

SUSTANABILITY IN INFRASTRUCTURE PROJECT FINANCE: BINA ISTRA CASE

Discussion Paper

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Abstract

Sustainability in infrastructure project finance is an important topic that has gained high importance in last decade. This became very important mainly as money providers in form of bank loans, equity or bonds require companies to comply with equator principles as condition precedent to financial close. Lenders, investment funds and other funding providers have in their prospectus, constitution acts or other corporate documents a clear condition related to sustainable development compliance or conditions from companies looking for finance. On top of that the laws or bylaws in many countries provide for many subsidies, tax reliefs or other incentives used by companies to get cheaper or more flexible financing. This is very much used in EU, USA and developed countries. How to achieve sustainable goals through project finance is one of the key concerns for many companies. Investments in sustainable development exist in many countries but further research is needed to better reposition the role and the future of sustainability in infrastructure project finance within boundaries and based on a concrete example of Bina Istra, the concessionaire of Istrian Epsilon motorway project in Istria, Croatia.

Recent investments in sustainable development and future projects of Bina Istra as one of the biggest investor in construction of motorways in Croatia and region demonstrate that Lenders and money providers accept the financing of such big and challenging infra projects which propose a set of investments in sustainable development, mainly in reduction of pollution and energy optimization.

Keywords: sustainability, sustainable development, project finance, infrastructure, Bina Istra, Istrian Epsilon.

1 Introduction

The research done in last decade has put in evidence and highlighted the necessity to promote the investments in sustainable development of companies. The role of project financing in enhancing, or undermining, sustainable development has come under increased scrutiny in recent years, prompting borrowers to address the environmental and social impact of their activities (Robert F. Lawrence and William L. Thomas, 2004). When we know that project finance accounts for many positive impacts on

macro economy such as employment, consumption, investments, GDP etc then the efforts in trying to respect the lenders conditions in terms of sustainable development are necessary and fully justified from the corporate perspective.

Many economists, such as Weber Olaf (Weber et al., 2016) agree that the connection between the financial industry and sustainable development is indirect. However, capital rising and access to capital markets is today very much conditioned to the full compliancy to sustainable development policies, mainly Equator principles (Principles, E., 2013) requested by most of money providers all around the world.

Infrastructure projects have many impacts on people and on the environment. Through 10 Equator Principles Financial Institutions (EPFIs) identified, assessed and managed environmental and social risks and impacts in a formalized and structured way, with a purpose to apply it in corporate practice, to monitor it and to condition such principles for funding of infra projects. It has to be highlighted that such improved financial, environmental and social standards as part of sustainable development policy contribute to be for any company socially responsible and respect environmental management practices. In such way the access to financing can also positively contribute to the climate change, biodiversity, human rights, ecosystems and overall better life conditions in communities.

The adoption of and adherence to the Equator Principles increase the benefits of cheaper financing, higher volume of financing, more flexible finance structure, more flexible terms and conditions of financing and to ease credit committee approvals of new financing requested by a company.

The public Private partnerships (PPP) consider the dynamics of the social, financial, and environmental drivers for sustainability in infra projects. By implementing a combination of qualitative and quantitative research strategies, Castelblanco (Castelblanco, 2022), addresses sustainability challenges of toll road PPPs. “The continuity of user-pay PPPs is based on guaranteeing their sustainability, which can be defined as the aggregation of their economic, environmental, and social dimensions”. Castelblanco demonstrates that “the PPP body of knowledge has been traditionally driven by the economic dimension of sustainability neglecting the social and environmental dimensions, which should be strengthened to counterbalance the current pitfalls in social legitimacy and environmental underperformance to promote the emergence of more sustainable PPPs”.

For advancing the economic, financial and environment sustainability of PPPs, we shall use few concrete examples of investments realized in a PPP project, Istrian Epsilon motorway project in Istria, Croatia.

In the next chapter we will discuss and demonstrate that sustainability in infrastructure project finance can be achieved by investing in projects which can at same time contribute to positive environmental impact but also to reduce the corporate costs and increase the value of company.

2 Sustainable projects

To illustrate our thesis that sustainability in infrastructure project finance can be achieved by investing in projects which can at same time contribute to positive environmental impact but also to reduce the corporate costs and increase the value of company we shall use 4 concrete and illustrative examples implemented in Bina Istra. The concessionaire of Istrian Epsilon motorway project since 1995 : investment in LED lighting, investment in new ventilation system, investment in new drainage system and investment in new concrete of Ucka tunnel.

Bina Istra operates, finance and build the 145 motoray, including Ucka tunnel of 5 km, in region of Istria from Umag to Pula and then to Matulji. The Concessionaire has raised funds on capital markets to finance different works Phases (1A, 1B, 2A, 2B1, 2B22, 2B23) by raising equity, bonds, syndicated loans and other fiancé instruments. What is common to all such finance structures is that Concessionaire

had to comply with strict Equator principles which required from Bina Istra to be fully in compliance with environment and social standards required by money providers as condition precedent for financing.

The following investments realized by Bina Istra in last years contributed very much as part of equator principles policy to get cheaper financing, more flexible finance structure, longer maturities, higher debt volumes etc

1) Investment in LED lighting

Light pollution causes a change in biorhythm of humans, animals and plants which have evolved for millenia to accommodate natural cycles of day and night shifts and Moon's phases shifts. Artificial lighting is the backbone of modern life, but at the same time it is the "invisible" pollutant that mankind only recently has become aware of.

Environmentally friendly lighting is not just the energy-saving one, but also lighting which casts light only where it is needed, without any light trespass.

On the Istrian Motorway Bina Istra opted for luminaires featuring a narrow beam of light directed strictly to the road surface.

This new technology facilitates conservation of the ecosystem, in particular of night birds by preventing loss of orientation during migrations.

Environmentally Friendly Lighting is of a particular significance in the area of Višnjan interchange.

As stated in Table 1 the investment in led lighting on Istrian Epsilon project demonstrate the annual savings of 113 KEuros or 947.591 kWh. If we consider the investment in new Led lighting of 637 k€ (Neos, 2022) we can then conclude that the initial investment is reimbursed in 6 years and 7 months.

Table 1 : Led Lighting all project Istrian Epsilon

	Annual Consumption kWh	Annual Consumption Euros
Before LED	1.365.295	163.085
After LED	417.704	49.895
Annual Savings	947.591	113.190

Source: Bina Istra 2022

Investment in Led on all Istrian Epsilon motorway project contribute to almost 70% of cost reduction in electricity consumption. This is as significant cost reduction for Bina Istra budget.

If we go in more details of figures announced in Table 1, we come with same conclusion in Table 2 with the investment in led lighting in Ucka tunnel with the annual savings of 18 KEuros or 150.957 kWh. The calculation has been done under assumption of 10 meters of distance between led lights in Ucka tunnel.

Table 2 : Led Lighting existing Ucka tunnel

	Annual Consumption kWh	Annual Consumption Euros
Before LED	764.472	91.317
After LED	613.515	73.285
Annual Savings	150.957	18.032

Source: Bina Istra 2022

Investment in Led in Ucka tunnel contribute to almost 20% of cost reduction in electricity consumption. This is an important cost reduction for Bina Istra.

Table 3 below also clearly shows that the investment in led lighting in Toll Plazas on Istrian motorway project contributed to the annual savings of more than 36 KEuros or 305.702 kWh. The calculation has been done under assumption of 10 meters of distance between led lights on Toll Plazas.

Table 3 : Led Toll Plazas

	Annual Consumption kWh	Annual Consumption Euros
Before LED (10m distance)	509.503	60.860
After LED (10 m distance)	203.801	24.344
Annual Savings	305.702	36.516

Source: Bina Istra 2022

Investment in Led in Toll plazas contribute to 60% of cost reduction in electricity consumption. This is a huge cost reduction for the Concessionaire. Regarding the possibility to finance here above LED projects many producers or distributors have proposed to finance or cofinance investments in a deal where the costs savings on energy could be shared between Bina Istra and such producer or distributor which reduce the investment costs for Bina Istra.

2) Investment in new ventilation system

As stated in Table 4 the investment in new ventilation system in Ucka tunnel on Istrian Epsilon project demonstrate the annual savings of 24 KEuros or 200.392 kWh.

Upgrade of the Učka tunnel ventilation system with Croatian company – Dalekovod d.d. and System air from Germany has been done in 2022. The equipment of 26 of 48 fans has been installed. The new modern reversible fans which can work based on traffic, accidents and other situations monitored by Scada system contribute to 23% of cost reduction in electricity consumption. This becomes very important when we know the constants current uptrend of energy in Europe.

**Table 4 : Ventilation
Ucka tunnel**

	Annual Consumption kWh	Annual Consumption Euros
Before	858.821	102.587
After	658.429	78.650
Annual Savings	200.392	23.937

Source: Bina Istra 2022

3) Investment in walls against noise

During the Motorway construction stage residential buildings exposed to traffic noise are mapped in the Environmental Impact Study.

Noise barriers reducing the car noise are installed and further noise level measuring is carried out to ascertain that the installed protection meets the requirements.

25.000 m² of noise barriers have been installed along the Istrian Motorway to date.

In order to minimize noise disturbances of areas along the Motorway, Bina-Istra has launched a noise level measurement project encompassing the remaining sections of the Istrian Motorway. Based on the results of the noise level measurement project, a strategic noise map was created covering the entire area of the Istrian Motorway. This is used as the basis for further assessment of the impact of motorway-generated noise on nearby settlements and for the planning of noise attenuation activities.

The new walls on Matulji Ucka section will be placed along the existing and new roadways and their total length is 6,163 m. Their heights vary from 2.0 to 5.0 m depending on the need for noise reduction in relation to the positions of protected residential buildings, configuration and terrain cover. Absorbent panels will be installed.

For the purposes of the main project, an acoustic calculation was made and the walls were designed with the aim of reducing traffic noise to permissible levels, as stipulated by the Ordinance on the highest permissible noise levels with regard to the type of noise source, time and place of occurrence (Official Gazette 143/21).

As a consequence of investments in walls against noise, the local population can then coexist with motorway and expected traffic increase on project.

4) Investment in water protection

As early as in 2050, 45% of the world's population will be living in regions facing chronic water scarcity.

Croatia is among the three of Europe's richest countries in natural spring water.

Conservation of this natural resource is becoming paramount for our future generations.

It takes changing lifestyles on a personal level, but also a more responsible behaviour of businesses and organisations.

The Mirna, Raša, Dragonja, Pazinčica and Boljunčica are the 5 rivers our Motorway passes by.

On the Istrian Epsilon Motorway:

300 km of underground piping

11 rainwater treatment lagoons

57 filtering chambers

250 laboratory tests

Bina-Istra emergency teams are specially trained and equipped for rapid response operations in cases of environmental incidents.

In 2021 more than 3 million m³ of surface water collected and filtered, which is equivalent to the consumption of water of a town the size of Pula.

As a consequence of investments in water protection, the filtered water can be reused on motorway, environmental accidents reduced and concessionaire costs reduced as well.

5) Investment in new green concrete of Ucka tunnel

Bina Istra has launched a new phase of construction of second tube of Ucka tunnel. In order to reduce carbon print one of the contractor proposed to use Ecopact solution developed by Holcim, one of the biggest producer of cement. Holcim has proposed a solution of Ecopact which consist in reducing Co₂ footprint in cement used in concrete which is necessary for Ucka tunnel tube, mainly tunnel lining over 5.6 km with intertubes between old and new tube of Ucka every 250 m.

This Ecopact solution will reduce for 30% Co₂ in concrete used in Ucka tunnel lining. If we consider that the tunnel has more than 5.6 km the impact of such investment is more than useful as a green concrete measure of Co₂ reduction on such big infra project.

In this position paper, we have demonstrated that investments in sustainable development projects contribute to lower the costs, whether operational trough operation and maintenance of assets or financial costs through cheaper funding and more flexible terms and conditions of financing proposed by money providers who condition their project finances subject to the satisfaction of adequate sustainable development projects or satisfaction of equator principles. The reduction of operational costs in EBIT or Investment costs (CAPEX) will then have as a consequence the increase of FCF's which then will increase the value of any company. This is a final and the main goal of any owner of company.

Many economists highlights the necessity to invest in sustainability of projects such as Sachs, (Sachs et al., 2006), or Cerin, (Cerin et al. 2008), or Ikram, (Ikram et al., 2021). However, some authors such as Płonka et al. 2022) put forward a thesis about the low social understanding of the essence of the idea of sustainable development, its assumptions, and difficulties with its implementation.

Plonka, many others and we believe that the main problem relates to the understanding and adequate implementation of the Sustainable Development policies, equator principles and other similar standards or measures.

The obtained research results indicate a gap in corporate management education regarding the Sustainable Development policies and practices by companies which usually start to implement it to satisfy at last minute the money providers. This educational gap in many countries seems to be one of the main barriers to the adequate implementation of sustainable development policies in corporate world.

Also, the pandemic situation has not helped companies to dedicate part of their budgets in sustainable development projects. Inflation pressures combined with interest rates growth on capital markets prevent companies in launching new investments in sustainable development projects. Ha and Ohnsorge (Ha et

al., 2022) explain the difficulties for companies facing from low to high inflation, combined with high interest rates, with very negative implications for emerging market and developing economies.

We call for future research that will help in better understanding how education can help investments in sustainable development. How to integrate sustainability in project finance transactions but not only after transactions have been realized but also as condition precedents to successful financial closing operations? How to satisfy to equator principles in advance of raising additional financial sources ? Or how to find sources of financing of sustainable development projects in the periods of high inflation, high pressure of interest rates and capital markets instability ?

These important questions call for further research that will address these important questions. By better understanding how to satisfy the investors expectations in terms of sustainable development policies with limited budgets, we could better reposition the way the companies could benefit from costs savings and company value increase.

Despite some first promising insights, research in this area is still at nascent stages.

3 Conclusion

Sustainability in infrastructure project finance can be achieved by investing in projects which can at same time contribute to positive environmental impact but also to reduce the corporate costs and increase the value of company.

There is an evidence that the satisfaction of sustainable development policy or Equator principles plays an important role for money providers as condition precedent to more easily raise the financing by corporates and/or to benefit from better finance conditions. This has been clearly demonstrated with 5 concretes illustrative examples implemented by Bina Istra on Istrian Epsilon motorway project. All 5 case studies show the significant costs reduction (up to 70%) in electricity consumption. This significant cost reduction for Bina Istra budget contributes to lower the operational costs and investment cost, two components of FCF's which then increase the company value.

With such examples and many others (62% of waste recycled, -4.5% CO2 emission in 2021, 3 million cubic metres surface rainwater collected, 250 water quality lab tests done per year, 35 points for separate waste collections, 25.000 m2 noise barriers, 170 solar panels to supply road furniture, 100% ISO 14001 standard requirements met in 2021) Bina Istra managed to raise huge amounts of financing on capital markets (110 m€in 1997, 258 m€in 2003, 617 m€in 2007, 224 m€in 2018, 920 m€2020) with each time cheaper cost of financing and refinancing. Also, the concessionaire could benefit from longer debt maturity, more flexible finance terms of repayments and lower fees.

Many economists such as Ivanov, (Ivanov et al., 2021) explain that PPP can be a tool to achieve sustainable development goals and implement the concept of "Quality Infrastructure Investments". We also have to keep in mind that Investments in sustainable development is considered to be one of the pillar or strategic decision of United nations (Montiel et al., 2021) when promoting international business.

Past research has already found a gap in corporate management education regarding the Sustainable Development policies and practices by companies which usually start to implement late such measures and policies. This education can be an important contributor to reaching good practices of sustainability and primarily to see how to satisfy the investors expectations in terms of sustainable development when companies have with limited budgets. This becomes particularly important in periods of high inflation, interest rates uptrend and high volatility on capital markets that most of companies are facing today.

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