1 Wentainer

Wentainer is an inland water transportation system. The main advantage of the system is that it can transport cargo with lower cost while not being affected by the problems that the existing inland water ways has.

2) Working

The Wentainer system works as a convoy of boats in straight line(3.25m Width ) which is able to carry a container (33 TON) or equally weighing cargo. A three-rail system situated in the structure constructed above the water path helps in the movement and control of the Wentainer. The Wentainer initiates movement by applying force onto the middle rail called puller rail , the other two rails along the sides of structure is used to guide the Wentainer along the path. Wenatiner system has an engine unit situated at the front boat of the straight convoy which applies the force on the rail. The entire system works with help of electricity generated by the solar panels situated above structure.

3) Advantages

The advantages of Wenatiner system over the conventional inland waterways systems are:

1. Cargo can be transported by using only one by third of energy used by a propeller system.
2. Can use solar energy directly which has lower generation cost.
3. Direct and indirect pollution is minimized during the cargo transport.
4. Large scale goods transportation can be achieved using a small water pathway.
5. Can be made fully automatic.

4)Problem

In time being, the cost less method for cargo transportation throughout the country is waterways. To move one-ton cargofor 1 km through highway it requires Rs. 2.28, Rs. 1.41for railways and Rs.1.19 for water ways. But, only through existing waterways, waterway can achieve profit. Due to lack existing water ways, expect other transportation system to make new one’s it requires large amount of money, place, water etc. so creating water ways for transportation become not profitable. Railway work in electricity, which make it working cost low. But waterways use high cost fossil fuels which make it working cost high, fossil fuel also create high pollution. only low speed is permitted for inland water ways which increases the working hours of the labor’s result in increase of cost. In addition, food and accommodation facility has to be made in barge/boat itself, also increases the cost.

5) Solution

Wentainer system travels through water ways with the help of a rail. Wentainer is arranged like a chain of small barges, each barge (3.25m width \* .90m depth) can carry a container or other goods equal to a weight of container. Due to this Wenatiner need only very small waterways and large-scale goods can be transported. This type of small waterway can be constructed with comparatively less cost, land and water.

Solar panel can be easily placed over the rail structure constructed for the Wentainer system. From this solar energy with least production cost can be directly used in the Wentainer system.

Wentainer system can work fully automatically with the help of both rail path and IOT technology. Because of this work time can be reduced and also food and accommodation can be avoided. By this way we can reduce the overall cost.

6)market analysis

Current capacity of Columbo port is 6 million TEU whereas in china it is between 10 to 40 million TEU for 8 of its ports. However, the capacity of all ports in India together is 3 million TEU even though they are close to international shipping route. At present works are being done to increase this capacity to 12 million TEU.

The current road/rail system is not enough to handle this huge amount of cargo, in order to overcome this Indian government is trying to implement the ‘Sagar mala’ project, aiming to link the seaports using rails, road and feeder ship systems.

If this rail, road and feeder ships are replaced by Wenatiner system it will be possible to handle at a lower cost than that of the road, rail and feeder systems.

If the Wentainer system is used to link industrial corridors and/or between states, it will be also possible to handle cargo along with supply of water.

7. Competitors-comparison

According to study report of World Bank, to move 1 ton of cargo through a km, railway requires Rs 1.41 while waterways requires only Rs 1.19. Of the total cargo transportation throughout the country 27% of it is done by railway while only about 0.5% is done by waterways. Even though the energy used for transportation of cargo using waterways is less, the cost of construction of is greater due to larger area and volume of water required for the waterway. Hence it is often avoided.

Even though the energy required by the railways is very high, the cost for construction of railways is less than waterways due to lower area and money requirement. Thus a railway attains profit quickly and is rapidly taken up everywhere.

Wentainer path can be created with same cost as that of railways & can operate at a lower energy consumption than that of waterways.

The construction cost, running cost, fuel cost and balance amount of railways, inland waterways and wentainer system are given below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Transportation Mode | Construction Cost  (per km) | Running Cost  (TEU/km) | Fuel cost TEU/KM | Balance amount[running cost-fuel cost] |
| Railways | 7 to 10 crore per km | Rs.19.74 | Rs10.76 | Rs. 8.98 |
| Inland waterways | 50-100 crore per km | Rs. 16.66 | Rs. 8.67 | Rs. 7.99 |
| Wentainer | 7-10 crore per km | Rs. 15 | Rs.0.30 | Rs 14.70 |
| One TEU = 14 ton | | | | |

Therefore the balance amount obtained by transportation systems after reducing fuel cost when one million TEU is transported through 1 km are

Railways – Rs.8.98 x 1 million TEU =0.90 Crore

Inland waterways – Rs 7.99\*1 million TEU = 0.80 Crore

Wentainer – Rs 14.70\*1 million TEU =1.47 Crore

Time required to regain initially invested amount

[ initial cost/ Balance amount]

Railways :

7 – 10 crore/.90 crore = 9.44 year

Inland water ways:

50 to 100 crore/.80 crore = 93.75 years

Wentainer :

7 – 10 crore/ 1.47 crore = 5.78 years

That is Wenatiner can achieve profit quicker than that of railways whose construction cost is similar. As wentainer system can supply water, generate solar energy and provide accommodation throughout the path in profitable way, this makes wenatiner system more attractive compared to railways and inland waterways.

Another feature of Wentainer which makes it more attractive is its ability to transport cargo without direct and indirect pollution.

8)PRODUCT PORTFOLIOS

1. Transportation of cargo at a lower cost

Wentainer can transport cargo at a lower cost when compared to Ship and railway.

Cost of transportation of cargo per Ton is Rs 1.41 for railway while it is 1.19, for a distance of 1 KM. However, for Wenatiner system it will be less than Rs 0.10 for the same.

Since, Wentainer can avoid lot of energy losses that occur in ship, railways/m and by using solar energy having lower energy cost it is possible to achieve lower transportation cost.

1. Water supply

It is possible to supply water for agricultural and industrial needs to the areas through which Wentainer path passes through. It is possible to recover the cost of construction of the path from the profit of cargo transportation easily hence water supply can be done at a lower cost.

1. Generation and supply of electricity

It is possible to integrate solar panel onto the rail structure of Wentainer system without any other additional cost. On a 1 km path solar panels together having a capacity of 600kw can be placed without additional cost and an energy of 2700kwh can be generated daily. Due to this solar energy it is possible to operate Wentainer system without direct and indirect pollution.

By generation of energy for transportation it is possible to avoid service providers and their charges. The skyrocketing fossil fuels can be avoided by solar panels having a life span of 25-35 years with a very low constant generation cost.

Of the generated electricity half or less than it will be required for transportation. The surplus energy can be supplied to the grid or to nearby villages.

1. Profitable accommodation facilities

It is possible to provide accommodation facilities on the Wentainer path due to its small width and height in a profitable way. This facility can be used to create commercial structures such as shops, structures for accommodation of poor can be done.

By acquisition of land and constructing Wentainer path it will be possible to achieve transportation of cargo at lower cost, supply of water, generation of electricity and provide accommodation facilities parallelly.

1. Automation of the transportation system

Since inland transportation is done at lower speed the staff work hours are very long and it is necessary to provide food and accommodation on the barge/boat. All of this increases the cost.

However, for Wentainer system since it is fully automatic all of these costs can be avoided.

9) Marketing and sales plan

According to the report of world bank ,for moving one ton cargo for 1km through railway Rs.1.41 is required and for inland water ways only Rs.1.19 is needed.[15% less than railway]. But for transporting cargo a new canal should be constructed for that more land, money and water is required. For constructing a new railway less money and land is required. Due to that as soon as railway will get the invested amount back and waterways could not achieve it.that is water way needs less working cost and high initial cost for constructing a new waterway so that most of the places is rejecting it.

But wentainer system needs less initial cost[equal to initial investment of railway] and less working cost[1/10 of waterway].that is wentainer system can achieve the profit very fastly as compared to water ways and railways.

Culombo container port which is near to India have a capacity of 6 million TEU and in china most important8 port have 10-40 million TEU. But southindia port lies nearer to the international shipping route only have 3 million TEU. For reaching 12 million works is going on. But road-railway does not have that much capacity. Due to that ,for the industrial growth of our country , our government announced the sagarmala  project, industrial corridor. This plan includes construction of road/railway by connecting industrial zone, port. But instead of roads/railways through a wentainer path we can transport cargo every cheaply and also water required for industrial use can be given.[Tamil Nadu government charge Rs. 150 from industries for 1kilolitre water (1000 litre), for 1 TMC[2.83 crore litre] water is rs.425 crore. Kerala gets the required water through rain and Tamil Nadu is drought affected area, by connecting these two states through a path more than 12 TMC of water can be transported to Tamil nadu in one year[ex. Cochin to Coimbatore industrial route].that is 12TMC\*425 = 5100 crore water. Due to that industries get sufficient water and also water sharing Kerala and water transporting wentainer will get good income from it.

    The place taken for creating wentainer system can be used for transporting cargo, water, solar energy , accommodation can be given at the same time. We can easily place the solar panel with more profitably above the rail structure which is constructed for transportation path.600Kw capacity solar panels can be place above the path for 1km, from this daily 2700kwh electricity can be generated. from this half of the electricity is used for the path and remaining can be selled. Gujarat, Punjab etc, in such states solar panel are placed above the canals and large amount of electricity can be generated, which is a good model. Government is providing subsidy for placing such type of solar plants. Accommodation facilities can be implemented more profitably above the rail structure having less height and width. Bruna water village, Thailand water village etc are some of the model showing the accommodation facility above the water. We can accommodate the workers who all are working near by industries and also the poor people. From this facilities large amount of profit  can be achieved. At the same time profit can also be achieved from cargo transportation, water transportation, solar energy.

10) Product cost

To build Wentainer pathway which can have large scale goods transportation (above 1 million TEU per year) and which is able to supply 12 TMC water (12 m3/s) per year require Rs 7 crore to 10 crore per km.

To lay solar panels together of 600kw in a km requires Rs 3.5 Cr.

For a Wentainer unit which carries 10 TEU requires Rs .30 crore.

11) Revenue

a) Income from good transportation

Wentainer uses the solar energy generated from the path to run. To generate 1kwh of energy the cost is aabout Rs 2.5. It is possible to generate and utilize this for a period of 25-30 years (life period of pv cells )

B) Income through water supply

Using wentainer pathway which is used for transportation of cargo water supply can be achieved without any extra cost.

The volume of water that can be supplied through a wentainer path in a year = 12 TMC

Amount of 1 TMC water = Rs 425 Crore\*

(\* Tamil nadu – Industrial water tariff)

Therefore, amount for 12 TMC water = 12 X 425 Crore = Rs 5100 Crore

Of water supply charge if 20% of amount is considered as profit, we get 5100 X (20/100) = Rs 1020 Crore.

If the water is supplied to a distance of 500km ( For example in the upcoming Kochi-Coimbatore-Chennai industrial corridor if we build a wentainer path and if we supply water from Kerala to TamilNadu), The profit we obtain every year in a Km path =1020 Crore/500 Km = Rs 2.04 Crore per year for a km

Since Kerala obtain 50% of sales rate by water supply, Kerala can gain a high income (Rs 425 Crore X 50/100 =212.5 Crore per TMC).