribution uniformity — whether the plant at the end of the lateral receives what the plant at the valve receives — is never measured at commissioning and never measured afterwards, so a system at 91% and a system at 68% are commercially identical from the day they are switched on. Since uniformity is expensive to design for, cheap to omit and invisible forever, the industry converged where such industries always converge: a decade of installed systems performing far below design, and a farmer population that quietly concluded drip does not work as promised — the same conclusion the bio-inputs plan traced in another category, reached by the same route.**
- **So a measurement is inserted where none existed and money is attached to it.** Uniformity is measured at commissioning by an audit function that reports to the promoter and never to the crew or to sales, and again at 12 and 24 months, with results given to the farmer and published in aggregate; 85% at 24 months is warranted and shortfalls are rectified at this company's cost — 124 installations and ₹1.12 crore in Year 3 — and 15% of every contract's value is released against the 12-month reading rather than against the sanction. **That last commitment is the one that changes behaviour, because a promise that costs nothing until a claim is made is a promise, whereas a payment withheld against a measurement is an incentive. WHERE PAYMENT IS TRIGGERED BY A SANCTION RATHER THAN BY PERFORMANCE, THE ONLY HONEST STRUCTURE IS TO MEASURE PERFORMANCE AND PUT MONEY ON IT. Mean uniformity of 88% at 24 months against 93% at commissioning is a number that exists nowhere else in the industry, because nobody returns to take it.**

- **The subsidy claim is reconciled in public, component by component.** Micro-irrigation is almost entirely a documentation-based claim — cost norms per hectare, an approved package, an inspection, a release — and per the vertical anchor's rule such a claim must be defended with a published reconciliation. **The gap between the specified pipe class, emitter count, filter capacity and fittings and what is actually buried is the industry's largest quiet margin, invisible because a one-day inspection cannot dig up a lateral. So every claim file is published against the physical bill of materials, make by make; every component is stated by make and BIS/ISI status on the handover, which is what makes the reconciliation checkable rather than asserted; and differences are refunded to the scheme — ₹22 lakh in Year 3, plus an estimated ₹68 lakh of package margin forgone.**
- **The system is designed to the soil and the water rather than to the scheme's package.** Emitter discharge, spacing and lateral run follow from infiltration rate and root zone; filtration follows from what the water actually contains, and a screen filter on high-iron borewell water will clog however well the system is laid. **No design is issued without a water analysis and a soil infiltration test, hydraulic calculations and expected uniformity are stated in the proposal so the commitment predates the sale, and ₹2.40 crore of Year-3 revenue was declined where the standard package would not hold on that field — the vertical's refuse-the-unsupported-sale discipline applied to an engineering decision rather than an agronomic one.**
- **The flushing is contracted rather than advised.** A drip system is a consumable disguised as an asset: emitters clog with precipitates and biofilm, filters foul, laterals silt, and uniformity decays within two seasons unless the system is flushed on schedule and acid- or chlorine-treated to its water chemistry. **Handing the farmer a maintenance leaflet transfers an operating requirement to a party with no dosing equipment, no chemistry and no reason to believe it matters — which per the crop-protection plan's rule is a liability transfer dressed as an instruction. Here it is a priced annual contract performed by this company's crews with the treatment recorded per system, at a 68% attach rate against a trade norm near zero; and at 9% of revenue and roughly a third of gross profit it is also the commercial answer to a 32% hardware margin.**
- **The economics are honest about what the discipline costs and where the exposure sits.** Measurement, warranty and reconciliation total ₹2.70 crore — 13.2% of gross profit — and a competitor carrying none of them while keeping the package margin this plan refunds earns roughly ₹3.4 crore more on the same revenue, with systems at 68% uniformity in year three. **Component supplier volume support is disclosed separately per the library's commission rule, because a rebate that quietly decides which make gets specified is exactly the conflict this vertical keeps finding — here it is reported and it does not enter the design decision, which is made from the water analysis. Finance cost of ₹1.18 crore reflects the industry's real structure: the subsidy is released after the work, so the installer funds the government's share of every system for months.** The blended revenue per acre of ₹72,000 carries its underlying figures — orchard drip with fertigation ₹1,04,000, field-crop drip ₹58,000, sprinkler and rain-gun ₹31,000.
- **Compliance sits inside a scheme framework that does not require the commitment this plan makes.** PMKSY Per Drop More Crop and state schemes govern empanelment, cost norms per hectare, farmer contribution and release against inspection; BIS specifications and ISI marking govern pipes, emitters and fittings, where the practical abuse is a compliant specification in the file and a lower class in the ground. **No scheme requires a distribution-uniformity guarantee at 24 months, so offering one is voluntary and becomes enforceable only because it is written into the contract — which is precisely why the trade does not write it, and precisely why writing it is the position.** Then groundwater extraction permissions; electrical and solar pump approvals and net-metering; GST including works-contract treatment; consumer-protection exposure on performance representations made in the proposal; and EPF/ESI, POSH and electrical and trench safety for crews. Professional advice should be taken on empanelment terms, warranty drafting, payment-linkage clauses and works-contract taxation.

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