I N T E G R A T E D

W A T E R

CONSERVATION

AND

DISTRIBUTION

PROJECT

(For our Mother Planet)

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1. PREFACE TO THE CONCEPT OF INTEGRATED WATER CONSERVATION AND DISTRIBUTION PROJECT (IWCD PROJECT)

The presentation of this Project Report (Concept) is Integrated Water Conservation and Distribution Project (IWCDP), a novel concept on large scale ground water, river water and rain water harvest. This concept has multiple effects- solution on drinking water, irrigation water and flood control to name a few.

This concept of Earth and Water Management is written and designed with vision not only to inter-connect all phases of IWCD projects nationwide, but also to transfer and equalize water from excess zones to scarcity zones. My concept would also allow our mother Earth to swallow her share of water, allow rivers to have its natural course of water-flow without hurting anything and in that process we take our share as well. Yes, in systematic ways. IWCD Project concept is extra-ordinary and massive but it is cost effective result oriented in a few years' time and beneficial to all in many respects.

As the collection, storage and transfer facilities are fully guaranteed, IWCD Project concept needs only simple study on project locations. However, laying pipelines for inter-state transfers would require surveys. Water Resources Ministries and all Departments concerned need to decide exact spots from recommended areas of these prestigious projects in order to inter-link and constitute Central Pool of Water Supply System. A separate body preferably Directorate of IWCD Projects will have to be formed to run these projects efficiently and profitably.

Realizing the importance of our serious present and future water scarcity and flood losses, I hope that this Project Report(Concept) would be analysed, improved and also hope that the IWCD Projects would have its approval for implementation soon to benefit the common man.

Significantly, these IWCD Projects would turn out to be one of the dignified gifts ever presented by human beings on to our mother Nature's lap to protect her to benefit all of us.

With respect,

K.V.RAJENDRAN
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2. NECESSITY OF IN TEGRATED WATER CONSERVATRION AND DISTRIBUTION (IWCD) PROJECT

Vedic Stories tell and Yoga teaches us that we can live without Food and Water. Barring a few no one in this world – no living beings- can live without it. No replacement too.

Water was the subject of the British in India during World war. River Linking was initiated by them. In a country where intricacies prevailed, topographical exercises are strenuous; in a country where population was less and water shortage was not reported in caption, the British idea was to spread water only for their strategic movement and not for clean water distribution. Why did they drop the idea? Battle tanks were faster than movement on water. The British could not afford troops and logistics movement at 10-15 km per hour 100 years ago! Other reason: non-recoverable huge expenditure. We know that Konkan Rail Route was abandoned by the British and we succeeded in accomplishing the same our own way. We learn a lot out of it. Modernize, utilize but re-creating inland waterways need a deep study. What we need now urgently, is Drinking Water Projects. And that's exactly what the Supreme Court, all citizens and all Governments want.

Clean water is one of the most important necessities of all living beings. Despite India and several countries are gifted with sufficient rain and rivers, we were so far unable to conserve enough water and distribute to majority of our people. We also diverted our technology to tap bore-well's water some of which show non-availability of water. Rains fall but Rivers also get dried up soon.

With major rivers and unevenly distributed rains, all inter-mingled water flowing to the rivers almost go waste to the sea only with little productive utilization of water. Dams and lakes are still not sufficient enough to store abundant river and rain water. We know Dams get dried up for want of water flow. Lakes conserve water level even in summer. But they also do not facilitate in for drinking and irrigation purposes in an unlimited quantity which is a sad reality. We find scarcity of water when we need it and we also suffer flood losses –because we do not have large scale rain water harvest and also river and ground water harvest and also because we do not have the right infrastructure to collect, store and distribute state-wise and nation-wide.

In addition to the uncontrolled/ unwanted population growth, following are other areas that would require huge water consumption:

i) improvement of standard of living of poor people;

ii) demands in large pilgrimage centres, tourist destinations;

iii) growth in industrial and commercial establishments;

iv) increasing demand of domesticated and wild animals; and

v) most importantly, to augment variety of agricultural produces.

Therefore, the time has come imperatively to take necessary long term and permanent steps to conserve water in large scale and distribute to the people year-round.

While we should not frown at rain-water harvest on buildings, or 'save a drop' or other conventional methods of conservation, these exercises are non-economical and inadequate for want of growing enormous supply system of water. In the case of food and water there can not be disparity between minority and majority. Instead of dissipating our wealth and efforts on smaller and unviable projects, we need to come out with a comprehensive, reliable large scale conservation programme covering flood control, irrigation and potable water applying prudence and cost effectiveness. Large scale projects would reduce operating costs, improve efficiency with adequate returns as well. Necessities demand Infrastructures, Infrastructures must be rewarding. Rewards make Governments rich and the economic wheel must move on and on unhindered.

Please note, our trains and other vehicles can reach from North to South i.e., from Kashmir to Kanya kumari and we have laid several hundreds of thousands of kilo-metres of rail and road lanes for this purposes. But we should realise the fact that these vehicles move because of applied power. When water has to move, it needs gravity or force. So the force has to be triggered at some point and at some intervals and it has to be boosted for further move and the water reaches the desired destination anywhere we want. Exactly like Food and Oil Corporations procure, store and distribute their products, why not our gifted National Wealth of water? Yes we can but the method we need to opt has to be different.

If Panama & Suez canals can be made in several kilometres why not our Reservoirs? If these canals can have 100 ft depth why not our Reservoirs? Two are two different issues but our Reservoirs would need much more attention. So, blend farmer's ideas and natural ways with the Engineering techniques!

Hence, I meditatively opted for a comprehensive system that is pragmatic at the same time not prodigal. Call it One solution for multiple water problems or just call **Integrated Water Conservation and Distribution Project**- collecting, storing and supplying clean water nationwide in abundance now targeting minimum of 256 million cubic meters of water for every day's use in India. The Project is designed only to supply clean water but how purified water the Authorities can deliver would be their responsibility. we would need approximately 400 IWCD Projects nationwide.

I have great confidence in our Engineers. Even as the Rajadhani reaches Chennai from Delhi, Water from Rapti River to Tirupati River (Renigunta Project) would also be reaching.

This novel concept would give ample opportunities for all to add their ideas and I am sure Indians would write stunning success story of Water Projects in near future.

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3. COMPARISION ON OTHER SOLUTIONS OF WATER SCARCITY

3.1 BORE-WELLS;

Bore-wells are used to tap deep underground water which has devastating effects of creating dry lands slowly, steadily and surely. Bore-well water contains bad odour, minerals and natural chemicals and therefore it requires extensive purification before it is consumed. Deep underground water is nature's balancing asset on climate control, environment and hence this technique shall not be misused.

3. 2. DESALINATION PLANTS;

These plants require maintenance and the recurring costs are a heavy burden. The Plant needs total change in four to five decades' time. The Plants would be very costly for irrigation. In a country where rainfall is higher this solution is unwanted.

3.3. CONVENTIONAL(WELL) WATER CONSERVATION;

Good and Natural but this can not support large scale water supply. Lakes are also the finest option but we do not have much.

3.4 RIVERS-LINKING:

The objective to de-congest and spread linked-water would create more flood losses through out the nation except in A.P. & T.N. It lacks grand programme of collection, storing and distribution. It lacks recovery and remunerative programmes and would eventually turn out to be a questionable exercise due to paltry benefits comparing the proportion of costs and its bad effects. Attempt on nation-wide linking would be penny-wise pound foolish. A gift for Andhra & Tamil Nadu during June to August and a big slap during October to November. Inter-linking deprives few states to benefit other states. It is impossible to reverse or change if it is put to implementation stage.

3.5. DAMS;

Certain Dams are for about 100 to 125 years. Natures fury can not be withstood and can cause heavy damage/ losses of lives. Dams create heavy pressure on Earth's surface at one point alone and I believe there is long term danger. Even Dams are not eco-friendly. Immediate solution for future problems.

3.6. PRESENT WATER SUPPLY SYSTEM

Many Water Authorities are forced to run non-viable projects and their electric bills pile up. Existing system do not offer adequate returns and has several abandoned projects. Our national wealth is impaired in the name of concession without tapping from the available opportunities.

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3.7 INTEGRATED WATER CONSERVATION AND DISTRIBUTION PROJECT; (CONCEPT)

IWCD Projects are meant mainly for Potable Water Supply and the project offers comprehensive solution for all water related problems. It is safer and ever lasting. IWCD Projects can be completed in shorter period and have guaranteed results. Read Point_4

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4. BENEFITS OF INTEGRATED WATER CONSERVATION AND DISTRIBUTION PROJECT

4.1 Geology, environment, ecology, you name any, the IWCD Projects favour all.

4.2 Rain, river and ground water collection and storage are naturally guaranteed. Flood control takes place on its own. Even if there is no heavy rain fall, a bit reduced yet guaranteed water level is for sure.

4.3 Support to optimum utilization of Dam water for irrigation purpose. No more construction of new Dams.

4.4. Immediate protection to depleting water of deep underground once IWCD Projects are accomplished. No more bore-wells. Refilling of Ponds would pose no problems anymore.

4.5 Nominal maintenance and minimum operational costs on distribution.

4.6 Nationwide availability of clean water. Yes, probably the distribution systems to become the world's largest network of water supply with computer controlled demand and replenishing system.

4.7 Agricultural losses due to overflow of rivers and floods could be brought to zero level and augmenting production of agriculture produces.

4.8 Eroded soil could be collected and re-deposited efficiently. Enormous availability of soil to deposit on arid lands for immediate cultivation and for extensive infrastructure work. World's largest soil collection without side effects. Read Point. 8 – Soil Availability & Allocation.

4.9 Nationwide direct, indirect employment in massive scale. The biggest employment opportunity in the world on the subject of water conservation– both for men and machines.

4.10. Excellent returns of income which would recover all expenditures in a specified time limit. Also, no other conservation programme offers long term returns of extra revenues to run the projects.

4.11. Well ahead of making pre-cautionary or supportive measures on effects of global warming and expected repairs/de-commissioning of Dams.

4.12. No more disputes state-wise, nation-wise. No more public cry on Cola - companies. Even private participation from infra-structure and cola companies on B -O99y- T possible with the design guidance from W.R Ministry for national unification. An ideal concept for Cola companies and companies which require large amount of water consumption. They can engage bottling plants in nearby locations.

4.13 Efface out rivulets to create new land mass and create some rivulets into a perennial one.

4.14 All waste material would (compelled to)be deposited in the concrete dry-very-deep-wells maintained by the waste producers so that river water would hencefoth beome usable confidently.

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IMPORTANT;

Integrated Water Conservation and Distribution Project is a CONCEPT created to suit all states / Nations to pump out average one million cubic meter of water a day (in India)per project. There are possibilities of deletions of some canals and may be increase in size/depth of Reservoirs in scarcity/ excess zones and even the increase of Total area of the Project since water flow in each sector differs and supply of water refers to requirements of population and also, the Project demands lengthy areas as catchments area but no River runs straight. Even Water Authorities of each state has not taken up the Project- costing of this magnitude.

Therefore, a Detailed Project Report (DPR) for each selected- site for IWCD Project and also the length & diameter of pipelines to be laid to local locations for the supply of water, will have to be prepared by the concerned Authorities based on the Concept. This would be essential to arrive at a national average cost and actual cost per project. Though in India, a minimum of 256 IWCD Projects needed, it would be good to go for more projects (say upto 400) which would reduce local pipeline costs, increase the storage capacities and would benefit immensely in the long run.

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5. WHAT IS IWCD PROJECT CONCEPT?

The IWCD Project is simply large, typically designed layout carved out of traditional guaranteed techniques, creating a large catchments area to achieve our objectives of collecting, storing and distributing one million cubic meter of water(or for the water supply to approximately three Districts) per day, from each IWCD Project. These Projects are designed to directly receive clean water also from Water falls and Dams. A minimum of 256 Projects and more (say up to 400) depending upon the water requirements from total IWCD Projects. It has huge excavation work in an extended rectangular shape. IWCD Project sites would be suitably selected in low lying areas and essentially along the river bank from the recommended places given in the distribution sectors-Zone-wise (and suggestions 9.3 & 9.4 of Point no.10). Projects along river banks are necessary to create large catchments area and to take and release excess water. But minimum distance is 300 meters **away** from the river bank. Needless to mention the distance from the sea-shore. Nevertheless, the supply need refers to the requirements of the human and animal population and it is not possible to have smaller projects either in all places, for the simple reason, all Districts may not be having Rain & Ground water tapping opportunities/ facilities. River water harvest is an added advantage especially in Northern Zones. Please refer the dimensions also (last pages).

IWCD Project would consist of three stages (Primary, secondary and third) as follows:

PRIMARY STAGE:
Primary stage is to get the excavation and construction of canals and Reservoirs done in a typical design along with its housing, pump houses etc—Mostly Civil Engineer-
ing Works.

5.1 PRIMARY STAGE

Primary stage has two Reservoirs :

i) Receiving Reservoir,(RR) and
ii) Potable Water Reservoir(PWR)

For pumping water to outstation, a Transfer Pond (T.P) is connected to Receiving Reservoir and it is within the Receiving Reservoir. Transfer Pond also indicates the excess water availability for pumping.

5.1.1.i) **RECEIVING RESERVOIR (RR)**

Receiving Reservoir has Rain Water Collection Canal on North, East and West sides to welcome Rain Water which is the biggest source of water harvest followed by ground/river water harvest. It has also projections of several sub-canals in between the soil protection bunds (non-excavated area). Bunds are necessary to reduce soil/silt accumulation in Receiving Reservoir and also to channel water in proper ways for *filtering / blocking larger particles. The IWCD Project has large and lengthy areas along the river bank to create more catchments areas hence direct fall of water to RR would be a nuisance.

This means all rain water that is expected to fall and flow to the river is naturally attracted to fall into the rain water collection canal to reach the Receiving Reservoir(RR) through sub-canals. An arrangement of spillways is made on Receiving Reservoir to expel excess water to the river after filling the RR and also the Transfer Pond(TP). Several IWCD Projects would ensure that the big/ perennial rivers do not swell during rainy season. Needless to say that areas such as Soil Protection Bunds, Roads, Pump House areas fall in the Non-Excavated Areas(NEA).

5.1.2. **RIVER CANALS** : (This can wait until water quality and tapping possibilities from the rivers are clear) When excess River water gets into River canals (of the Project) water goes to Receiving Reservoir & also to Transfer Pond and fills. In-filter-action filter-nets send good water in the Transfer Pond.

When Transfer Pond and Receiving Reservoir are filled, we would start pumping out water from Transfer Pond even as the excess River water is getting into the Transfer Pond through River Canals.

When River water recedes, there are all possibilities that there would not be any excess water left in the Transfer Pond to be drained out back to the River or to the Receiving Reservoir. Therefore, sluice gates do not come in picture. Suppose there is any little possibility of blocking water, I do not want to miss that chance. I shall submit my design for sluice gate. When the need of water comes up, we would fill T.P. and RR with pumping systems.

It is also definite that the height level of RR and the water level of swelling or normal flowing rivers will not come to an adjustment level to 'tap and fill'

through tunnels. On the job (of IWCD Project) we will realize this point.

*Filter nets and in-filter-action systems are available in the market and we would get according to our requirements.

The width given in this Project's drawing for Receiving Reservoir (South side of the IWCD project) is minimum. In scarcity zones it may be widened for additional storage.

All Receiving Reservoirs and Transfer Ponds would serve especially the agricultural needs.

5.1.3. TRANSFER POND

All the water accumulated in RR during rainy season would pass through Diversion Pit canals, filtered and would go to the Transfer Pond. This process takes place automatically once the water level in RR rises. Judging the water flowing to Transfer Pond, pumping is started to pump out water to connect to the remotest IWCD project which in turn does the same process for further transfer. Thus the scarcity zones get water in abundance as early as possible.

My plan is to collect all water in IWCD Project area before it reaches the river to enable immediate storage & transfer all the excess water and hence the very purpose of Transfer Pond. Transfer Pond improves the system of efficiency and cleanliness of water once the filters are fixed. This process comes at no extra cost. The receiver further purifies and supplies to Consumers.

We would also create a Pond similar to Transfer Pond without full-fledged IWCD Project in certain locations, but surely with the support of nearby large IWCD Projects.

Here I wish to mention that Weir Projects that are already in construction would also also support our IWCD Projects in some states. BUT not necessarily needed. (Many Weir Projects have weak or faulty designs).

5.1.4 **POTABLE WATER RESERVOIR (PWR)**

Second biggest source of water harvest and hence we compulsorily need this larger, deeper hygienically maintained reservoir.

This has no connection with the Receiving Reservoir. But adjoining RR creating a wetland condition, plantations to reduce evaporation would enhance the water level in Potable Water Reservoir. This Reservoir would ensure storage of clean ground water (and in full capacity) for the simple reason that it would be made to lay in a hygienically maintained area and definitely in a low lying area along the river bank. Only after we make sure about the quality of river water flow & purification work we should think of transferring water to this PWR (from River to T.P/RR. to PWR). Potable Water Reservoir is designed also to receive clean water directly from upper region's Water falls and streams with gravitational force.

None of the rain water flowing to the Receiving Reservoir needs to be collected in Potable Water Reservoir, reason being that during rainy season seepage of under-ground water is immense and that is why we can pump out clean water beyond the said volume of one million cubic meter of water during rainy seasons.

The supply of clean water from PWR would be made to local Water Authorities who would treat the water and would supply to consumers. Local Authorities need to have water reception facilities and treatment plants.

5.1.5. **IWCDP - FLOOD CONTROL**

My concept on IWCD Projects has typical design with huge excavation and its strategic locations on the banks of major/ perennial rivers would not only accommodate excess rain water before it reaches the rivers but also is designed for immediate transfer to scarcity zones thus eliminating rain floods/flood losses. IWCD Project's river canals also receive excess river water flowing above river-surface level and is designed for immediate transfer thus guaranteeing elimination of river floods. Additional IWCD Projects would reduce river swelling and rain floods. Soil available from excavated sites would be deposited to raise the height level of the river banks, project area and areas that are prone to floods.

Please read Soil availability and presumptive soil allocation.

THERE WOULD BE NOTION WHETHER TO GO FOR THIRD STAGE AS WE HAVE GUARANTEE OF COLLECTION, STORAGE AND SUPPLY CAPACITY. IN EACH LOCATION.

5.2. SECONDARY STAGE;

Secondary stage is to get installation of pumping motors, filter nets etc. -Mostly Mechanical and Electrical Engineering works,

Immediately after completion of Primary & Secondary Stage and welcoming the first rains/ rainy season IWCD Projects can pump out water to the Local Water Authorities' pipelines and account for it**. We can definitely complete IWCD Projects in few years' time and recover total expenditures and plan for the next Stage.**

5.3 THIRD STAGE

Third stage involves installation of heavy H.P. pumps to supply to few districts & distant project sites. This stage also involves huge and lengthy pipeline connection booster pumps to inter-connect IWCD Project sites from excess zones to scarcity zones. Third stage is complex but once completed and supply starts, it is almost like a computer game that Engineers would like to enjoy working. Hectic activities on IWCD projects would never ever cease to function.

MISSION ACCOMPLISHED ONCE THE THIRD STAGE IS FULLY COMPLETED.

The clue for Success to this Project is simple: (One) Creation of largest man-made Catchments area for collection of Rain water and (two) creation of largest ground water storage. To support water storage level creating large moisterous conditions around the Project areas. To support low evaporation levels, raise large coconut plantation which would reward revenues as well. Man can make it. Successfully.

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6. OBJECTIVES OF TYPICAL LAYOUT OF IWCD PROJECT

I have created a typical PLAN of IWCD Project with following specific reasons:

6.i) To create maximum catchments area and to create maximum clean water economically with large public-utility-storage facilities and to enable direct connections to local Water Authorities.

6.ii) To receive clean water directly into IWCD Projects from any upper regions, from Water falls and Dams with gravity, in addition to rain and ground water collection.

6.iii) To create separate body at National level and to create profe -ssional water distribution management to equalize all zones/ divisions and to professionally account for it from inter-state and local supplies and also to delete all non-viable projects. The IWCD Project would also compel several other disciplines run in perfect order. No more dumping responsibilities on citizens depriving their leisure on water harvest. The Companies can undertake on B-O99y-T) which would reward more on all accounts.

6.iv) Most importantly, exclusive design & layout protects from sabotage, poisoning, pilferage from start to end as no supply and storage water is exposed to the public – nowhere. Potable water Reservoir is placed in a secured place.

6.v) To raise Central and State Governments' Revenues, as supplies to Commercial and Industrial establishments are expected to be higher with larger low-cost availability of water. No additional bills for extra or huge consumption. Income starts even as Primary and secondary Stages get completion.

6.vi) To earn additional large and long term income from Projects' plantation, Dairy farm etc. to recover monthly outgoings. The only Project concept for extra revenues and to attract definite investments.

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7. REQUIREMENTS OF IWCD PROJECTS NATION-WIDE

ZONE-WISE

A minimum of 256 projects are needed urgently. Depending upon the Flood scenes & Water storage capacities, IWCD Projects need to be increased up to 400 projects. Local Administration can identify several sites for more Projects near by the Dams and Water-falls. (Read P.10 Notes & suggestions)

Present calculation is a minimum of 100 litres of water per person per day (PPPP). i.e. 128 million cubic meters of water per day for India's present population. MORE water for domesticated and wild animals, and additional requirements of agriculture, etc and also to benefit flood control. .

100 Litres of water include an individual's food, cleaning of home & dress in and outside his home, and his personal belongings such as instruments, vehicles, dog, cow, gardening etc. This requirement may be increased according to IWCD Projects completion. Government's Discretion .----------

States	Population in millions	Needed Projects plus extras	Total needed	Divisions	Identified	
NORTH ZONE						
1 J & K	12				2	
2 Himachal	08				1	
3. Punjab & Chandigarh	31				11	
4. Haryana & Delhi	26				3	
5. Uttaranchal	11	9 + 9	18	4	1	18
NORTH CENTRAL UPPER & NORTH CENTRAL LOWER ZONES						
6. Uttar Pradesh	200				41	
7. Bihar	100				18	
8. Jharkhand	33	33+33	66	18	7	66
NORTH WEST ZONE						
9. Rajasthan	68				15	
10. Gujarat	61	13+13	26	6	13	
						28
NORTH EAST ZONE						
11. Assam	32				14	
12. Meghalaya	3					
13. Mizoram	2					
14 Tripura	4					
15. Manipur	3					
16. Nagaland	3					
17. Arunachal Pr.	1				1	
18. Sikkim	1	8+ 8	16	4		15

States	Population in millions	Needed Projects plus extras	Total needed	Divisions	Identified	
CENTRAL ZONE						
19 Madhya Pr.	73				12	
20. Chattisgarh	26	10+10	20	5	8	20
WEST ZONE						
21. Maharashtra	117				23	
22. Goa	1	13+ 13	26	6	1	24
EAST ZONE						
23. West Bengal	97				22	
24. Odisha	45	14+ 14	28	7	12	34
SOUTH & SOUTH CENTRAL						
25. Kerala	40				12	
26. Tamil Nadu	76				18	
27. Andhra Pr.	92				26	
28. Karnataka	65	28+28	56	14	12	68
TOTAL			256	64		273

Four or Five IWCD Projects …. One Division
Four or Six Divisions …. One Zone

Total 12 Zones.

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8. IWCD PROJECTS – MINIMUM SOIL AVAILABILITY AND PRESEMPTIVE SOIL ALLOCATION (in million cubic metres)

As the excavation starts, soil and rock particles' disposal routine would also start. Several tens of trucks from each IWCD Project would carry soil and rock particles to the Railway yards for further disposal. Several Goods-Trains would have to be hired to reach several Railway destinations. Again from there several tens of trucks would carry soil & rock particles to the Actual Point of Dumping. Taking advantage of very large project work, including commercial plots in the infrastructure work would reward monetary benefits to the Government and it would be very easy as well, as our existing railway, road and sea transportation network are also excellent. Government's discretion.

		Cubic meters in millions
8.A.	Soil Excavated from one IWCD Project	31
	Less:	
	Soil required to be deposited for levelling in each project site areas + -	4
	Balance soil available	27
	Soil/rocks available from 256 Projects ……	……7,000

Presumptive soil allocation :

8.B. 1.	To create modern container terminals 600 meter long projection into sea x 200 meter wide avg. 30 meter deep. well compressed Eight Projections: Eight Port cities	460
8.B.2	To create Container terminal yard Approx. 500 meter projection into sea x 2000 meter long x avg.30 mtr deep well compressed Eight Port cities	480
8.B.3.	Back bay reclamation for Defence, Coast Guard and commercial land along the sea shore.500 meter projection into sea x 5000 long x avg 30 meter deep. Eight Port cities	1,200

8.B.4. Soil required for National and State highways especially on Ganga & Brahmputri river banks and Railway Tracks, with commercial plots
25.000 Kms x 120 mtr wide x avg 1.5 mtr ht. 4,500

8.B.5. My personal suggestion:
I would prefer to create an exclusive Entertainment / fantasy island on sea to divert the minds of younger generation to enjoy **freedom and invent in life rather than opting for violence or terrorism.**
840 mtr wide x 1000 mtr long x 30 mtr deep well compressed for skyscrappers.
Eight Port cities 403

OR

8.C. Soil required to be deposited in arid lands for immediate vegetable cultivation
Possible coverage 5 billion sq.mtr
(or 500,000 hectares)x avg 1.5 meter height. All available soil

OR

8.D. To create land mass along West-coast To produce Solar and Wind Mill energy 500 mtr Projection into sea x 250,000 mtr long x 30 mtr deep well compressed **All available soil/rocks**

As we know, Points 8. B.5; 8.C, & 8.D are income generative

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10. NOTES & SUGGESTIONS

10.1 IWCD Projects may be designed in any convenient way keeping in mind creation of large catchments area and large storage, and also the design of Potable Water Reservoir to be placed in a safe and secured place.

10.2 Preference is that no wetlands to be disturbed as far as possible.

10.3 IWCD Projects' locations should be selected from where Water falls' water could be drawn (in an appropriate dia pipe/s) with gravity directly to IWCD Projects. Chalakudy River would be a great combination.

10..4 Projects within the radius of 500 meters to 1500 meters of Dams (which do not dry up completely in summer season), since these areas gift highly moisterous land mass and guarantee inner seepage of water to IWCD Projects. Very ideal spots.

10.5 To efface out a rivulet there has to be some connection from one rivulet to another - one to make a perennial river . This is entirely different program to be decided as the projects' works move on.

10.6 By virtue of being the project in a very large water rich area, we would take advantage of acres of open land for plantation and Dairy farm. Also, for the project's use we would have vegetable farm within the project-area. So, except Coconut or Areca-nut and Pepper- no other trees are recommended in the project's area.

Coconut /Areca-nut Trees drop larger leaves (palms) in limited quantities and in longer intervals. It is therefore easily manageable for disposal. All other trees bring down lots of smaller leaves making the project area dirty and is also a nuisance. A couple of mango, jackfruit, and cashew trees are enough for the project's need, outside the Reservoir area.

Coconut or Areca-nut trees also bring cool atmosphere to enable the evaporation process slow. And it would be a spectacular view/location once raised. Coconut or Areca nut trees in such water rich areas would bring higher income enabling compensation of several monthly outgoings including salaries. See Expected Income no.14.

As the Cow dung deposits would regularly be removed, it does not harm the Project area. Minor deposits of dung are supportive to Earth worms which benefits large seepage but won't be harmful.

10.7 IWCD Projects' locations have advantage in Kerala, coastal Karnataka, Goa & Konkan region as these areas have higher rainfall, reasonable temperature level. Kerala and Karnataka are also benefited due to Eastern rainfall during October-November. These areas need not necessarily depend on Northern IWCD Projects. Hence, inter-connections in this sector-Zone XII - may be decided later. Southern West Coast can very well supply water to South-East region during June-August.

10.8 All state governments/ Central government have ready information on all low lying & moistureous areas, river water-flow & all season's water level and it is now going to be applied on our IWCD Project details.

10.9. In scarcity zones, Receiving Reservoir of the south side i.e., on the side of the river bank may be expanded from 15 meter wide to 65.96 or 100 meter wide and a depth of 15 meter. There is nothing wrong in expanding even in Excess zones. All slopes are at 60 degree angle down except at the D.P. pillar-platforms.

10.10 Depth mentioned is from surface level. Potable Water Reservoir depth is 30 meter from surface and it can be increased to another 2 to 3 meters in certain needy locations. The Width of 35 meter for road & open land mentioned is the minimum requirement. The maximum width of the open land & roads benefit more seepage, more plantations & for gracing etc.

10.11 It would be good to pump out remaining all water of PWR soon after completion of work and pump out during peak summer after the first rainy season to get water quality improved.

10.12 To reduce the cost of local distribution pipelines it would be good to have more IWCD Projects than 256 required projects.

10.13 It is also essential not to allow any construction activities in the vicinity of IWCD Project area. Paddy fields and coconut/Areca nut estates should continue to remain for ever to promote moisterous land mass.

10.14 IWCD Projects are made to receive water from Upper regions, Water falls, Dams and if possible to and from Lakes.

10.15 Water supply to smaller farmers and agriculture would be presently utilised from Dams and Lakes until a proper system is carved out.

10.16 Excavation on PWR would be done first, soil of which would be deposited around the Project area except where excavation of Receiving Reservoirs, Transfer Pond and Rain Water Collection Canal would take place later. Soil deposit would be to raise up to two meters (Height after compression) and level the land mass of the Project area.

10.17 In states like Kerala where density of population is more, there are chances of roads/ bridges crossing the selected sites. In that case it would ideal to divide the Project length into two leaving a road width of 60/80 meters and a connection by tunnel between the two project sites if necessary.

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10. **BUILDINGS AND STRUCTURES OF IWCD PROJECT**

All residential buildings would be built on East side and Office, Go-down other buildings on West side of the Project area. Each building **length** would be positioned horizontally on road-length to retain more width from the road & open place for any Project operations. The project roads/open land are only 35 meter wide which is the minimum requirement. It may be increased suitably. It is suggested all buildings and structures need to have less widely built-up. Widening of the roads within the project area is no harm but not needed. Then the Project size would also be increased. Discretion Advised.

Approx.cost

10.1. OFFICE BULDING TWO FLOORS
71 FT X 25 FT floor space
Ground Floor for Office Staff/ Engineers etc.
1st floor – for conference/ drawing/ security dressing/ Reading
2nd floor Terrece …

10.2. RESTAURANT & CLUB HOUSE – THREE FLOORS
88 FT x 28 FT 1+2 floors –
Ground floor for Restaurant, Kitchen, Stores Laundry
1st floor for Indoor Games, Store-room for Kitchen and Gen.stores
2nd floor for accommodation for kitchen-staff Laundry-staff

10.3. DR'S VILLA & CLINIC – ONE FLOOR
Ground floor for Visiting Divisional Doctor Clinic & accommodation.
1st floor Terrace 1040 SQFT floor space

10.4. APARTMENT FOR JR. STAFF THREE FLOORS
ONE BLDG for 24 staff x 3 floors =72 staff
100 FT x 35 FT x 3 floors

10.5. VILLA FOR PROJECT ENGINNER/ PIPELINE ENGINEEER/ DIVISIONAL ENGINEER
THREE FLOORS(Three flats)floor space 1055 sq ft.

10.6. APARTMENT FOR VET.DOCTOR & BOTANIST A/C OFFICER, ASST ENGR//–
TWO FLATS x 3 floors = 6 flats
1520 x 3 floors- floor space

10.7 PUMP HOUSE THREE BUILDINGS
21 x 21 x 15 FT for Outstation

10.8. PUMP HOUSE- TWO BUILDINGS(East & West Sides)
6 x 6 X 9 FT for internal use

10.9. GODOWN FOR CYLINDERS /PETROL ETC
40 x 12 x 9 FT -2 floors
1st floor for Sand Storing/ metals storing

10.10. GODOWN FOR PLANTATION (future 3 bldgs)
70 x 30 x 15 FT 2100 SQ.FTx 1 bldg

10.11. GODOWN FOR HEAVY MACHINERIES
70 x 30 x 15 FT

10.12. GARAGE FOR VEHICLES
40 x 20 x 9 FT

10.13. COWSHED FOR 60 COWS; TWO FLOORS –
Ground floor-124 X 29 X 15FT, 1st floor 9 FT ht
for storing hay/grass etc.
2nd floor terrace

10.14. WATER TANKS (TWO NOS)
Two tanks with 10,000 litre capacity.

10.15. COW-CARE SHED
Ground floor-20 x 29 x 15 FT, 1st floor 9 FT

10.16. BIO -GAS CHAMBER

10.17. FRESH WATER FISH POOL (future plan)
10.18. SWIMMING POOL(future plan)
OTHER REQUIRMENTS:

10.19.	KITCHEN EQUIPMENTS	
10.20	FURNITURES	
10.21	LAUN MOVERS CLEANING EQPTS ETC	See
10.22	MOTOR PUMPS FOR PROJECT USE (for gardens.)	presumptive
10.23	4 BOATS – COUNTRY OR RUBBER (four seater)	cost
10.24	PROJECT VEHICLES, SUMO,MOTORBIKE(2)	
	Bi-cycles (6 nos), Hand cart, (2)	
10.25	SMALL MOTOR PUMPS FOR PROJECT.	
10.26	HEAVY DUTY (HIGH H.P.) PUMPS	

TOTAL COST

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11.A Details of IWCD Project at a glance

Cost per IWCD project	=
Requirements of IWCD projects in India	Minimum 256 nos & Upto 400 projects. For Drinking Water and for all animal population and additional requirements of agriculture & flood control.
Total Presumptive cost for 256 projects	National average Rs.285,696 crores
Total expected employees	72 per project & 18,687 nationwide, (12 Zones, 63 divisions, 256 projects.)
Projects' to be controlled by new body	Directorate of IWCD Projects under Ministry of Water Resources
Total expected salary per project	Rs.1.74 crores per annum
National salary for 256 projects +63 divisions+12 zones+ Directorate	Rs.478,11,00,000 per annum.
National average salary per project	Rs.1.87 crores per anuum
Expected revenue as water charges per project	Rs.675.25 crores per annum
Expected income from 256 projects as Water Charges	Rs.1,72,864 crores per annum
Expected additional revenues/project	Rs.5.85 crores per anuum
Expected additional revenues from 256 projects for about 80-90 years	Rs.14,976 crores per annum
Expected additional income from W/mills	=
Completion of projects nationwide	3 to 4 years' time
Recovery of all expenses	In 6 to 7 years' time after completion.
Advantage	Far ahead of any other water Conservation Project- Environment, Ecology, Cost, Income & completion time. Favours all – read points 3 & 4

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11. B. AREA DETAILS OF EACH IWCD PROJECT
(Each project area may differ from one another)

Project development coverage 3754mtr x 492 mtr	1,846,968 sq mtr 184.70 hectare 456.38 acres
Total Project coverage L 3754 x W 492 meters+300 meters to River bank	2, 973,168sq.meters 297 hectares/734.68 acres
Depth of Potable Water Reservoir from Surface level is	30/ 33 meters
Total excavated area (without river canals) Total non-excavated area	1.260 million sq.meters 1.713 " "
Soil availability (presumptive) after levelling work	+- 29 million cubic mtr
Total water Storage capacity In Potable Water Reservoir	30.438 million cubic meter (MCM)
Total water storage in Transfer Pond	600,000 Cm
Total storage in Receiving reservoir	578,194 Cm
Total Project area water storage	31.393,194 cm
Supply capacity (annual Average per day)	1 million to 1.25 million cubic meter (MCM)
Area available for gracing of cows Min. 60 cows or Max.75cows.	+303 acres
No of Coconut Trees for plantation	+29,000 trees
Area available for vegetable garden	+- 4.5 acres
Area Reserved for two-way traffic lane and for Wind mills 50 meter wide 3754 meter long along the river bank	Up to 40-50 Wind Mill towers

Proposal for Total IWCD Projects - 256 Nos Nation-wide

Water storage in 256 Projects……	7.8 billion cm.
Soil availability from 256 Projects……	7000 million cm
Cost per project	=
Expected Actual Water Charges(Revenues) per project	Rs.675.25 per annum
Expected Additional revenues per project	Rs.5,85 crores per annum
Expected outgoings as salary per project	Rs.1,74 crores per annum

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12 IWCD PROJECT ORGANISATION MANAGEMENT CHART

Directorate of the
CHIEF EXECUTIVE DIRECTOR

EXCUTIVE DIRECTOR **EXECUTIVE DIRECTOR**

FINANCIAL CONTROLLER

STAFF (4 +10)

Directorate of the
EXECUTIVE DIRECTOR
CHIEF ACCOUNTANT (2)
ADDL.STAFF (6)

Office of the
ZONAL ENGINNERS (12)
ASST ZONAL ENGINEERS(12)
ZONAL ACCOUNTANTS (12)
STAFF (66)

Office of the
DIVISIONAL ENGINNERS (64)
ASST.DIVISIONAL ENGINEERS (64)
DIVISIONAL DOCTORS (64)
DIVISIONAL ACCOUNTANTS (64)
STAFF (756) FOR ALL DIVISIONS

OFFICE OF THE
PROJECT ENGINEERS,(256)
PROJECT BOTANISTS/HORTICULTURIST,(256)
VETERINARY DOCTORS(256)

12. contd..

Staff numbers are tentatively fixed.

Office of the Zonal Engineers and Divisional Engineers will be based in City Head quarters of the respective Region.

Directorate of the Chief Executive Director, Executive Directors, Financial Controller will be based in suitable /important Region or in New Delhi.

12. Management Chart contd..

Office of the PROJECT ENGINEER						
Asst Project/Pipe Line Engineer Engineer (1)	Asst. Engineer (1)		Accounts & Admn Officer (1)		Bota- Nist / Horti- Culturist (1)	. Vetnry Doctor (1)
Computer Staff (1)	Computer staff (1)	Canteen Cook (1)	Accounts Staff (1)	Medical Assistant/ Nurse (1)	Helper Gardening (2)	Helpers Dairy Farm (4)
Motorman (1)	Motorman (1)	Asst Cook (1)	Clerk Stores(M/c) (1)	Housing Supervisor (1)	Helper Project (2)	
Motorman (1)	Motorman (1)	Canteen Stores Asst (1)	Office Clerk (1)	Laundryman (2)	Helpers Plantation (2)	
Helper RR Section (1)	Helper PWR (1)	Canteen Supplier (2)	Driver Project (1)	Security Outside (12)		
Helper T.Pond (1)	Boatman (1)	Canteen Cleeners (2)	Driver Project (1)	Security Internal (8)		
Boatman (1)			Clerk (1)	Helper Housing (2)		
Helper Elec.works (1)			Helper Project (3)	Helper Club (1)		
				Housing clerk (1)		
Total 8	Total 6	Total 7	Total 10	Total 28	Total 7	Total 5

Total Staff for Each Project : 1 + 71 = 72 (tentative)

Total Nationwide:	18432
Divisional Office	204
Zonal Office	30
Central Office	21

Total employees 18687 (nationwide-256 Projects)

Total expected salary per project Rs.1,74,00,000 per annum

Total staff salaries for 256 IWCD Projects Rs.445,44,,00,000 per annum

Total Expected 63 Divisional Salaries approximately Rs.27,60,00,000 per annum

Total expected Salaries of 11 Zones approximately Rs.3,84,00,000 per annum

Total IWCD Projects Central Office salaries Rs.1,23,00,000 per annum

Total expected salaries of 256 Projects : Rs.478,11,00,000 per annum.

Total IWCD Projects National average salary per annum Rs.1,87,00,000 per annum

Each State can also select their excess and scarce areas and plan the IWCD Project locations first in water available/excess areas and implement the same and then select the sites in scarce areas for better supply system, also making provisions of easy access for national-linking and/or inter-state link. Only on providing this solution the IWCD Projects become fully integrated.

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13. A PRESUMPTIVE EXPENDITURE OF THE CONCEPT (INDICATIONS ONLY)

The total cost for the IWCD Projects and its Distribution nationwide would depend upon various factors such as some changes in Receiving Reservoirs in Scarcity Zones, sizes of Distribution pipelines , different capacity of motor pumps, booster pumps for ascending and descending levels and the actual distance we are going to cover. The Central and States have fingertip information to prepare the Detailed Project Report on IWCD Projects and on various water flow in rivers/ and rain fall during all seasons and they also have finger tip information of the topography and hence it would be possible for them to arrive at the actual cost factors in accomplishing the IWCD Projects and the Distribution network nationwide.

For extra-ordinary large projects like IWCD Projects, local costs can not be considered. Nevertheless, Indications for cost factors would give an elaborate idea of the total cost per Project & 256 Projects & 400 Projects.

1.	Presumptive Cost per IWCD Project	Rs.
	minimum x 256 Projects	Rs.
	maximum x 400 Projects.	Rs.

Though the Distribution sectors are not completely required to be carried out, we need to plan for pipeline connections and its expected expenditures. Read **Third Stage.**

This presumptive cost is, apart from the Distribution cost for National and local connections i.,e., average cost for IWCD Projects and extended Distribution would come to Rs…….. crores per project that means a total presumptive expenditure of Rs. …….. Far below the cost of River-linking and far ahead in benefits than any other Water Conservation Programme without hurting environmental issues. **Having more projects would reduce the length and cost of pipelines but would enhance the storage capacity.**

But why worry? We have recovery programme, and I am sure through a streamlined programme of water supply and accounting system there will not be any obstacles to a great success. Also, to run the project for ever, we have an elaborate plantations, earnings from energy possibly from Solar and surely from Wind Mills which would compensate project expenditures immensely including salaries etc.. Expected Income would give you a better idea.

K.V.RAJENDRAN
KULAPPURA VEETTIL DESIGNS

13. B PRESUMPTIVE COST PER IWCD PROJECT - ITEM WISE

INDICATIONS ON COST FACTORS.

Cr. L Thd

1. Land cost 3754 mtr x 792 mtr = 2,973,168 sq.mtr
   Area 297.32 Hectares OR 734.68 Acres @ Rs.30,000/cent

2. Excavation & soil removal of Rain Water Collection
   Canal(main)(RWCC) @ Rs. 30

2.a North 3695 mtr L x 2 mtr W x .5 mtr D (3697cm)
West 407 mtr L x 2 mtr W x .5 mtr D (407 cm)
East 405 mtr L x2 mtr W x .5 mtr D (405 cm)

2.b Sub canals 7.5 mtr L x 1 mtr W x 4 mtr D x 159 nos (4770cm)

2.c Construction on entry of all sub-canals to R.R

3. Metal nets on RWCC 159 nos on sub-canals.

4.a.Exacavation & soil removal of Receiving Reservoir (RR)
North 3687 mtr L x 12 mtr W x 4 mtr D (1,76,976cm)
West 392 mtr L x 12 mtr W x 4 mtr D (18,816 cm)
East 370 mtr L x 12 mtr W x 4 mtr D (17,760cm)
South 3299.4 mtr L x 15 mtr W x 6 mtr D (296,946cm)
Diversion Pit = 60.5 x30 x 6x.2 sides (27,180 cm)
Triangle 60.5mtr x 30 mtr x 6 mtr D x 2 & (21,780 cm)

Option:
Southside 3299.4mtrLx 100mtrWx 15mtr D (49,49,100cm)
or
Southside 3299.4mtrLx 65.96 mtrWx 15mtrD (37,36,571cm)

4.b.Excavation & soil removal 2 sides x 385 mtrLx 6mtr x0.3mtr D
part concrete-paving of spillways.(2 sides)
from RR to River 300mtr Lx 6mtrWx 3" thick

4.c Bridge (66 mtr Lx 8 mtr W x 45 cm thick) - on
Rcc canal-pillars on RR(between Diversion Pit - Transfer Pond.)

4,d.Metal nets (20 x 4 = 80 pcs) &
purification filters on RR to D.P to Transfer Pond Bund.

5.a Excavation & soil removal of Transfer Pond
402 mtr L x 102 mtr W x 15 mtr D (615,060 cm)
60 degree slope up to 2 meter down repeat 3 times
up to 8 meter down, again 60 D. angle up to bottom.

5.b Construction of Rcc Side Wall on all four sides
of Transfer Pond.

6. a. Excavation & soil removal of canal to the River from
Transfer Pond/RR (**wherever necessary)**
300 mtr L x 1.5 mtr W x 2 mtr D 8 canals (7200 cm)

6.b.Constrtuction of 8 River Canals (part)
(wherever necessary) 20 mtr L x 2 mtr x 1.5 W

7 . Filter nets (metal) & Purification nets
from River to Transfer Pond**.(wherever necessary)**

8. Paving work on Receiving Reservoir
all two sides North, West East & South

9 . Excavation, Rock blasting & soil removal of
Potable Water Reservoir excludes inner road ,P.H areas.
3640 mtr L x 290 x 30 mtr D (30,153,769 cm)

10. Paving work on all four sides up to 2 mtr down
with 1` mtr wide footstep,
Slabs laying on slopes (up to additional 6 mtr down)on
Potable Water Reservoir
(Slabs of 72" x 36" x 2" thick)

11.a.Construction of wall around the non excavated
Pumping area – 30+1 mtr projection, 30+2 mtr Wx 30 mtr D
in PWR – 31 mtr L x 1 mtr W x 30 mtr ht.
32 mtr L x 1 mtr W x 30 mtr htx

11.b Laying slabs on Inner roads West & East sides)177 mtr long
Slab size 4 mtr long 1 mtr wide x 3 inch thick(2 sets)upto

12.Soil filling/levelling on Project area aprox 2-3 mtr Ht
8000 mtr long x 35 mtr W x 2 mt Ht (420,000 cm)

13. Soil refilling on borders of River bank 1.5 mtr ht (8000 cm)
with fence wall if necessary.

14. Project road 8 meter + 8 meter wide on all
four sides 8000 mtr L x 8 mtr W 2 sides.

15. Construction of Apartments and Villa and
other buildings. Refer Buildings/ structures of
IWCD Project. Total cost

16. Security Posts 8 nos outside 10 x 6 x 9 FT
17. Security Posts 4 nos inside 10 x 6 x 9 FT
18. Electric Posts 235 to 250 Nos single phase &
Three Phase
19. Generator 400 KWA
20. Exit/ Entrance Roller Gate 8 meter x 6 Ft

21.Water Tanks(2 tanks) for the Project use included in
10,000 litres + 10,000 litres no.17 above

22. Motor pumps 2 nos for the project"s use

23. High H.P.Motor Pumps 2 nos on T.Pond -2 nos on PWR

24. Project vehicles – 1-Tempo Traveller/ Sumo
1-HD vehicles, 2 motor-cycles, 2 scootys,

12 bi-cycles ,2 Hand carts, 4 Rubber boats or traditional boats 4 nos,

25. Kitchen utensils, Laundry Equipments, ceiling fans, Vaccuum cleaners, office Tables, coats and other stay arrangements

26 .Project cleaning equipments, Misc items Plucking equipments

27 .Indoor games –Billiards, carom-board(4), chess Table tennis, & Outdoor games items such Volleyball nets, balls, Shuttle nets, bats etc.

28. Wind Mills on 30 meter wide x 3754 to 4000 mtr long area -

29. Solar panels wherever Sunlight reception is possible i.e., Rivers flowing East to West or vice versa. –

30. Cost of saplings, and misc items. -

31. Cost of cows 60-75 nos

32. Add cost of Pipeline connections to Local W.A

13.B contd..in next page.

13.B contd.

TOTAL COST PER PROJECT (PRESUMPTIVE)FOR ONE MILLION CM OF WATER SUPPLY.

Primary & Secondary stage costs:

Without River canals Rs.
Add cost of 8 river canals(wherever necessary) Rs.
Project cost with South larger Receiving Reservoir
3299.4mtrLx 66 mtrWx15mtrD)in scarce zones Rs.
OR OR
South side Reservoir to Rs.
3299.4L x 100Wx 15D).

-Add cost of wind mills generators /towers
-Add cost of Solar panels (wherever applicable)
-Add cost of saplings Rs.

Cost on Third stage: Read Point 15.

Add cost of :
Distribution pipe-lines to local regions to consumers &/or
(W.Authrities) from IWCD Project for supply of
one million cu.mtr of water.(Presumptive)

Add cost:
National Inter-connections National Average

Indications on cost factor on Distribution of Pipelines, please refer to Third Stage

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14. EXPECTED REVENUES AND OTHER INCOME FROM IWCD PROECT

INDICATIONS ON INCOME

There is no objective to make money but our motto should be to recover total cost spent on all IWCD Projects in six or ten or twelve years' time and also generate income for their running costs including salaries. So, gradually we will get rid of all non-viable, loss-making projects including borewells and re-connect to water supplies from the IWCD Project lines and account for it.

As said, we can pump out annual average of one million plus cubic meter of water a day from one project. even during summer due to the gift of Himalayan water flow.

Consider Supply Reservation of 300,000 cubic meter of water exclusively to commercial and Industrial Establishments at the rate of 5 five paise per litre or Rs.50 per cubic metre of water a day and half paise per litre or Rs.5 per cubic metre of water exclusively for citizens (There is demand and there are takers) following revenue could be recovered:

14. AS WATER CHARGES:

14.A.1	Rs.50 x 300,000 x 365 days x 256 Project sites.	Rs. 1, 40,160 Crores p.a.
14.B	Rs.5 x 700,000 x 365 days x 256 Project sites	Rs. 32,704 Crores p.a
	TOTAL Expected Recovery	Rs. 1, 72,864 Crores p.a.

Income as water charges from one project Rs.675.25 Crores p.a.

To recover even one Million Crores, it is possible for us to recover the whole cost of the IWCD Project in hardly six year's time with the right management of accounting system after completion of all IWCD Projects. We would also be getting enough funds to go ahead with the inter-connections programme as well.

CONTD

14.B.	Income from (B.5(1660 acres),and C & D of presumptive Soil availability & allocation) New land mass	
14.C.	Other incomes.(Regular per annum) Income from 29,000 coconut trees 58,00,000 nuts x Rs.4.5*	Rs. 2,61,00,000
14.D.	Income from 29,000 Pepper plants . 3 kg per tree x Rs.300 per kg	Rs. 2,61,00,000
14.E .	Income from 60 milch cows 12 litres x Rs.24 x 365 days	Rs. 63,07,200
	TOTAL OF 14. C+D+E =…….	Rs.5,85,07,000

There are many petty income as well from the Project area.

TOTAL income from Project area (excluding Actual Water Charges) Rs. 5,85,07,000 p.a.

(against the salary expenses) Rs..1,74,00,000 p.a.

For smaller projects (1820 L x 300W x 30 D) operating and running costs would be more and the profits would be reduced.

*coconut/pepper rates are of Jan/Feb.2012.

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15. THIRD STAGE
INDICATIONS ONLY

Third Stage, as said INTEGRATION i.e.,inter-linking all IWCD Projects nationwide from Excess Zones to Scarcity Zones especially from North to Central and to Southern scarcity areas.

But Third Stage will be decided only after completion of all IWCD Projects, thorough and detailed study on water availability – from rain, river, and ground – from each area and only then PIPELINE connections could be carried out. However, on completion of Primary and Secondary stage of all IWCD Projects local water supply could be started and accounted for.

The facts to be ascertained are : From how many projects ' water should be transported and to where; How many occasions we would need this transferring business. Should we use canal connection or Pipeline connections or both. Until we find solutions, we cannot go ahead with the Distribution work though we have guarantee of collection and storage and supply capacity in huge quantity which is what we all wanted. But planning is a definite 'MUST in case of major floods still occur.

We know each project area brings different volumes of water during different seasons. So, what matters here in Third Stage is the water pumps, its horse power required to be applied based on distance, height level, and the diameter of the required pipes for successful reach of water. Manufacturers of Pumps and Pipes have ready information on this subject and I have confidence in our Engineering boys taking part in this large IWCD Projects would write an exemplary success story. We would now go with the available powerful motors for pumping out water.

Following pages have recommended project locations, its approximate height level from sea, distance between each IWCD Projects and also the nearest river. Local authorities would be able to tell the exact low lying spots/ project sites from the recommended areas**. Places shown in order in each zone need not necessarily to be connected.**

Please note that 'A' denotes areas below 150 meter level. B, C, D, & E denote areas below 300 mtrs, 600 mtrs, 900 and 1200 mtrs respectively. Places shown in each zone "from and to" need not to be necessarily connected. But judgement is possible as to how the routing of pipelines would go and how many kilometres of pipelines with its diameter required to be laid with its actual costs – both project to project pipelines and Direct Supply Connections from North to South.

Needless to explain that when pipelines are to be laid, obviously the height level may run from 'A' to 'B' to 'C' and even to 'D' level and may descend back to A level.

Our geography and vast topographical levels prohibit nation-wide linking of Rivers/ canals, which is why we need IWCD Projects and its pipeline connections everywhere.

Each IWCD Project would bring its own water directly connecting to the optimum possible reach OR few IWCD Projects' pipelines would be merged with one major pipeline from the North and, at the reaching point in scarcity zone it would be segregated to reach each IWCD Project. ONE project in South may also receive water from different Zones (Example – Renigunta would receive water from East & North Central Zones). During June-August, Kerala can transport water to T.N. and Karnataka can transport water to A.P. so bringing water from North & North-East may not be necessary during this season. (explained in para 2 & 3 above)

There is also a valid reason for pipeline connections: that our National wealth of water should NOT be pilfered spoiled or poisoned at any point and therefore I preferred pipelines instead of risking on canals connections. Pipelines can block water, divert water and we can release excess water to the river from a particular/ required place through the pipelines.

The IWCD Projects are also designed to also receive and despatch water from & to Dams and Lakes in case of excess and scarce scenarios.

For information only: We have around 112 IWCD Projects in Excess Zones From excess zones to scarcity zones, pipelines would have an approximate length of 17,455 kilometres to connect to the various IWCD Projects, based on the 12 zones explained herein. Few Projects' pipelines may also be connected to one Major Pipeline/ s which means approx.112 Projects' pipes would be merged to 11 or 12 Zones i.e.,avg.125 Kms x 110 = an addition of 14000 Kms. Not finished yet. Again from each IWCD Project we would have to re-connect to Local Water Authorities Water Treatment Plants within the radius of about 75 Kms to 250 Kms. National avg: 163Kms from each project. Which means another 163 Kms x 256 Project connections = 41,728 Kms. That means a total 41,728 + 14,000 Kms plus 17,455 Kms = 73,183 Kms. Please do not be disheartened. Presumptive Cost and Expenditure Chart and also the Expected Income/ Revenue Chart would have revealed where we would stand.

Each State can also select their excess and scarce areas and plan the IWCD Project locations first in water available/excess areas and implement the same and then select the sites in scarce areas for better supply system, also making provisions of easy access for national-linking and/or inter-state link. Only on providing this solution the IWCD Projects become fully integrated.

PRESUMPTIVE EXPENDITURE OF DISTRIBUTION (THIRD STAGE)

1.	National Connection of Pipelines 17455kms x 7.5 Crores	Rs. 1,30,912
2.	State Pipeline connection to Local W.A pipelines 55,728 Kms x Rs.5.5 Crores	Rs. 3,06,504
	Grand Total	**Rs. 4,37,416**

National average is Rs.1709 crores per project.

March 2012

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NATIONWIDE DISTRIBUTION
TOTAL XII ZONES

ZONE I & II
LOCATIONS OF IWCD PROJECTS & pipeline requirement-

Routing of Pipelines. Please note that "from and to" given below need not necessarily to be connected. But judgement is possible on several accounts of pipeline and other engineering work. The places refer to IWCD Project sites within the radius of 75Kms of the areas mentioned.
Trb: Tributary, SR: small river Confl: Confluence

Name of place/ District	State	Near River	Aprox Ht	Distance in kms(aprox)
1 Pasighat to	Arunchal	Dihang	A	-
2Dhemji	Assam	Brahmputra	A	150
3 Majuli	"	Subansiri	A	95
4 Biswanath	"	Brahmputra	A	120
5 Tejpur	"	"	A	50
6 Mangaldai	"	"	A	90
7 Barpetta	"	Manas	A	170
8 Bilasipara	"	Brahmputra	A	50
9 Koch Bihar	W.B	Amu	A	100
10 Jalpaigudi	W.B	Thiesta	A	110
11 Goalpara	**Assam**(south)	Brahmputra	A	-
12 Dhuburi	" " "		A	-
13 Also at Dibrugarh	"	Brahm. Trb	A	-
14 Sibasagar	"	"	A	-
15 Golaghat	"	"	A	-
16 Morigaon	"	" /Kopilli	A	-
17 Guwahati	"	Brahmputra	A	-
Total length of connection				935 kms
Connection from Jalpaigudi to				
18 Islampur	W.B.	Ganga Trb	A	120
19 Kishenganj	".	"	A	50
20 Raiganj	"	"	A	100
21 Ingraj Bazar	"	"	A	110
22 Jangipur	"	"	A	90
23 Kandi	"	"	A	90
24 Katoya	"	Ajay	A	70
25 Bardman	"	Damodar	A	70
26 Arambaug	"	" Trb	A	60
27 Ghatkal	"	" "	A	50
28 Medinipur	"	" "	A	50
29Dantan	"	Subarnarekha	A	70
30 Baleshwar	**Odisha**	Trb	A	80
31 Tejpur	"	Baitrani	A	150
32 Cuttack	"	Mahanadi	A	110
33 Also at Baripada	"	Trb	A	-
34 Also at Sonam Mukhi	W.B	Damodar	A	-
35 " " Bishnupur	"	Trb	A	-

36 "	" Subarnarekha bank	**W.B.**	Subarnarekha	A	-
37 "	" Damodar river bank	**W.B**.	Damodar	A	-
38 "	" Burnpur	"	"	A	-
39 "	" Durgapur	"	"	A	-
40 Also at	Manishdal	"	"	A	-
41 From Cuttack to		Odisha			
42 Asika		**"**	**Rusikanya**	**A**	**150**
43 Parlakhemundi		"	Varshadhar	A	180
44 Bhimunipatnam		**Andhra**	Sabari	A	125
45 Also at	Gunupur	"	Varshadhara	A	-
46 "	" Parvatipuram	"	"	A	-
47 Anakapalle		"	SR	A	70
48 Also at	Kakinada	"	Godavari	A	-
49 Rajmundari		"	"	A	200
50 Also at	Bhimavaram	"	Kolleru	A	-
51 "	" Elleru	"	"	A	-
52 "	" Amravati	"	"	A	-
53 "	Vijayawada	"	Krishna	A	-
54 "	" Gundalkhama	"	Gundalkhama	A	-
55 "	" Ongole	"	Gundalkhama	A	-
56 Tanali from	Rajmundari	"	Krishna	A	220
57 Kanigiri		"	Penneru	A	220
58 Atmakur		"	"	A	130
59 Gudur		"	SR	A	100
60 Also at	Penneru confl.	"	Penneru/SR	A	-
61 Also at	Renigunta	"	SR	A	-
62 Tiruvalloor		**T.N.**	SR	A	180
63 Chengalpettu		"	Pallar	A	120
64 Villupuram		"	Ponniyar	A/B	150
65 Also at	Tiruvannamalai	"	Trb	A	-
66 "	" Near Nayveli	"	on Vellar bank		-
67 Srirangam		"	Kauveri	A	190
68 Pudukottai		"	Vaigai	A	70
69 Mannandorai/Madurai		"	Vaigai	A	
70 Kovilpatti on	Vaipayar bank	"	Vaipayar	A	90
71 Palayamkottai		`"	Chittar	A	70
72 Also at	Kumbakonam	"	Kauveri	A	-
73 "	" Thanjavoor	"	Kauveri	A	-
74 Also at	Musri	"	Kauveri	A	-
75 "	' Covai/Pollachi	`"	Amravati/	A	-
76 "	" Erode	"	Kauveri	B	-
77 "	" Karoor	"	Amravati	B/A	
78"	Ramanathapuram	"	Vaipayar	A	-
79	East Virudunagar	"	SR	A	-

TOTAL LENGTH OF EXPECTED PIPELINE 3740 Kilometres

Zone I & II – Total IWCD Projects

Arunacahl Pradesh	1
Assam	14
West Bengal	21
Odisha	7
Andhra Pr	18
Tamil Nadu	18
TOTAL IWCDPs	**79**

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16.contd.

ZONE III – LOCATIONS OF IWCD PROJECTS AND PIPELINE REQUIREMENTS

Name of Place District	State	Near River	Approx Height	Approx distance Kms
1. South of Naughar	U.P.	Rapti	A	-
2. Gorakhpur	"	Gandhak	A	100
3. Tanda	".	Ghagara	A	70
4. Akbarpur	".	Tons	A	50
5. Sultanpur	".	Ganga	A	70
6. Bela	"	Ganga Trb.	A	80
7. Allahabad	"	Ganga	A	80
8. Also at Sartnath	"	Yamnuna	A	-
9. Basti	"	Gaggara Trb	A	-
10.Kausambi bank(south)	"	Yamuna Trb	A	30
11. Satna	**Madhya Pr**	Vindhyan Trb	B	140
12Beohari	"	Son Trb	B	75
13.Katni	"	"	C	85
14.Jabalpur	"	Narmada Trb	C	100
15.Also at Balaghat	"	Wainganga	B	-
16." " Ramakona	"	"	C	220
17. Achalpur	**Maharashtra**	Tapi Trb	C	100
18. Akola	"	Puma	B	120
19. Washim	"	Pennganga	C	100
20. Parbani or Nanded	"	Dudhana Confl	C	150
21. Latur or Tirna	"	Tirna	C	120
22. Also at Manjira banks	"	Manjira	C	-
23.Solapur	"	Sina/Bhima Confl	C	120
24. Bhima banks	**Karnataka**	Bhima	C	75
25. Bijapur or Basavana	"	Tungabadra Trb	C	80
26. Ghatprabha or at	"	Ghatprabha /		
. Krishna bank	"	Krishna bank	C	70
27. Bagalkot	"	Tungabadra Trb	C	50
28. Hungana	"	Malprabha confl	C	100
39 Gangawati	"	" "	C	120
30.. Bellari	"	"	C	80
31. Penneru Bank	**Andhra Pr.**	Penneru	C	60
32 Tadpatri	"	"	C	50
33. Cuddappah	"	"	B/A	75
34. Rajampet	"	Penneru Trb	B	70
35. Renigunta	"	SR	B	100

.

TOTAL LENGTH OF PIPELINES **2815**

Total IWCDPs :

U.P.	10
Mahdhya Pr	6
Maharashtra	7
Karnataka	7
Andhra Pr	5
TOTAL	**35**

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ZONE IV - LOCATIONS OF IWCD PROJECTS & PIPELINE REQUIREMENT

Name of Place/ District	State	Near River	Approx Height	Approx Distance---
1. Shivhar	**U.P.**	Burtiganga Trb	A	-
2. Musafarpur	"	Ganga	A	50
3. Patna	**Bihar**	Ganga	A	100
4. Jahanabad	"	Ganga Trb	A	70
5. Gaya	"	Ganga Trb	A	80
6. Also at Rajgir	"	Talaiya	A	-
7. Ara	"	Son	A	-
8. Khagaria or Munger	"	Ganga	A	-
9. Daltenganj	**Jharkhand**	Ganga Trb	B	150
10. Bishrampur	"	Pantsagar	C	150
11. Korba	"	Hasdo	B	80
12. Balodasagar	**Chattisgarh**	"	B	60
13. Simga `	"	"	B	50
14. Durg	"	"	B	80
15. Brahmpuri	**Maharashtra**	Wainganga	B	250
16. Chandrapur	"	Wardha	B	200

TOTAL LENGTH OF PIPELINES **Kms: 1470**

Total IWCD Projects:

U.P.	2
Bihar	6
Jharkhand	3
Chattisgarh	3
Maharashtra	2
Total	**16**

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16.contd

ZONE V –LOCATIONS OF IWCD PROJECTS & PIPELINES REQUIREMENTS

Name of place/ District	State	Near River	Approx Height	Approx Distance
1. Madhuban	Bihar	Sapt Kosi	A	-
2. Darbganga	"	"	A	50
3. Samastipur	"	Burtiganga	A	50
4. North Biharsharif	"	Ganga	A	80
5. Nalanda	"	Ganga Trb	A	50
6. Nawada	"	Ganga Trb	A	50
7. South Dhanbad	Jharkhand	Baraka	B	220
8. Purulia	W.B.	Purulia	B	70
9. Jamshedpur	Jharkhand	Subarnarekha	A	120
10.Banei	Odisha	Sankh	A	220
11.Barakot	"	"	A	60
12.Sonapur	"	Tel	A	175
13. Bouda	"	Mahanadi	A	100
14. North Kasinga	"`	Tel	A	140
15. Also at Sukma	Chattisgarh	Sabari	B	
16. " " Konta	"	Sabari	A	
17. Badrachalam	Andhra Pr	Godavari	A	80
18. Khammam to	"	Krtishna Trb	A	120
. Amravati (repeat)	"	Kolleru	A	80

TOTAL LENGTH OF PIPELINES Kms 1605

Total IWCD Projects :

Bihar	6
Jharkhand	2
West Bengal	1
Odisha	5
Chattisgarh	2
Andhra	2
Total	**18** -

16.contd.

ZONE VI– LOCATIONS OF IWCD PROJECTS AND PIPELINES REQUIREMENTS

Name of Place/ District	State	Near River	ApproX Height	Approx Distance Kms
1. Bettiah	Bihar	Burti Gandhak	A	-
2. Gopalganj	"	Kali Gandhak	A	60
3. Siwan	"	Ganga Trb	A	50
4. Balia	"	"	A	70
5. Dumran	"	Gomati	A	50
6. Sasaram	"	Son	A	100
7. Hussainabad	Jharkhand	"	A	50
8. Garwa	"	"	C	70
9 Surajpur	Chattisgarh	Trb	C	180
10 Katgora	"	Hasdo	C	100
11.Champa	"	"	C	70
Balodasagar Repeat	"	"	B	80
From Brahmpuri to 12. Nagpur	Maharashtra	Wainganga	C	250
From Brahmpuri to 13. Wani	"	Wardha Godavari confl.	C	130/
From Brahmpuri to 14. Ramagundam	Andhra Pr	Godavari	A	260

TOTAL LENGTH OF PIPELINES kms 1520

Total IWCD Projects

Bihar	6
Jharkhand	2
Chattisgarh	3
Maharashtra	2
Andhra	1

Total 14

16.contd.

ZONE VII –A LOCATIONS OFIWCD PROJECTS AND PIPELINES REQUIREMENTS

Name of place District	State	Near River	Approx Height	Approx/ Distance kms
1. Bahraich	U.P.	Ganga Trb	A	-
2. Ramnagar	"	Sarada/Ganga	A	90
3. Lucknow	"	Ghaggara Trb	A	70
4. Raibareli	"	Ganga Trb	A	70
5. Fatehpur	"	Yamuna	A	90
6. Banda	"	Yamuna Trb	A	60
7. Near Lauri	M.P.	On Ken banks	A	50
8. North Halta	"	Ken	C	100

ZONE VII - B

9. Also from Kheri	U.P.	Sarad/Ganga Trb	A	-
10, Beriganj	"	Ganga Trb	A	120
11. Kanpur	"	Yamuna	A	100
12. Hamirpur	"	Yamuna	A	90
Banda (Repeat)	"			

TOTAL LENGTH OF PIPELINES Kms 840

Total IWCD Projects

U.P. 10
M.P. 2

Total 12

ZONE VIII – LOCATIONS OF IWCD PROJECTS AND PIELINES REQUIREMENTS

Name of place/ Disatrict	State	Near River	Approx height	Approx Distance kms
1. Haridwar	Uttaranchal	Ganga	A	-
2. Bijnor	U.P.	"	A	70
3. Meerut	".	Ganga Trb	A	70
4. Delhi	Delhi	Yamuna	A	90
5. Faridabad	U.P.	ganga Trb	A	60
6. On Yamuna bank	"	Yamuna	A	70
7. Mathura	"	"	A	50
8. Agra	"	"	A	50
9. Dhaulpur	Rajasthan	Chambal	A	70
10. Sawai Madhavpur	"	On Chambal confl	A	150
11. Kali sindh	"	Kali sindh	` B	90
12. Sangod	"	Kali sindh	B	80
13.Jhalwar	"	"	C	50
14. Ujjain	M.P.	Vindhyan Trb	C	170
15. Barwah	"	Narmada Trb	B	130
16. Khandwa	"	"	B	80
From Sawai Madhavpur				
17. Also at Tonk	Rajasthan	Chambal	B	100

TOTAL LENGTH OF PIPELINES Kms 1380

Total IWCD Projects

Uttaranchal	1
U.P.	6
Delhi	1
Rajashtan	6
M.P.	3
Total	**17**

16.contd.

ZONE IX - A -LOCATIONS OF IWCD PROJECTS AND PIPELINES REQUIREMENTS

Name of place District	State	Near River	Approx Height	Approx Distance Kms
1. Sravasti	U.P.	Rapti	A	-
2. Balrampur	"	"	A	50
3. Ayodhya	"	Ghaggara	A	100
4. Koiripur	"	Gomati	A	120
5. Jaunpur	"	"	A	70
6. Varnasi	"	Yamuna	A	70
7. Robertsganj	"	Son	A	150
Bishrampur Repeat	Chattisgarh	Pant sagar	C	180

ZONE IX – B

8. Also at Bareli	U.P.	Ganga	B	-
9. Sahjahanpur	"	"	A	100
10. Farookhabad	"	"	A	70
11. Kanauj	"	"	A	60
12. Auriya	"	Sindh/Yamuna confl	A	100
13. Orai	"	Dhasan/Betwa confl	A	110
14.Jhansi	M.P.	Betwa confl	B	100
TOTAL LENGTH OF PIPELINES			Kms	1280

Total IWCD Projects

U.P.	13
M.P.	1
Total	**14**

16.contd.

ZONE X – LOCATIONS OF IWCD PROJECTS AND PIPELINES REQUIREMENTS

Name of place District	State	Near River	Approx Height	Approx Distance Km.
1.. Kathua	H.P	Ravi	B	-
2. East of Beas	Punjab	Beas	B	50
3. Rahon	"	Sutlej	B	150
4. South of Sutlej	"	"	B	50
5. Maler Kotla	"	Trb	B	50
6. North of Tohana	Hasryana	Ghaggar	B	120
7. Hissar	"	Trb	B	100
8. Katputli	Rajasthan	-	C	220
9. Dausa	"	Trb	B	150
10. Hindaun	"	Yamuna Trb	B	75
Sawai Madhavpur	"	Chambal	A	130

TOTAL LENGTH OF PIELINES Kms 1095 .

Total IWCD Projects

H.P.	1
Punjab	4
Haryana	2
Rajasthan	3
Total	**10**

16.contd.

ZONE XI –A LOCATIONS OF IWCD PROJECTS & PIPELINE NAME OF REQUIREMENTS

Name of Place District	State	Near River	Approx Height	Approx Distance
1. Aknor	J & K	Chenab	C	-
2. Samba	"	Ravi Trb	C	60
3. Pathankot	Punjab	"	C	60
4. Gurudaspor	"	Beas	B	50
5. Patti	"	Sutlej/Beas	B	130
6. Kotkapura	"	Sutlej	B	120
7. Melaut	"	Sutlej Trb	B	60
8. Mandi Dabwali	"	"	B	60
9. Sirsa	"	Ghaggar	B	80
10. Rawatsar	Rajasthan	Extn of Ghaggar	B	120

ZONE XI _ B

11. Lun	Rajasthan	Luni	B	-
12. Samdevi	"	"	A	50
13. Balotra	" `	`"	A	40
14. Sindari	"	"	A	50
15. Gurha	"	"/ SR	A	60
16. Disa `	Gujarat	Luni/Banas	A	120
17. Patan	"	Trb	A	70
18. Gandhi Nagar	"	Aravati Trb	A	120
19. Kheda	"	Sabarmati	A	60
20. Anand	"	Mahi	A	120
21. Padra	"	"	A	60
22. Bharuch	"	Narmada	A	70
23. Mandvi	"	Ukai	A	50
24. North of Bardoli	"	Ukai Trb	A	40
25. Navasari	"	Satmala Trb	A	50
26. Valsad	"	SR	A	50
27. Also at Amreli	"	Shetrunji	A	-
28. Dolka/ Lothal	"	Trb	A	

From Rawatsar to I.G.canal connection was possible, the reason being Rawatsar is at 350/400 meter level from sea and I.G.canal falls at below 150 mtr level

TOTAL LENGTH OF PIPELINES Kms 1750

Total IWCD Projects

J & K	2	
Punjab	7	
Rajasthan	6	
Gujarat	13	…….. …… Total 28 Projects in XI A & B

ZONE XII – LOCATIONS OFIWCD PROJECTS & PIPELINE REQUIREMENTS

Project to Project pipeline connections may not be required. A helpful zone to supply to Eastern IWCD Proje**cts.**

Name of Place District	State	Near River	Approx Height	Approx Distance kms
1. Vada	Maharashtra	Satmala	A	-
2. Kalyan	"	Harichand Trb	A	
3. Alibag	"	Trb	A	
4 Srivardhan	"	Trb		
5. Khed	"	SR	A	
6. Sangameshwar	"	" `	A	
7. Vijaya Durg	"	"	A	
8 Kudal	"	"	A.	
9. Venguria or . Sawantwadi	"	"	A	
10.Panaji	Goa	Terekhol Trb	A	
11.Karwar	Karnataka	Mandovi/Zuari	A	
12. Sharavati	"	Sharavati	B	
13.Khundpura	"	SR	A	
14.Udippi	"	SR	A	
15. Mangalore	"	SR	A	
16. KanoorThaliparmb	Kerala	SR	A	
17. Payyoli	"	SR	A	
18. Beypore/Farook	"	SR	A	
19. Thrithala/Kutipuram	"	Bharatapuzha	A	
20. Kalady	"	Periyar	A	
21. Piravom	"	SR	A	
22. Chengannur	"	Pambayar confl	A	
23. Haripad	"	SR	A	
24. Also atChalakudy	"	SR	A	
25. Shas/kota				
26.Attingal	"	SR	A	
27.Nemam	"	SR	A	
28. Also at Daund	Maharashtra	Bhima/Godavari confl		
29. " " Nira bank	"	Bhima/Nira confl		
30 " " Nandurbar	"	Tapi		

Total IWCD Projects

Maharashtra	12
Goa	1
Karnataka	5
Kerala	9
Total	**27**

Nation-wide distribution over.

17. MY PERSONAL DATA

Few read my Conceptual Project Profile and said I am an Engineer. No I am not. Few also said I am a well qualified man. No, Not at all. Primary education was in Chennai and I am qualified up to –Tenth (Pass).. How big one imagines and how refined one thinks makes him great. And I know, What I contribute to the Nature/ Nation and her subjects is important than what I was and what I am. If one imagines very big, he creates and achieves big. Many people with no or formal education have made history. A farmer, Kalashnikov stunned the Western world. It all inspires me a lot. For such a huge Project, some said, 'go to America".

By virtue of being from a large farmer's family of + 8000 sq .ft joint family mansion I possess knowledge of traditional Earth & Water Management. I began my career working as clerk in an Architect's firm in Mumbai, shifted my profession to marketing and retired as Area Sales Manager. Now I am a small Retailer.

Knowing the serious topic of the world on water from newspapers, TV channels as to how people stand in queue for water, animals dying for want of water, flood and its damages, water disputes, I took initiative possessing the instinct of helping the society, environment, wild and domesticated animals. When I wrote a covering letter before 1999 to the T.N. Secretariat, my project then was only Water Conservation Project but since it was only pertaining to a state matter I took a pause. I alone delved into detail to go for a National Project suitable not only for our nation but also to several needy nations. I also thought we all go the natural way as far as possible to favour all and our nature. Thanks to Supreme Court hearing which persuaded me to quickly present the Report. Took a Computer on Loan. Got into day and night action. A Decades' study and analysis gave a great boost. So a quick comprehensive matter on water was in dire need. While undertaking such matters of high magnitude, I thought no Governments, no Investors would become bankrupt and no environmental issues and no living beings –none are hurt. Later it was also conceived that the Government and the Investors must be rewarded with other long- term monetary benefits in addition to the Actual Water Charges, to run the projects. In the name of progress and concession, no Nation should financially collapse and that was the philosophy I applied. Clues were there before we were all born. So, anybody could have designed, nobody did it and precisely I did it.

Finally, IWCD Project Concept came into being as the only one solution. Fine tuned procedures and combination of multiple factors stuffed into one subject – for many water problems –One solution : the IWCD PROJECT.

Let the Project Report on my concept be studied, analysed and if necessary improved and implemented as early as possible to help protect the nature and her subjects.

Money matters to many. To me Earth, Water and all living beings matter. A lot.

GOOD LUCK. RESPECTFULLY YOURS,

March 28, 2012

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18. DIMENSIONS OF IWCD PROJECT TO RECORD/DRAW

Following are dimensions of IWCD Project for the supply of 1,000,000 cm of water a day or each approximately to three districts in India. You may record in your computer in 3-D modelling or directly draw on tracing paper**. First, read all points.**

We will start from the centre of the Project so that your Computer Operations become Lucid. Total Project-coverage area is 3754 meter Long. Width is 492mtr plus 300 meter(presumptive) distance to the River bank. Write North on top, your Left is west; your Right is East and bottom South. Assume South side lies the river bank area.(300 meter away from Transfer Pond & 387 meters from spillways of South West and South East). To reduce direct thrust of water on walls and to make water flow smooth make appropriate curves and arcs in the drawing at the beginning and end of canals & pillars and wherever necessary.

1. The plan of Potable Water Reservoir (PWR): (Excavation, slabs laying work) 3640 meter Long x 300 mtr wide x 30 mtr deep. For first 2/2.3 meter deep 60 degree angle slope and one meter wide foot step, repeat three times down at 60 degree angle & one meter foot step, again 60 degree angle slope up to 22/25.4 meter(surface to bottom) down. The distance between surface and the hypotenuse slope end is 21.30 meter which means PWR inner bottom length would be 3597.4 and width 257.4 meter. On 60 degree slopes and one meter foot steps, Slabs of 200 cm x 100 cm x 5 cm would be laid on all four sides.

1.1 a). PWR concrete(blocks)wall : (Concrete block laying work)
Draw to create 30cm ht x 20cm thick fence wall(concrete blocks)on surface around the PWR (after soil levelling) except the area surrounding Pump House Projections and except the area of Inner roads i.e., 2 & 3.

b). Draw to create 100 cm ht x 20 cm wide (thick) fence wall on surface around the Pump House projection Rcc wall. (as point no.2 below)

2. West Side Pump House Projection area- non-excavated(Wall construction work) From North-West side of PWR come down to South up to 79+1 mtr wall=80 meter down(i.e., North to South) create Pump House area of 31 (30+1) meter long projection into PWR and 30 mtr wide (1+28 +1) x 30 meter deep. One meter is the thickness of Rcc wall from surface upto 26 meter down and from 26 meter, 60 degree angle slope or arc upto bottom surrounding the Pump House Projection.

2.1 West side Pump House bottom platform (Concrete paving work)
Draw to create 30 meter L x 15 meter W x 20 cm wide (thick) Concrete platform at the bottom of Pump House Projection in PWR. (for better suction of clean water). Write 2.1 West side P.H.bottom platform.

2.2. East side Pump House projection area (non excavated)(wall Construction work)
Just copy (same measurements) and repeat Point 2 to the East side .
Write 2.2 East side Pump house projection.

2.3 East side P.H.bottom platform (Concrete paving work)
Just copy same measurements of 2.1.and write **2.3** East side P.H. Bottom platform.

3. West side PWR inner road (Part-excavation)
From Pump House to South up to 100 meter down and create a PWR -Inner Road. 177 meter long x 8 meter wide, at 10 degree angle slanting(Hypotenuse) towards bottom(West to East) and 60 degree angle slope towards North side and South side of PWR inner road.

3.1 East side PWR Inner road (Part excavation)
Just copy (same measurements) and repeat Point 3 to the East side :
- the Inner Road Projection from East to West side and write **3.1** East side PWR-Inner road.

4. Roads and open land.(non-excavated area- 35 meter)
Draw to create 35 meter wide gap around the Potable Water Reservoir. 8 meter Wide road + 19 meter open land for construction of buildings & structures + 8 meter wide road. Road no.1 will be adjoining the PWR and Road no.2 will be adjoining all Receiving Reservoirs. centre is the open land.

4.1 Write North road 3710 meter L x 35 meter W and as explained in 4.
4.2 Write West road 300 meter long x 35 meter wide and as explained as 4.
4.3 Write South road.3710 meter long x 35 meter wide and as explained in 4.
4.4 Write East Road 300 meter long x 35 meter wide and as explained in 4.

5. Project entry road
Come to the North West side and draw to extend the road up to 22meter towards North. Width is 35 meter. Write Project Entry Road.

5.1 Draw to create concrete fence wall on both sides of project entry road: 30 cm height x 20 cm wide (thick) .

6.1 West side Receiving Reservoir RR (Excavation work)
For simple computer operations, from Project Entry Road draw 22 meter wide towards West, bring down (only West line) 407 meter long– you get a long box along the West road no.2. Leave two meter from this line towards East and draw (from North side) rectangular boxes of 45.2 meter long with 8 meter wide leaving one meter gap. So, You get 407 meter long x two meter wide Rain Water Collection Canal,(Give 0.5 meter Deep) You also get 407 meter long x 8 meter wide Soil Protection Bund with one meter wide x 8 meter long sub-canals and you also get 392 meter long x12 meter wide Receiving Reservoir.(Give 4 meter Deep for RR).

OR

From West of West road. Draw from the Start of North Project Entry road to South 392 meter long x 12 meter wide, 4 meter deep, 60 degree angle slopes up to the bottom. Bottom width is 7.4 meter Write West Receiving Reservoir. West road is the border of Receiving Reservoir

6.1.1 Draw to create fence wall (concrete blocks) of 30 cm ht x 20 cm wide (thick) adjoining West RR on West road No.2.

6.2 West side Soil Protection Bund (S.P.bund) (Non excavated area)
From the start of North Project Entry road to South (392+15=) 407 meter long x 8 meter wide. Write West Soil Protection Bund. West Receiving Reservoir is the border of S.P. bund.

6.3 West side Sub-canals on S.P.bund: (Excavated area)
Create sub-canals for every 45.2 meter gap(distance) i.e., 9 canals in the soil Protection bund(safety Bund): 8 meter long from Receiving Reservoir x 1 meter wide x 4 meter deep, 60 degree angle slope from 7.5 meter from RR Please note that 0.5 meter non excavated area is for further protection of eroding soil from Rain Water Collection Canal and to keep filter nets. The sub-canals are East-West position. Write West side Sub- canals. Sub canals are connected to 6.4 & 6.1.

6.4 West side Rain water collection canal (Excavation work)
Draw to create Rain Water Collection Canal (RWCC) West of Soil Protection Bund : From North Project Entry Road to South up to 392 + 15 = 407 meter long x 2 meter wide 0.5 meter deep. Write West side Rain Water Collection Canal.

7. 1 North side Receiving Reservoir (Excavation work)
For simple computer operations: From Project entry road Draw 3687 meter long line, leave two meter wide gap towards South. Create 29.2 meter box for every one meter gap. You get 3687 meter long x two meter wide Rain Water collection canal(Give 0.5meter deep), 3695 meter Long x 8 meter wide soil protection bund, 3687 meter long x 12 meter wide (Give 4 meter Deep)North RR.

OR

Draw to create Receiving Reservoir (RR) at North of North Road No.2. From the start of Project Entry Road to East 3687 meter long x 12 meter wide x 4 meter deep 60 degree angle slope. Write North Receiving Reservoir. North Road is the border of North RR

7.1.1 Draw to create concrete blocks fence wall of 30 cm ht x 20 cms wide (thick) adjoining North RR on North road no.2

7.2 North side Soil Protection bund (S.P. bund) (Non-excavated area)
Draw to create Soil Protection Bund North of North Receiving Reservoir. From the start of Project Entry Road to East 3695 meter long x 8 meter wide. North Receiving Reservoir is the border of S.P.bund and this is non-excavated area.

7.3. North side Sub-canals on S.P.bund (Excavation work)
Draw to create sub-canals for every 26.2 meter gap (distance) i.e., 141 canals in the North S.P.Bund : 8 meter long from (North) Receiving Reservoir x 1 meter wide x 4 meter deep, 60 degree angle slope from 7.5 meter from RR. Please note that 0.5 meter non-excavated area is for further

protection of eroding soil from Rain Water Collection Canal. The sub-canals are North- South position. Write North sub-canals. Sub canals are connected to 7.4 & 7.1.

7.4 North side Rain water collection canal (RWCC)(Excavation work)
Draw to create Rain Water Collection Canal (RWCC) North of North Soil Protection Bund. From the start of Project Entry Road to East draw 3697 meter long x 2 meter wide x 0.5 meter deep. North S.P.Bund is the border of North RWCC. Write North side Rain Water Collection Canal.

Come to East side: Continue extension of Receiving Reservoir (RR), Soil Protection Bund and Rain Water Collection Canal on East side as under:

8.1 East side Receiving Reservoir (RR) (Excavation work)
For simple computer operations: Leave 22 meter from East road no.2, Connect and Draw from North point 370 meter long towards South. Leave two meter as (RWC)canal towards West. Create 45.2 meter x 8 meter wide box with one meter gap, so you get 405 meter long x two meter wide Rain Water collection canal, 397 meter long x 8 meter wide Soil Protection bund with one meter wide sub-canal and 370 meter long x 12 meter wide x (4 meter deep) East RR.

OR

Extend Receiving Reservoir from North RR to South 370 meter long x 12 meter wide x 4 meter deep 60 degree angle slope. Write East Receiving Reservoir. East Road no.2 is the border of East Receiving Reservoir.

8.1.1 Draw to create concrete blocks fence wall of 30 cm ht x 20 cm wide (thick) adjoining East RR on East road road no.2

8.2 East side Soil Protection bund (S.P.bund) (Non excavated area)
Extend Soil Protection bund (S.P.bund) to South from North Soil Protection bund i.e., Create S.P.bund East of East RR. : 397 (382 + 15) meter long x 8 meter wide. This is also non-excavated area and East R.R. is the border of this Soil Protection bund.

8.3 East side Sub-canals (Excavation work)
Draw to create sub-canals for every 45.2 meter i.e., 9 canals in East S.P.bund. 8 meter long from the East Receiving Reservoir x 1 meter wide x 4 meter deep, 60 degree angle slope from 7.5 meter from RR Sub-canals are East-West position. 0.5 meter is for further protection of soil erosion. Sub-canals are connected to 8.4 & 8.1.

8.4 East side Rain water collection canal (Excavation work)
Extend Rain Water Collection Canal from North RWCC to South up to 405 meter long x 2 meter wide 0.5 meter deep. East S.P.bund is the border of East RWCC. Write East Rain Water Collection Canal(RWCC).

The total length of South side from West S.P.bund to East S.P.bund is 3734 meter long plus 8 mtr West + 8 mtr East S.P.bunds' width.+ 2

mtr West + 2 mtr East Rain Water Collection Canals.= total Project length 3754 meters .

9. Come to South-West side South-West Receiving Reservoir(RR)
(Excavation work) (No excavation at 9.3.2)
Draw from East of South-West S.P. bund and stop at 1568.77 meter Long x 15 meter wide (from South road no.2) x 6 meter deep. Write Point 9. South- West RR. and South road no.2 is the North bounday of S-W RR.

9.1.1 Rcc canal bund South-West side (Construction work)
Extend the line 81 meters from point no.9 only from South road no.2 or from the East side of West Soil Protection bund go up to 1649.7 meter long on South road no.2 and again move 3.48 meter towards 90D down south from South road no.2. (i.e., from start of South-West road the distance is 1637.7 mtr)

Draw to raise 2 meter height RCC **bund**, 16.3 meter long (3.48 meter is the distance from the South Road, so the width of Road- Rcc-bund is 3.48 meter).

9.2 Canals on South west Diversion pit. (Excavation work)
Move your mouse to create a **canal** of 16.3 meter long x 2 meter wide x 2 meter deep parallel to Point no. 9.1 above. Write South-West- Diversion-pit **Canal.**

9.2.1 Repeat 16.3 meter long x 2 meter wide x 2 meter deep D.P.Canals, **19** times i.e.,Total of 20 canals, leaving 70 centimeter away from one another.

9.3 Pillars on South West diversion pit (Construction work)with slots-9.5)
Draw to create 16.3 meter long x 70 centimeters width x 2 meter height RCC **pillar** parallel to the West -Diversion-Pit **canal.** Write South- West-Diversion-Pit **pillar**. Again draw to create foundation to D.P. pillar up to 50 cm down.

9.3.1. Repeat 16.3 meter long x 70 centimeters wide x 2 meter height D.P.Pillars, **18** times i.e., Total of 19 RCC pillars. leaving 2 mtr from one another.

Out of 16.3 meter long D.P.Pillar, 0.3 meter length is to hang metal nets to block all particles entering into Transfer Pond stated in Point 17 below.

9.3.2 D.P.canal platform(Pillar support bund) Draw to create a platform (to avoid direct thrust of water on D.P. pillars on South West side).
From Pillars and canals- 53.30 m long(from 9.1.1 to 9.4 - 60.26 mtrs) x 3 m wide(3.3 from bridge slab) x 20 cm thick wide to West, then go down at 45 degree angle slope up to 5.65 m (4 mtr depth).

9.4 Rcc Bund (construction work)on South West side)
As mentioned in Point 9.1. Leave 3.48 meter and draw to create Rcc bund South-West Diversion-Pit–Road-Rcc-bund and close there.

So the total distance from South road No.2 (9.1) to the 9.4. **River Bank area** it has to be 60.26 meter long.The Inner distance of Reservooir is 53.30

9.4.1 Draw 10 inch x 8 inch width x 2 inch thick metal piece (6 inch to be inserted on both sides of Slabs/bridge) to restrict slab movement.

9.1.2 Draw to create fence wall(concrete blocks) on Road no.2 of South-West road .

9.5 Slots to insert filter nets between canals & pillars

Draw to create a slots between Rcc Road-bund and Rcc South-West D.P.pillar. 30cms plus 800cms(bridge)plus 135 cms plus 15cm slot(Total=980cms) away (distance) from the start of the West-Diversion-Pit Pillar to East.

Slot Size 15 cm wide x 20 cms long (inner depth) 2 meter (height).

Draw to create addl. three similar slots 1.35 meter away from the earlier slots. Write Point. 9.5 filter slots.

Twenty canals are required for the reason that when filter nets/boxes are fixed for in-filter–action systems the water flow would obviously be reduced and over flow might take place. So more canals would increase the flow of water. The other reason is when South side Reservoir is required to be widened up to 60.26 meter or up to 100 meter, then we do not need to disturb or re-work on canals.

10. Canal bridge (south west side) (Slab-laying work)

Draw to create 8 mtr wide bridge – Laying of slabs on top of the South West Diversion Pit canals & Pillars.

Leave 0.3 meter from west side of D.P.canals & D.P.pillars,for laying slabs.

Custom built 269 cm x 800 cm slabs x 45/55 cm thick thick, 20 nos to be laid on pillars (Point.9.3 & 9.3.1) and (13.3 & 13.3.1**) OR** 539 cm x 800 cm x 45/55 cm thick, 10 nos and two slabs of 312 cms x 800 cms x 18 inch to be laid on Rcc bund-each onee at the end of the bridge. (Point 9.1 & 13.1) Total 22 pcs of slabs. This would create 8 mtr wide bridge covering 60.26+ meter long on top D.P.canals and pillars of South West side. Total Ht 245 cm plus 45cm slab from platform(9.3.2) & Total Ht from S.W reservoir is 645 cms.

11. South- West Diversion Pit : (Excavation work)

Move your mouse from Point 9.4 (from Point 9.1 to 9.4 is the bridge-slabs on canals & pillars)to draw 20.30 meter long parallel line to the South West road. 30 cm canal pillar projection plus 300 cm platform plus 1700 cm Diversion pit area= Total 2030 cms) (Depth is 6 meter- 60 degree angle slope to North). Take 45/135 degree angle diversion towards North-West and(6454cm long) connect to point no.9 .R/triangle portion with Diversion Pit is created on South West RR.

12. South West Receiving Reservoir and Diversion Pit is now connected.

So, the South-West Receiving Reservoir is created with 1649.7 meter long including R/triangle portion & Diversion Pit. Surface Width of Diversion pit is 60.26 meter. D.P. canals & pillars > 16.3 mtr L = Total South-West portion is 1666 mtr long.

13 to 16 as below on South East side (Copy all measurements from East to West)

Repeat 9…… as 13. Write South East Rec.Reservoir

"	9.1.1…….	as 13.1.1	Write South East Road Rcc Bund
"	9.2 ……..	as 13.2	Write Canals on South-East D.P.
"	9.2.1……	as 13.2.1	Repeat of canals
	9.3 ……..	as 13.3	Pillars on South East D.P.
"	9.3.1. ……...	as 13.3.1	Repeat of pillars
"	9.3.2	as 13.3.2.	Platform to support D.P.pillar
"	9.4 ……..	as 13.4	Rcc bund on South-East side
"	9.5……	as 13.5	Slots to insert on S-E(C & P)
	10 ……	as 14	South East D.P.bridge
"	10.1 …….	as 14.1	South East D.P.bridge slabs.
"	11…….	as 15	South East Diversion Pit (D.P.)
"	12 ……	as 16	South-East Rec..Reservoir.& R/triangle portion & Diversion pit is connected.
	9.1.2……	as 13.1.2	Fence wall concrete blocks

17. Transfer Pond- (T.P.)Excavation work

After you complete Point 16 Your Computer will show a gap of 402 meter distance. between South West RR and South East RR. This area is called "Transfer Pond".

Draw to create Transfer Pond:.400 meter long x 100 meter wide x 15 meter deep. (90 Degree excavation on all four sides).

Draw 26.5 meter long line from 9.4. & 13.4. (i.e. from South- end of D.P. canal-bunds of both sides -South West and South East) towards River Bank area and join the two lines. You will get 402 meter long x 102 meter wide Transfer Pond.

17.1 Construction of RCC wall: (construction work) Inside Transfer Pond Draw One meter thick Rcc wall from the bottom to the top except where canal-water falls to T.P. Canal section Rcc wall would be drawn up to 12.5/13 meter Ht from bottom. From 10 mtr down to 15 mtr down draw 45 degree angle slope to support the Rcc wall,.except at the centre where suction pumps would be located.

17.1.1 Draw to create 30mtr L x 15 mtr W x 20 cm thick platform at the centre where suction pipes would be fixed.

17.1.2. Draw to create 100 cm height x 20 cm wide(thick) concrete blocks - wall except where Pump House would be located above.

18.a River canals: (Excavation work) (from River directly to Transfer pond) 300 meter long x 1.5 meter wide x 2 meter deep. 4 nos.

18.b River canals: (Excavation work) (from river directly to Receiving Reservoir) 385 m L x 1.5 Wide x 2 mtr deep. 4 nos

19. Spillways in West side 387 meter long(presumptive) x 6 meter wide x 0.3 meter deep.

19.1 Paving work upto 300 mtr long from RR x 6 mtr wide

20. Spillway in South East side 387 meter long (presumptive)x 6 meter wide x 0.3 meter deep.

20.1 Paving work upto 300 mtr long from RR x 6 mtr wide

21. River bank soil filling & wall on South West side (if necessary)

22. River bank soil filling & wall on South East side (if necessary)

Though the construction of IWCD Projects have no intricacies, IWCD Projects become a marvel in Earth & Water Management because of its massive size creating large catchments area, large storage facilities, fine water-collection procedures and a spectacular plantation programme and also the reward of additional revenues. Smaller projects would increase project operating costs thus resulting in less profitable operations.

Drawings – Plan of IWCD Project, Potable Water Reservoir (PWR),Pump House areas, Receiving Reservoir, Diversion Pit area & canals are included herein. Project Area's important Buildings and structures are also included. These are enough for Enginners to further develop a "Complete Project".

The IWCD Project details are over.

GOOD LUCK

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