

Funding Opportunities & Schemes

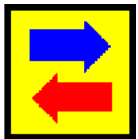
Dimitrios V. Lyridis, Assoc. Professor
Laboratory for Maritime Transport, Head
School of Naval Architecture & Marine Engineering
NATIONAL TECHNICAL UNIVERSITY OF ATHENS



Λιμάνια, Θαλάσσιες Μεταφορές και Νησιωτικότητα
20 Απριλίου, 2018

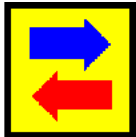
Contents

- General Framework
- Available Instruments: Funding & Financing
- National and EU Instruments
- Innovative Financing Schemes and Tools
- Conclusions



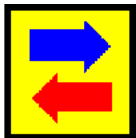
The General Framework: the Challenges

- Ship and Port infrastructure
- Shipping Funding or Financing?
- Port connection to electrical grid or own sources
- Exploit synergies between energy and transport
- Further exploit renewable energy sources for clean energy and for additional electricity requirements
- **Funding or financing the investments**



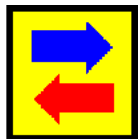
The Available Instruments

- **National Development Programmes/Εθνικά Προγράμματα**
 - More market focused but still including the element of research/innovation
 - Bureaucracy/Administrative
 - Limited budget
- **H2020**
 - Large consortia
 - Research focused (TRL mainly 2-7)
 - Not really for actual applications, only pilots/demonstration
 - Academia/industry/end user collaboration
 - Does not usually fund major hardware items



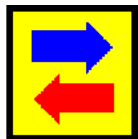
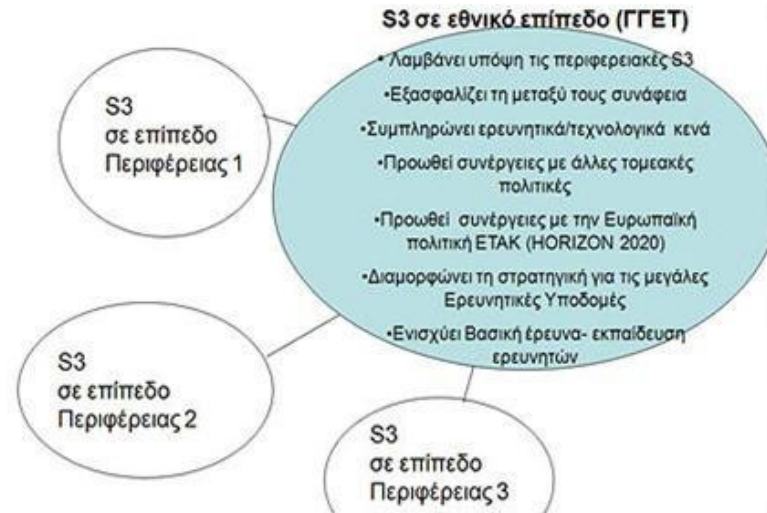
The Available Instruments

- **EASME/COSME, SME Funding**
- **EIB**
 - Green Shipping Scheme
 - Green Shipping Programme
 - SME Financing (EIAH)
- **EFSI (Juncker Plan)**
- **Connecting Europe Facility (TRL >8)**
 - Transport
 - Innovation etc.
 - MoS
 - Energy (PCI)
 - Telecom



Εθνικά Προγράμματα/ Στρατηγική Ευφυούς Εξειδίκευσης

- Υλικά / Κατασκευές
- Πολιτισμός, Τουρισμός και Δημιουργική Βιομηχανία
- Αγροδιατροφή-Αναθεωρημένο έντυπο
- Περιβάλλον και Βιώσιμη Ανάπτυξη
- Υγεία και Φάρμακα
- Μεταφορές και Εφοδιαστική Αλυσίδα
- Ενέργεια
- Τεχνολογίες Πληροφορικής και Επικοινωνιών

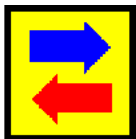


Στρατηγική Ευφυούς Εξειδίκευσης

Μεταφορές και Εφοδιαστική Αλυσίδα

Περιοχές Παρέμβασης

- Ενίσχυση του συστήματος επιβατικών, εμπορευματικών μεταφορών κι εφοδιαστικής αλυσίδας με σκοπό την αύξηση της προστιθέμενης αξίας και της ανταγωνιστικότητας
- Ανάπτυξη ευφύων υποδομών και συστημάτων μεταφορών
- Αειφορία και βιωσιμότητα στις μεταφορές
- Ενίσχυση της διατροφικότητας και της αυτονομίας στις αστικές μεταφορές επιβατών και εμπορευμάτων
- Αύξηση της προσβασιμότητας και της εδαφικής συνοχής του Ελλαδικού χώρου
- Αναδυόμενες Τεχνολογίες στον τομέα των Μεταφορών και της Εφοδιαστικής Αλυσίδας



Ενέργεια

Περιοχές Παρέμβασης

- Ενεργειακή αποδοτικότητα
- Παραγωγή Ενέργειας από ΑΠΕ
- Ενέργεια σε συνδυασμό με Αγροτικό τομέα και Περιβάλλον
- Αποθήκευση Ενέργειας
- Τεχνολογίες Υδρογόνου
- Τεχνολογίες Έξυπνων Δικτύων
- Ορυκτά καύσιμα – Μείωση Επιπτώσεων
- Αναδυόμενες τεχνολογίες

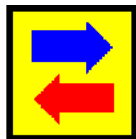


Στρατηγική Ευφυούς Εξειδίκευσης

Περιβάλλον και Βιώσιμη Ανάπτυξη

Περιοχές Παρέμβασης

- Αφορά όλες τις κατηγορίες αποβλήτων
- Στερεά αστικά απορρίμματα
- Διαχείριση αγροκτηνοτροφικών αποβλήτων
- Διαχείριση βιομηχανικών, και τοξικών αποβλήτων
- Διαχείριση ελαστικών
- Διαχείριση Υγρών αποβλήτων
- Αντιρρύπανση / απορρύπανση. Αποκατάσταση εδαφών παράκτιων και υπογείων και θαλάσσιων υδάτων
- Ατμοσφαιρική ρύπανση
- Προστασία βιοποικιλότητας σε περιοχές τουριστικού και αγροδιατροφικού ενδιαφέροντος
- Μετριασμός και προσαρμογή στην κλιματική αλλαγή και στις φυσικές καταστροφές
- Δημιουργία πρότυπων κέντρων /μετρήσεων, Οικοσυστημική προσέγγιση βιώσιμης Ανάπτυξης – Περιβαλλοντικοί Δείκτες/Μελέτες
- Αναδυόμενες Τεχνολογίες



Ταμείο Υποδομών

❖ Χρηματοδότηση

- Ευρωπαϊκή Τράπεζα Επενδύσεων (ΕΤΕΠ)
- Ταμείο Παρακαταθηκών και Δανείων (ΤΠ&Δ)
- Πρόγραμμα Δημοσίων Επενδύσεων (ΠΔΕ)

❖ Υλοποίηση

- εντός του 2018

❖ Αρχικός προϋπολογισμός:

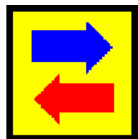
- 500 εκατ. Ευρώ (έως 2 δισ. Ευρώ σε βάθος πενταετίας)

❖ Ευνοϊκοί όροι

❖ Ιδιωτικό και Δημόσιο τομέα

❖ Μικρών και μεσαίων έργων υποδομής

❖ Χρήση ΣΔΙΤ



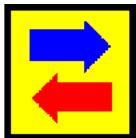
Ταμείο Υποδομών

❖ Στόχοι:

- Υποστήριξη της μετάβασης προς μια οικονομία χαμηλών εκπομπών διοξειδίου του άνθρακα σε όλους τους τομείς
- Διαφύλαξη και προστασία του περιβάλλοντος και προώθηση της αποδοτικότητας των πόρων

❖ Τομείς:

- Ενέργεια
- Περιβάλλον
- Αστική Ανάπτυξη



Νέος Αναπτυξιακός Νόμος

❖ Τομείς: Ναυτιλία/Εφοδιαστική Αλυσίδα/Μεταφορές

❖ Ναυτιλία:

- Η λιμενική βιομηχανία
- Αύξηση της κίνησης στα λιμάνια που λειτουργούν με τη μορφή Α.Ε. και βελτίωση των οικονομικών τους αποτελεσμάτων.
- Λιμάνια και παραχωρήσεις
- Ενίσχυση πλοηγικής υπηρεσίας
- Κρουαζιέρα
- Ναυπηγοεπισκευή
- Προώθηση ναυτιλίας

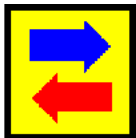
❖ Εφοδιαστική αλυσίδα (logistics)

- Ολοκληρωμένος στρατηγικός σχεδιασμός
- Αναβάθμιση και βελτίωση των υποδομών
- Ανάπτυξη λιμένων

- Ανάπτυξη εμπορευματικών κέντρων
- Εφαρμογή καινοτόμων χρηματοδοτικών εργαλείων και μηχανισμών

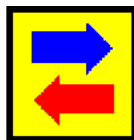
❖ Θαλάσσιες Μεταφορές

- Ανάπτυξη θαλάσσιων ενδομεταφορών και ακτοπλοϊκής συγκοινωνίας.
- Ανάπτυξη –κατά προτεραιότητα– των λιμένων Πειραιά, Θεσσαλονίκης και Αλεξανδρούπολης
- Σύνδεση βασικών οδικών και σιδηροδρομικών αξόνων με διεθνείς λιμένες, εμπορευματικά κέντρα και βιομηχανικές περιοχές της χώρας



Horizon 2020

Horizon 2020 societal challenges	
Smart, green and integrated transport	Secure, clean and efficient energy
€2.9 billion in 2014-2020, of which €950 million in 2018-2020: <ul style="list-style-type: none">• Mobility for Growth• Green Vehicles• Automated Road Transport	€3.8 billion in 2014-2020, of which €1.3 billion in 2018-2020: <ul style="list-style-type: none">• Competitive Low-Carbon Energy
Smart Cities and Communities	Food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy
<ul style="list-style-type: none">• Smart Cities & Communities (part of the <i>Secure, clean and efficient energy</i> budget)	<ul style="list-style-type: none">• Blue Growth (part of the <i>Smart, green and integrated transport</i> and <i>Secure, clean and efficient energy</i> budgets)



Horizon 2020

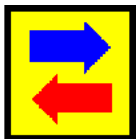
Secure, Clean and Efficient Energy

Objectives and research areas

- Reducing energy consumption and carbon footprint
- Low-cost, low-carbon electricity supply
- Alternative fuels and mobile energy sources
- A single, smart European electricity grid
- New knowledge and technologies
- Robust decision making and public engagement
- Market uptake of energy and ICT innovation

Main priorities

- Energy Efficiency
- Low Carbon Technologies
- Smart Cities & Communities



Blue Growth

Indicative budget:

- 72 million €

Topics:

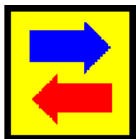
- Fisheries in full ecosystem context
- The Future of the Oceans Flagship Initiative
- Oceans Innovation Pilot
- Black Sea Research and Innovation Action



The Connecting Europe Facility (CEF)

Transport (Blending)

Objective	Priority
Bridging missing links, removing bottlenecks, enhancing rail interoperability, and, in particular, improving cross-border sections	Projects on the Corridors of the Core Network
	Projects on the other sections of the Core Network
	Rail interoperability
	European Rail Traffic Management Systems (ERTMS)
Ensuring sustainable and efficient transport systems in the long run, as well as enabling all modes of transport to be decarbonised	New technologies and innovation in all transport modes
	Safe and Secure infrastructure
Optimising the integration and interconnection of transport modes and enhancing the interoperability of transport services, while ensuring the accessibility of transport infrastructures	Single European Sky – SESAR
	Intelligent Transport Services for road (ITS)
	Motorways of the Sea (MoS)
	Actions implementing transport infrastructure in nodes of the Core Network, including urban nodes
	Connections to and development of multimodal logistics platforms



Energy

Objectives

- Ending energy isolation
- Increasing competitiveness by promoting the integration on the internal energy market and the interoperability of electricity and gas networks across borders
- Enhancing the Union's security of supply
- Integrating energy from renewable sources and developing smart energy networks
- Eliminating energy bottlenecks
- Completion of the internal energy market
- Contributing to sustainable development and protection of the environment, inter alia by the integration of energy from renewable sources and by the development of smart energy networks and cross-border carbon dioxide networks



CEF-Transport

New Technologies and Innovation

- Decarbonisation of transport, energy efficiency.
- Projects should be deployed on the core network corridors.
- **Co-Funding rate: up to 20%, 30%, 50%**

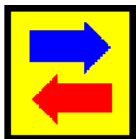
Motorways of the Sea (MoS)

- Alternative fuels infrastructure (e.g. Scrubbers only for shortsea outside SECA).
- New maritime links.
- **Co-Funding rate: up to 20%, 30%**

Urban Nodes of the Core Network

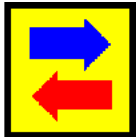
- Nodes of 9 Core Network Corridors.
- Directive 2014/94/EU on the deployment of alternative fuels infrastructure.
- Works , studies and/or deployments of pilot actions.
- **Co-Funding rate: up to 20%, 30%, 50%**

The 9
Core
Network
Corridors



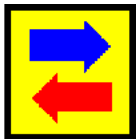
Challenges

- Long preparation phase (need to start as early as possible)
- Long pre-evaluation phase
- Long “evaluation” phase
- Requirements (e.g. EIA)
- Separate CBA evaluation (now adjusted)
- Business Plan
- Long deployment phase (problem? risk of speculation?)



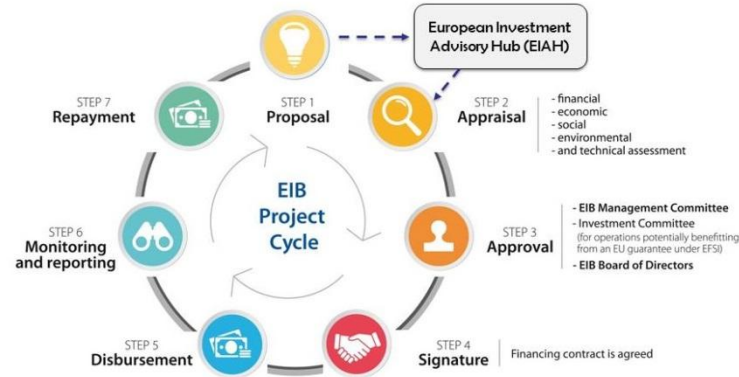
Challenges (MoS)

- Two ports, Dedicated line
- 50% for Ports (not bankable???)
- 50% for Vessels (bankable) (only environmental incremental cost, 5 years after end of Action)
- Long agreement phase, disparate investments
- CBA
- 30%
- Wider benefit vs pure MoS



Financing: the European Fund for Strategic Investments (EFSI)

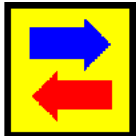
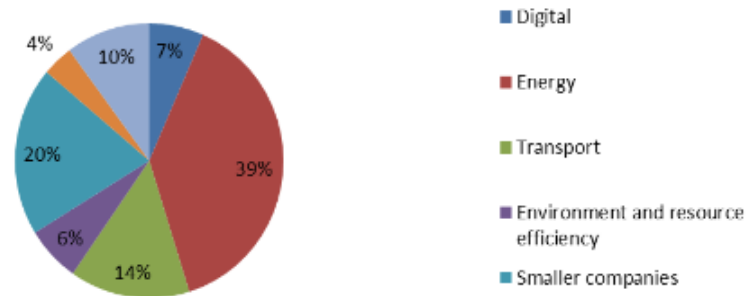
- Additional investment of at least EUR 315 billion over a three year period.
- Supports bankable projects.
- No geographical or sectoral allocation.
- Provides risk financing instruments via EIB (no grants).
- EUR 500 billion in additional investments by 2020.



EFSI Transport, as of 30 December 2017

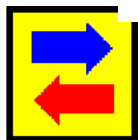
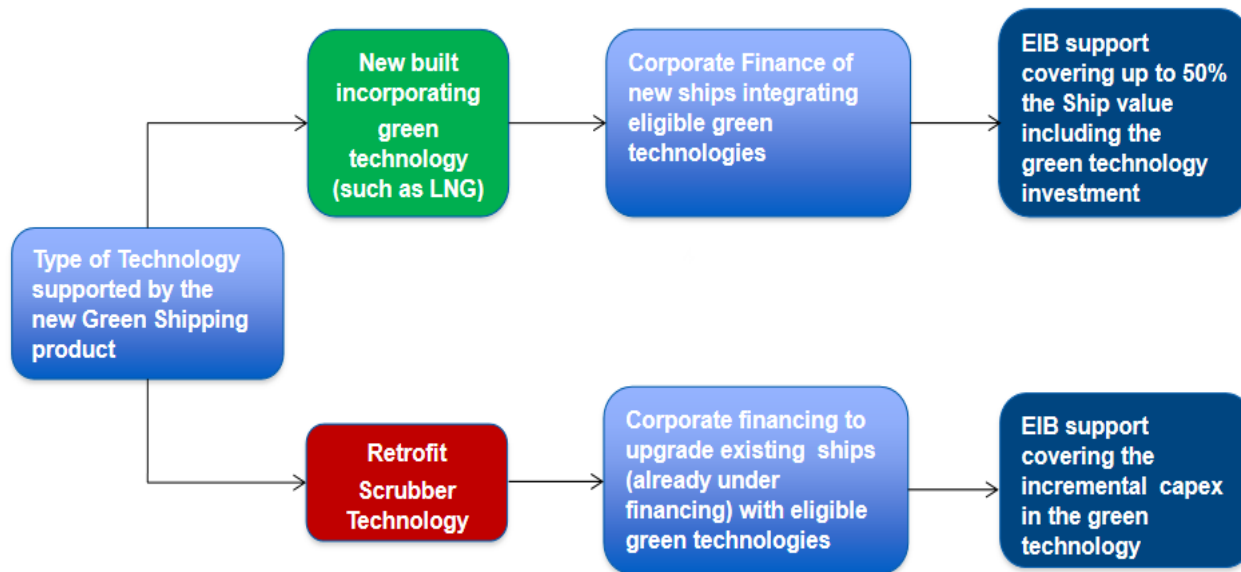
98 transport projects approved
Signed Loans of EUR 9,8 billion within EU

EFSI IIW Related Investment (EUR 99.0bn)



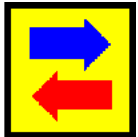
The Green Shipping Financing Tool (GFST)/EIB

- The GSFT instrument would allow financing of new investments and conversion of existing fleets (ships only)



Other Financing Schemes and Tools

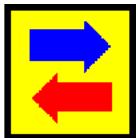
- Different funding schemes are used in ports' construction and upgrading projects all around the world:
 - Public Sector Scheme,
 - Private Public Partnerships (PPP)



Other Financing Schemes and Tools

Public Sector Scheme

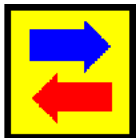
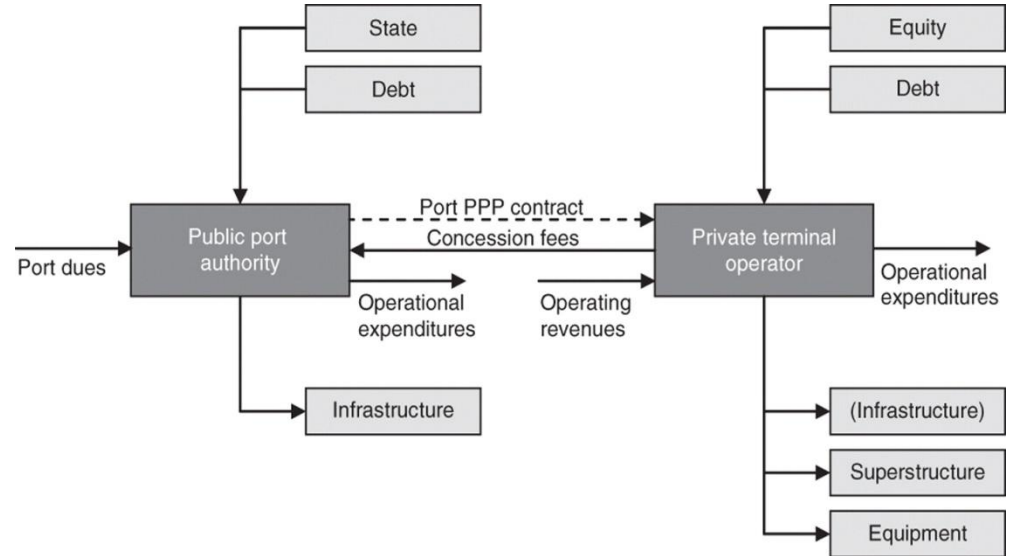
- Port Authorities self-fund the upgrade of their infrastructure and superstructure, opted due to lack of external investors, with respect to port improvement and maintain competitive advantage.
- Indicative examples are the ports in Florida, Georgia and Texas follow self-funding infrastructure projects or the Port of London Authority acts as a self funding public trust.



Other Financing Schemes and Tools

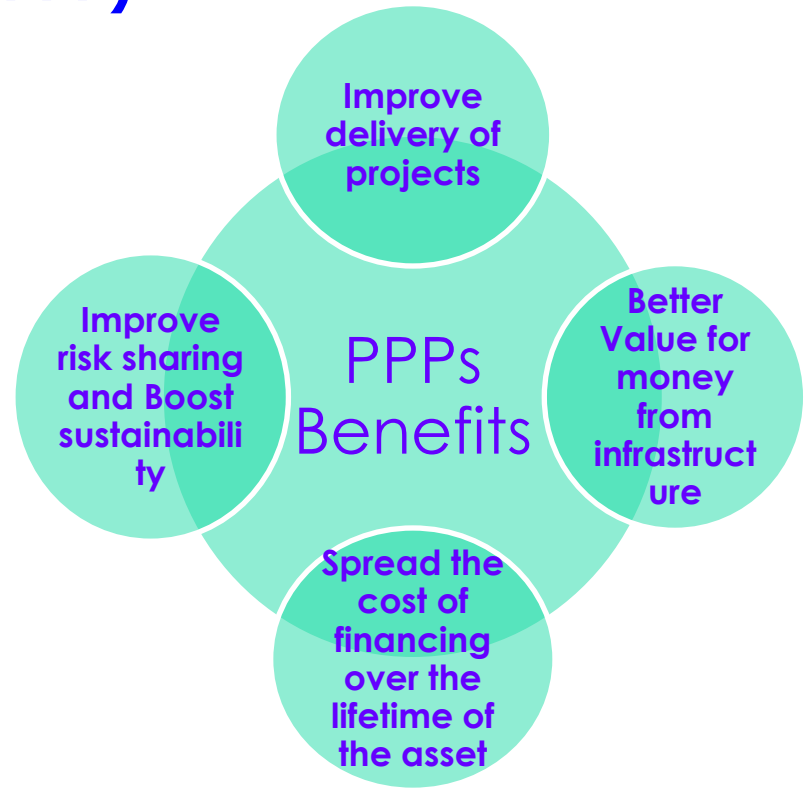
Private Public Partnership (PPP)

- The PPP model is very complex for any Port PPP to fit the specific objectives, local circumstances and national legislation.
- A PPP can range from a 100% private investment as in a build–operate–transfer (BOT) scheme to a regular concession agreement with varying public investment contribution.



Public Private Partnerships (PPP)

- Common practice for financing transport projects.
- Public party bears assets ownership.
- Procurement method for large infrastructure projects.
- Improve the quality of expenditure and ensure effective use of EU funds.
- EU funds make PPP projects more affordable for the procuring authority and/or user and improve the bankability of PPP projects.



Innovative/Alternative Financing

- Project Bond Initiative
- Innovative Financing
- Crowd Funding / AIF
- Blending Equity, Funding, Private and Public Financing
- Form EEIG's
- Involve Smaller Investors

Formulation of SPP (Special Purpose Project)

Adopt successful Projects

Syndicated Investment - Negotiation of Terms

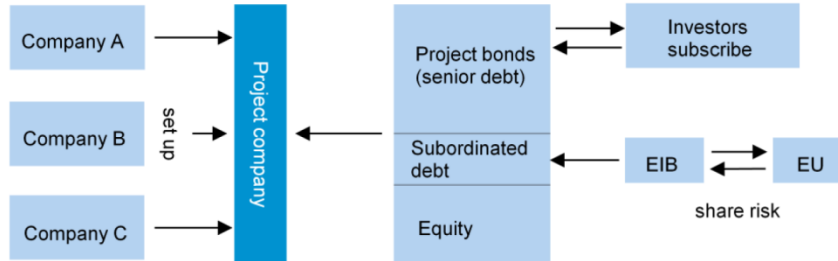
Equity (Ports, Municipalities, etc.)

Private Equity companies

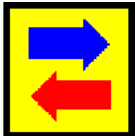
Investment & Development Banks

European Union

Project Bond Initiative



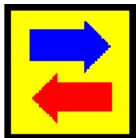
Sources: European Commission, EIB, DB Research schematic interpretation



Innovative Financing Schemes and Tools

Project Finance Bonds

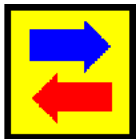
- Project bonds introduce an alternative debt funding avenue to source financing for infrastructure related projects.
- Opportunity to reduce the project funding cost and institutional investors to participate in infrastructure projects through listed, tradable securities that can offer superior risk-adjusted returns.
- Project bonds have been successfully used in Europe, America and Africa.
- European Commission and the European Investment Bank provide the Project Bond initiative, in order to stimulate capital market financing for large-scale infrastructure projects.



Innovative(?) Financing Schemes and Tools

Mezzanine Financing

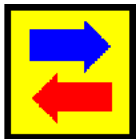
- “A hybrid of debt and equity financing that gives the lender the rights to convert to an ownership or equity interest in the company in case of default, after venture capital companies and other senior lenders are paid”.
- Typically structured as convertible debt that can be swapped by the lender for company stock if the price of the stock rises,
- Debt with a significant number of attached warrants that allow the lender to acquire company stock if the price of the stock rises and a preferred stock that earns a dividend, and which may have special voting rights, the ability to convert to common stock, or other special features



Innovative Financing Schemes and Tools

Port Investment Fund – The model of Spain

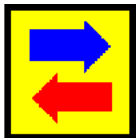
- Port Accessibility Fund (PAF) is a financial instrument created on 2014, encouraging Port Authorities to invest in their road and highway accesses railway, enhance the competitiveness of port facilities and Improve their sustainability.
- The regulations of the Fund establish mandatory and voluntary contributions of State Ports and Port Authorities based on their annual net benefits of past years.
- These contributions have the character of loans remunerated at a variable interest rate for 20 years with a 3-year grace period.
- PAF requested from the EIB a loan of € 105 million expected to trigger 425 million of investments.



Innovative Financing Schemes and Tools

Blockchain and ICO Funding

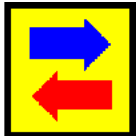
- Blockchain Technology is one of the most important technology trends in the sector of business and society.
- No single person controls all the data. Transactions can be fully automated. Money can be tracked and attached to a specific purpose Funds cannot be siphoned off. Middlemen are cut out.
- Reduces costs and complexity, shared trusted processes, allows for a greater visibility of public spending



Innovative Financing Schemes and Tools

Blockchain and ICO Funding

- This technology enables the existence of a digital currency and Initial Coin Offering (ICO), which is crowdfunding through the partial sell of its tokens (for example BitCoins) in exchange for money.
- It works like stocks, you own them, you can trade them on exchange, their value rise or fall but you don't necessarily own shares of the company.
- ICO, can be beneficial for companies that seek alternative ways to be funded, but how Port Owners and Operators can exploit it to trigger further investment for Cold Ironing?



Innovative Financing Schemes and Tools

Cases of Financing Infrastructure Projects

- As of May of 2017, over \$380M has been invested into ICOs.
- A number of Renewable Energy Companies have gone on to raise significant amounts of money through ICOs (SunContract and PowerLedger have reported approximately 24 million euros in funding).
- The ICO energy tokens are access tokens which provide a right for priority in buying cheaper green energy and raise money for the project using a donation-based model.
- Within the ICO platform it is visible if the companies are actually buying 100-percent-renewable energy, where they're buying and using the energy and how much of that is actually renewable. Thus, the transparency issue is being solved.

