



Contribution to worldwide food security

How to feed a growing population despite climate change?



12 octobre 2017

Bpifrance Inno Génération 3

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My name is Felix Bogliolo. I'm the Founder and CEO of Via Marina.

I'm 64. I'm an engineer by Ecole Polytechnique of Paris and I hold a PhD in Economics from Bordeaux University.

The mission of Via Marina is this one: ensuring food security in the face of two difficult megatrends: population growth and climate change.

Food Water Nexus

- ◆ Approx. 80% of world water demand: agriculture
- ◆ Growing agricultural demand:
 - ◆ Population growth: +2,5BN hab. around 2050
 - ◆ Higher standard of living: food with higher water footprint
- ◆ Declining agricultural offer – climate change:
 - ◆ Reduction of cultivated areas
 - ◆ Drop in yields
- ◆ Food insecurity: political crises, emigration, extremism, ...
- ◆ ⇒ Irrigation supplementary : required 40Mha and 8000m³/s water

UN World Water Development Report 2006 – Chapter 7 – P.252

Very little is done about the largest water market: agriculture and its most crucial issue: bulk water availability.

On the one hand, we are about to face an important increase in demand for food. Not only in quantitative terms to cope with the upcoming 2.5 billion supplementary human beings, i.e. about a 1/3 increase. But also in qualitative terms: meat, fruits and vegetables, due to a welcome increase in well-being.

On the second hand, we are faced with the disastrous consequences of Climate Change: Yield increases seen in some regions and for some crops are more than compensated by larger decreases in other regions and for other crops. The same occurs with surface reduction. Moreover, it is not of much comfort for an African or South American farmer to know that there is now newly available land in Siberia. The combined consequence of these two converging negative megatrends is the following: Basically all experts (for instance OECD, FAO) coincide on the projection that we require about 40 million hectares of supplementary irrigated land in surfaces which are today unproductive. Which will require an increased provision of agricultural water of approximately eight thousand cubic meters per second.

Let me stress that ALL anticipated productivity and savings gains have been duly factored into ALL those projections.

Available techniques

◆ Desalination :

- ◆ Limited flows: $2\text{m}^3/\text{s}$
- ◆ High energy consumption: $4\text{kWh}/\text{m}^3$
- ◆ Price not affordable by agriculture: $\approx 1\text{USD}/\text{m}^3$

◆ Onshore transfers:

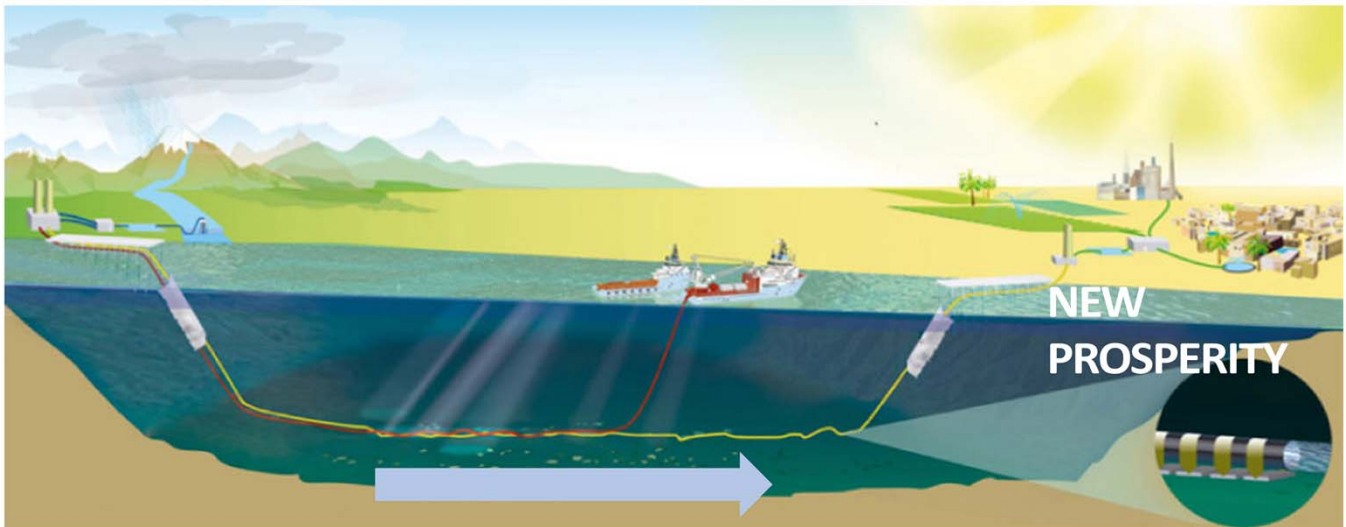
- ◆ Politically and environmentally difficult as intake is upstream

But, existing water provision techniques are of no help to attain this objective.

Desalination produces limited flows that are not commensurate with agricultural requirements. It is very much energy consuming And. its cost is way above what even the most profitable crops can afford to pay. That's why basically nowhere around the world, desalination is used for agriculture.

Traditional onshore transfers suffer from the same cost impediment. And also, they cause many prohibitive environmental impacts, both along their route and more importantly downstream their catchment point. That's why no major onshore water transfer has been implemented over the past decades in any country environment conscious.

Via Marina: a disruptive solution



Important flows – Low energy consumption – Affordable price



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Via Marina develops its disruptive, albeit down-to-earth, system for the transportation of water in large quantities and over long distances by an underwater flexible pipe. We transport water taken at the mouth of a river or from the outfalls of wastewater treatment plants of large coastal cities.

We can transport the equivalent of a dozen desalination plants in one 4 meter diameter pipe over several hundreds of kilometers, using up 5 to 10 times less energy and for a cost 50 to 70% smaller.

A new « Utility »

- ◆ Free water gently offered by nature → a new business model or paradigm
- ◆ Infrastructure : construction, operation, meter, invoice, collection
- ◆ Public Private Partnership – P3
 - + Possibly involvement of a Sponsor :
Venture Philanthropy or Impact Investment
 - + Interest of beneficiary sector: farmers and agribusiness

Well, these problems will be solved in a manner equivalent to what occurred with the introduction of many different kinds of utilities in many places all around the world over the twentieth century: a change of paradigm or of business model.

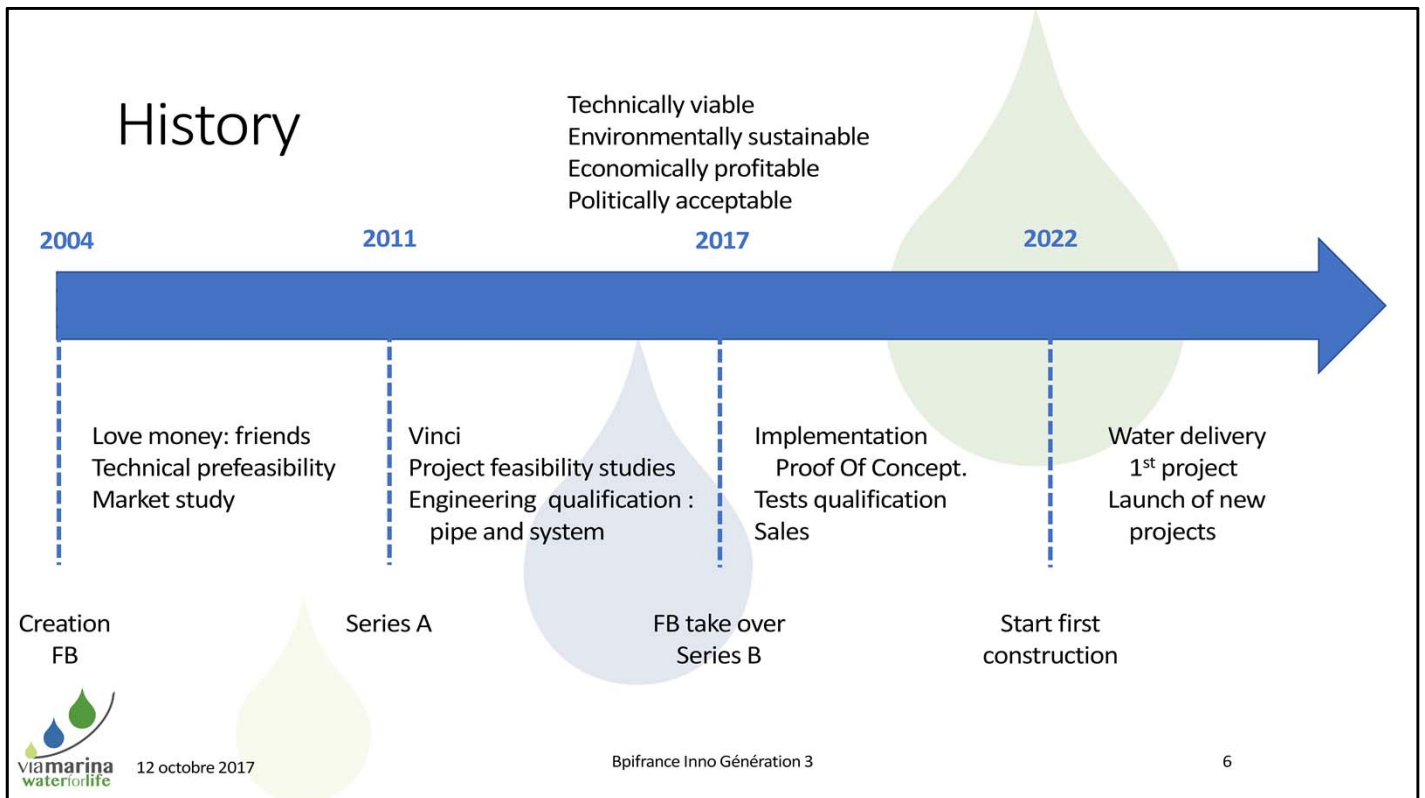
We cannot rely any longer only on free water given by nature. We'll have to pay for the service of having water brought to new fields in order to grow imperiously needed supplementary crops.

Some new kind of utility will build and operate those new infrastructures. It will put a meter at the entrance of these new fields. It will request payment for the new water consumed. If we don't pay, we'll be subject to some kind of legal punishment. And the price we pay will cover the loss caused by the insolvents.

This will be implemented in the framework of some kind of Public Private Partnership.

With possibly two add-ons:

1. the involvement of a Sponsor as our mission, albeit for profit, has so many and important social aspects. We could categorize it as Venture Philanthropy or Impact Investment.
2. Also the involvement of the beneficiary sector: farmers and agribusiness, through initiatives such as for example cooperatives



I created this company at the beginning of this century.

We then continued as a reduced group of friends with preliminary technical and commercial studies.

Then we raised Series A funding from the Vinci Group with whom we continued and deepened those studies.

During these years, the engineering studies performed by VIA MARINA about its system and about specific projects, have confirmed that it is at the same time technically viable, environmentally sustainable, economically profitable and politically acceptable. All this past work has also shown that it is necessary, for reaching the Construction stage of such projects, to invest both technically and commercially, a few dozens of millions of Euros.

The implementation of such hydraulic infrastructures mainly for agricultural uses does not form part of the development strategy of the Vinci Group. Hence I bought back their stake allowing me to be at the necessary liberty for finding new investors able to ensure the success of VIA MARINA by pursuing its innovative development. Hence we're launching now our Series B fund search so that we can take the required steps for reaching in a few years' time the construction stage or a first project. Other projects will follow soon thereafter once the first one starts delivering water.

Series B

- 25MUSD
 - Technical : 15M for P.O.C. and qualifications
 - Commercial : 10M for sales support and participations in SPV projects
- Equity
- Majority

Our Series B is for 25MUSD.

15M will be used for the Proof-of-Concept test and the qualification of both the pipe and the system.

10M will be devoted for supporting the sales effort: lobbying, PR, etc. and also for taking equity stakes in the project related SPVs that will promote and develop the projects.

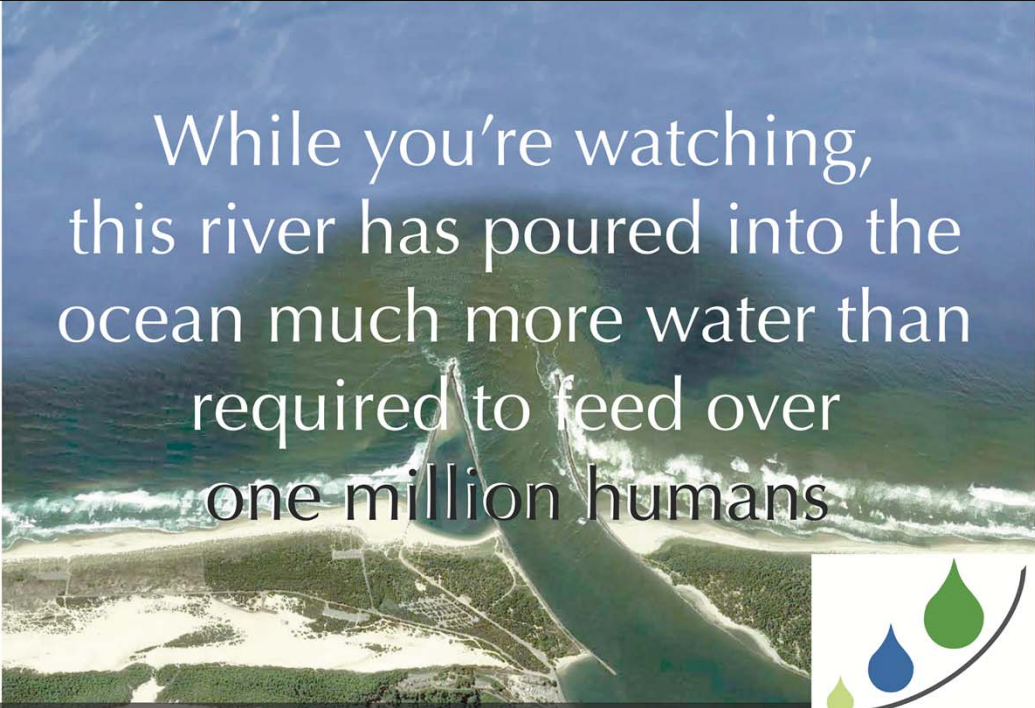
This fund raising will mostly be in equity.

It will obtain a majority participation in Via Marina.

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While you're watching,
this river has poured into the
ocean much more water than
required to feed over
one million humans



Stop watching ... Act with viamarina
waterforlife

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Thank you very much for your constructive attention.

Now question time.