

UNIDROIT International Summer School

“Financing of high value equipment: Railway Rolling Stock”

Rome, 11th July 2022

Howard Rosen
Chairman Rail Working Group
Switzerland

www.railworkinggroup.org

Follow us on  and  RailWorkingGrp



RAIL WORKING GROUP

- Formed in 1996 at the request of UNIDROIT, the International Institute for the Unification of Private Law (intergovernmental organisation based in Rome)
- Not-for-profit global industry group based in Switzerland
- Dedicated to the adoption of the Luxembourg Rail Protocol to the Cape Town Convention
- All officers and members work for free
- Over 80 direct members and hundreds via industry associations, including ARIA, linking up various industry stakeholders
- In Africa we work with the UN ECA, the AU, AfDB and various regional organisations as well as with individual governments

Introduction

1. **Setting the scene in Africa (Howard Rosen)**
 - The Railways and Africa
 - How can rolling stock be financed?
 - What are the legal problems for creditors?
2. **South Africa Case Study (Mesela Nhlapo)**
 - Rail today in South Africa and the new 3rd Party Access
 - Funding requirements
 - Regional considerations (Mozambique)
 - The Luxembourg Rail Protocol as a solution for Africa
3. **A detailed look at the Luxembourg Rail Protocol (Howard Rosen)**
 - Legal provisions, questions and URVIS
 - Registry Regulations and Model Rules
 - Economic benefits
4. **Q&A**

Introduction

1. **Setting the scene in Africa (Howard Rosen)**
 - The Railways and Africa
 - How can rolling stock be financed?
 - What are the legal problems for creditors?
2. South Africa Case Study (Mesela Nhlapo)
 - Rail today in South Africa and the new 3rd Party Access
 - Funding requirements
 - Regional considerations (Mozambique)
 - The Luxembourg Rail Protocol as a solution for Africa
3. A detailed look at the Luxembourg Rail Protocol (Howard Rosen)
 - Legal provisions, questions and URVIS
 - Registry Regulations and Model Rules
 - Economic benefits
4. Q&A

Africa Needs More Railways

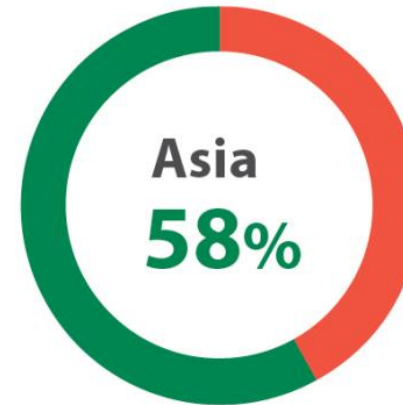
- Railways are essential for sustainable development
- The lack of integrated African rail networks is holding back growth and intra-continental trade – including the AfCFTA
- Roads cannot take the strain from increased trucking
- Cities are strangled by congestion and pollution
- Moving passengers and freight onto rail is vital for environmental, social and economic reasons (1 train can transport the freight carried by 40 trucks)

Africa Needs More Railways

Africa has a low level of intra-regional trade ...

Source: UN Economic Commission for Africa

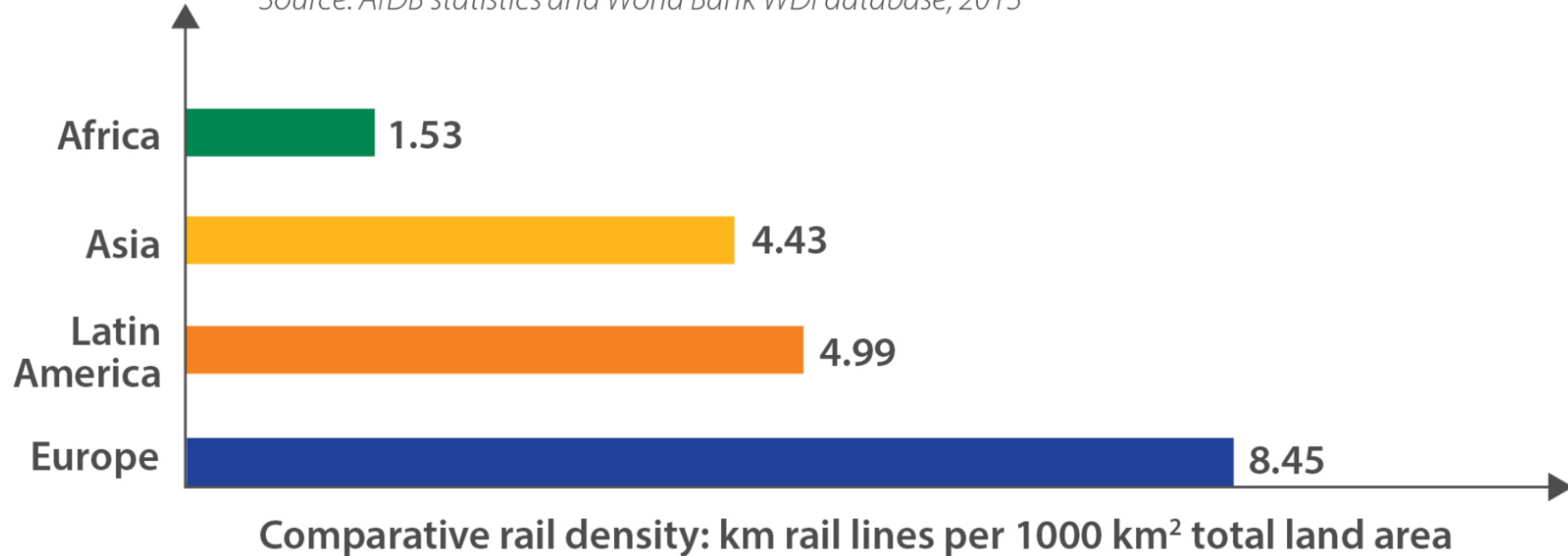
Percentage of
intra-regional
trade →



Africa Needs More Railways

... and too little rail infrastructure

Source: AfDB statistics and World Bank WDI database, 2013

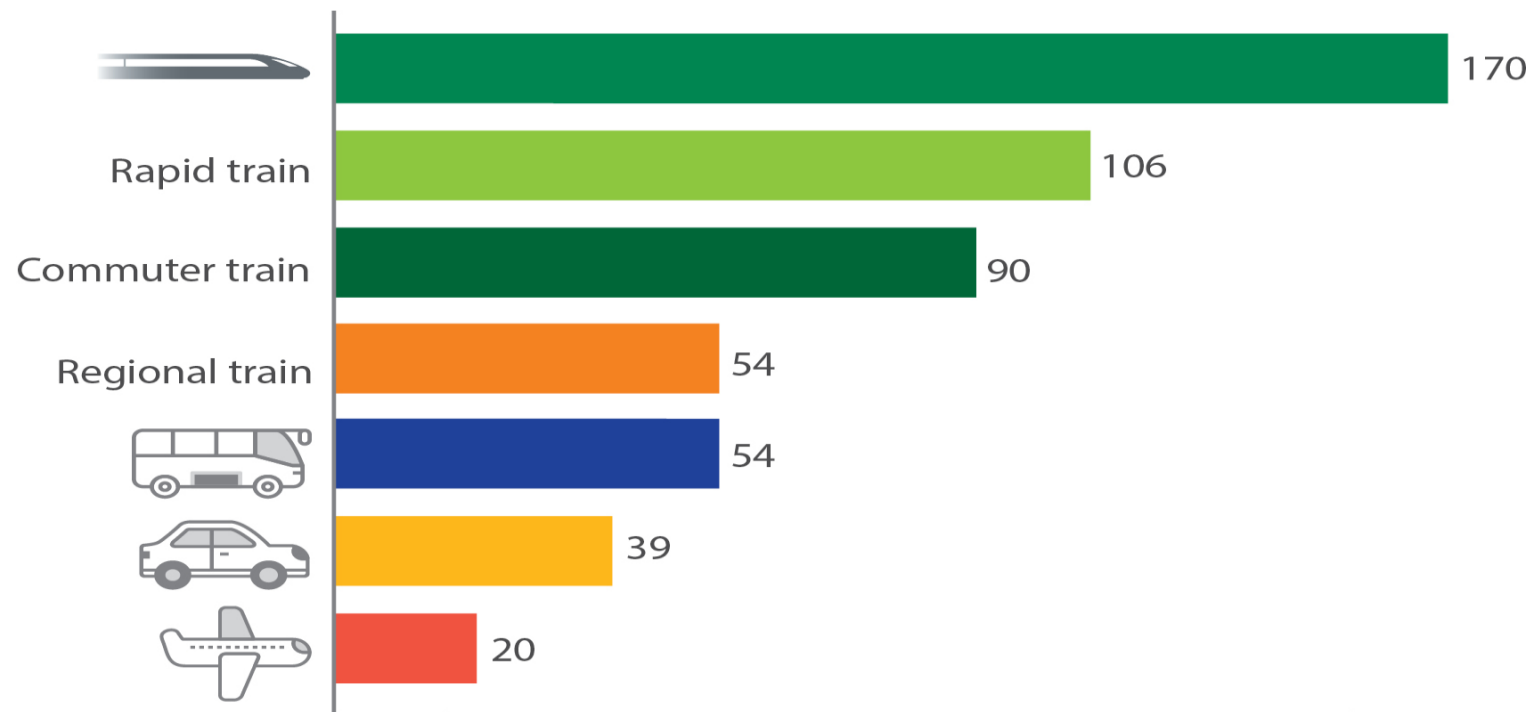


Africa Needs More Railways

Energy Efficiency

Passenger-kilometres carried per unit of energy (1kwh = 0.086kep)

Source: EEA (2018)



An African Finance Minister earlier today



Finding the money

- More passenger and freight traffic must be moved to the rails
- The rail sector has to be competitive
- Latest UN ECA study shows requirements upon implementation and realization of planned infrastructure for the AfCFTA as 132,857 bulk wagons and 36,482 container wagons at a cost respectively of \$26.571 bn and \$9.120 bn by 2030

Current Financing models

Country	Public sector	Private sector *
Australia	Long distance services and regional services predominantly State owned. Infrastructure government owned	Some suburban services operated by private sector companies along with freight
France	Government owned SNCF holding company, with functionally separate track and train companies	Rail freight open to competition and regional passenger services may follow
Germany	Government owned Deutsche Bahn holding company, with functional separation of track and train	Regional State tendered concessions, with new private sector entrants. Small amount of long distance under open access
Italy	RFI and Trenitalia are government owned, as part of Ferrovie dello Stato Italiane, with functional separation of track and train	NTV offers competition on high-speed rail
Japan	Broken up and privatised (fully integrated), albeit with loss making regional railway companies remaining in public ownership	Number of regional and commuter railways are private companies with significant business outside rail
Netherlands	Owned by the government, ProRail provides the infrastructure and Nederlandse Spoorwegen (NS) provides the majority of the passenger services	Small regional private contracted passenger service companies exist albeit very limited
Sweden	Track and train separated, with train operations privatised, but infrastructure in public ownership (including majority of stations)	Long distance services run as open access or under contract. Regional and suburban services under contract from regions
Switzerland	SBB is the largest operator and is publicly held. SBB also manages the infrastructure	Some freight operators, especially those operating trans-alpine
United Kingdom	Separated and privatised by function, with track now back in public ownership. Currently Intercity East Coast franchise under public operation	Passenger services franchised to private operators, freight services privatised along with rolling stock lease companies. Some long distance open access operators
USA	Amtrak, which is effectively government owned, provides intercity services across track	The freight operators are private and are vertically integrated owning their own

*Private operators also includes operators owned by foreign governments

Current Financing models

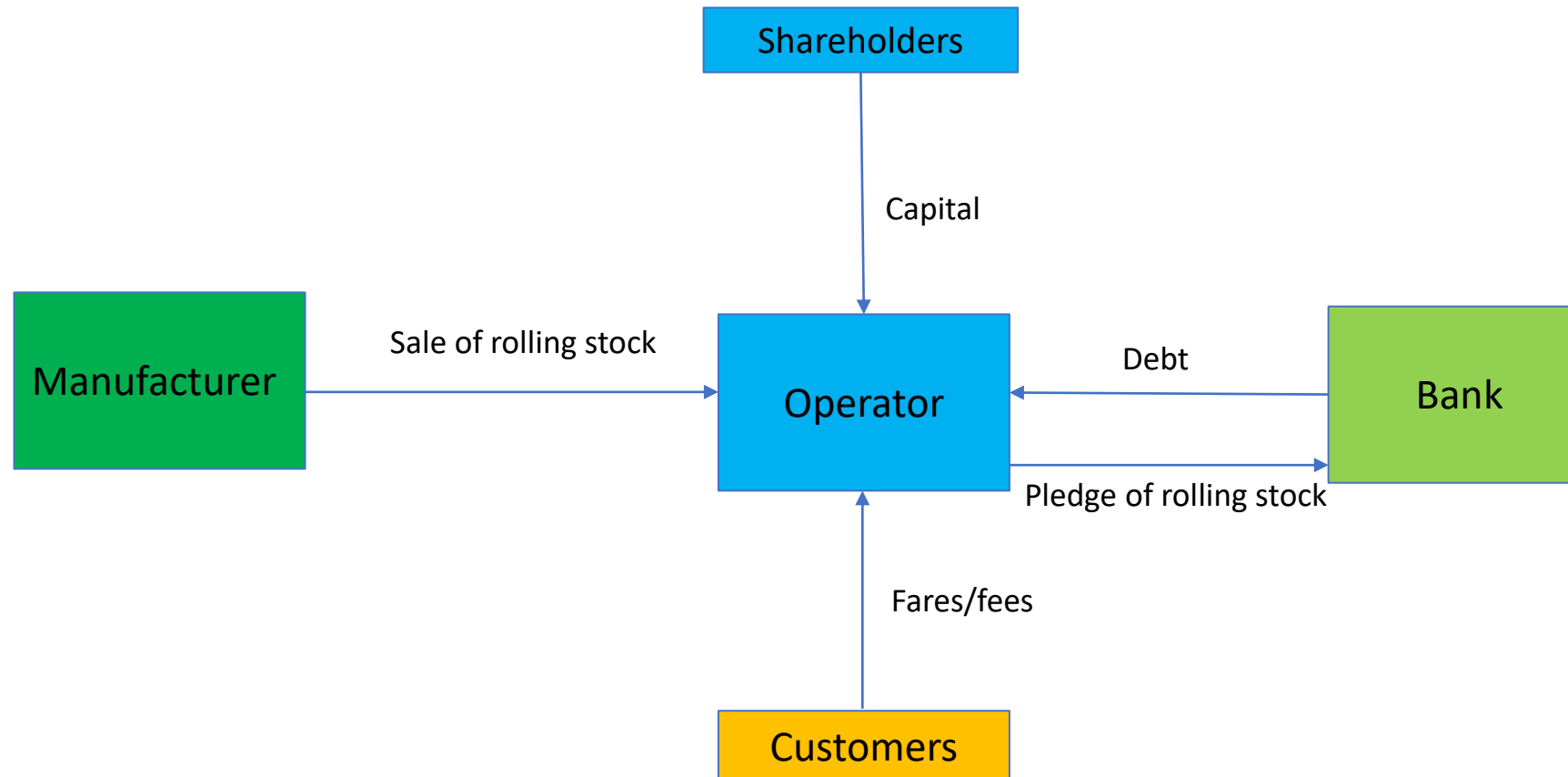
- State funds – taxation and debt
- Collective state borrowing – e.g. Eurofima
- Development Aid
- Foreign state/state agency loans and grants
- World Bank and multilateral development bank loans and guarantees
- However
 - the government resources are limited
 - debt burdens can be too onerous and
 - soft loans and aid come with conditions
- The private sector can help but there are problems

New Financing models

- Finance of infrastructure and rolling stock separated
- Investors can bring in capital through direct equity investments in operators
- Rolling stock can be financed by the private sector through
 - Debt or equity
 - Secured debt
 - Leasing
 - BOT/PPP
- Franchise and Concession models

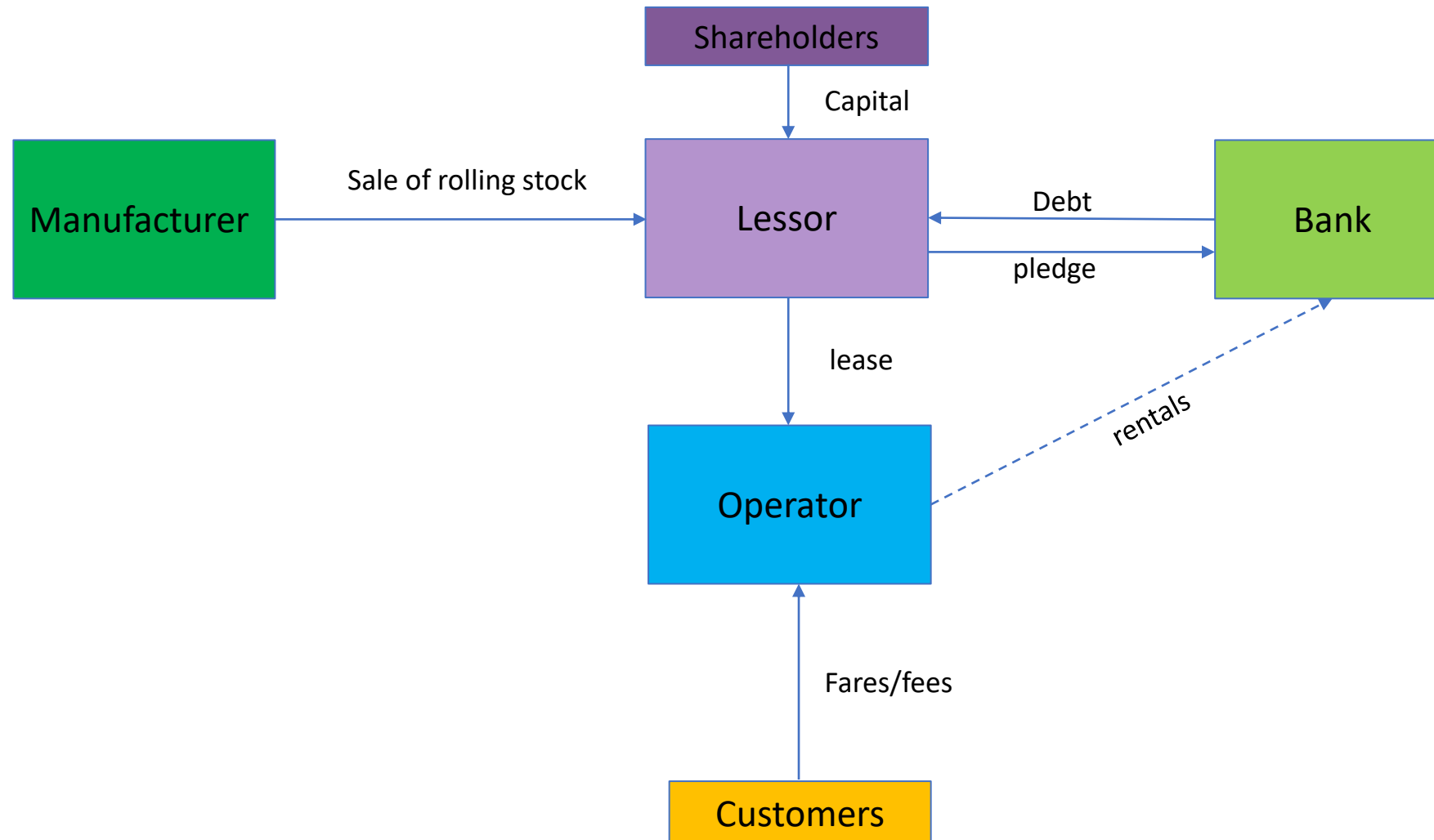
Financing Rolling Stock

Debt model



Financing Rolling Stock

Lease model



Operating Leases for the Railways

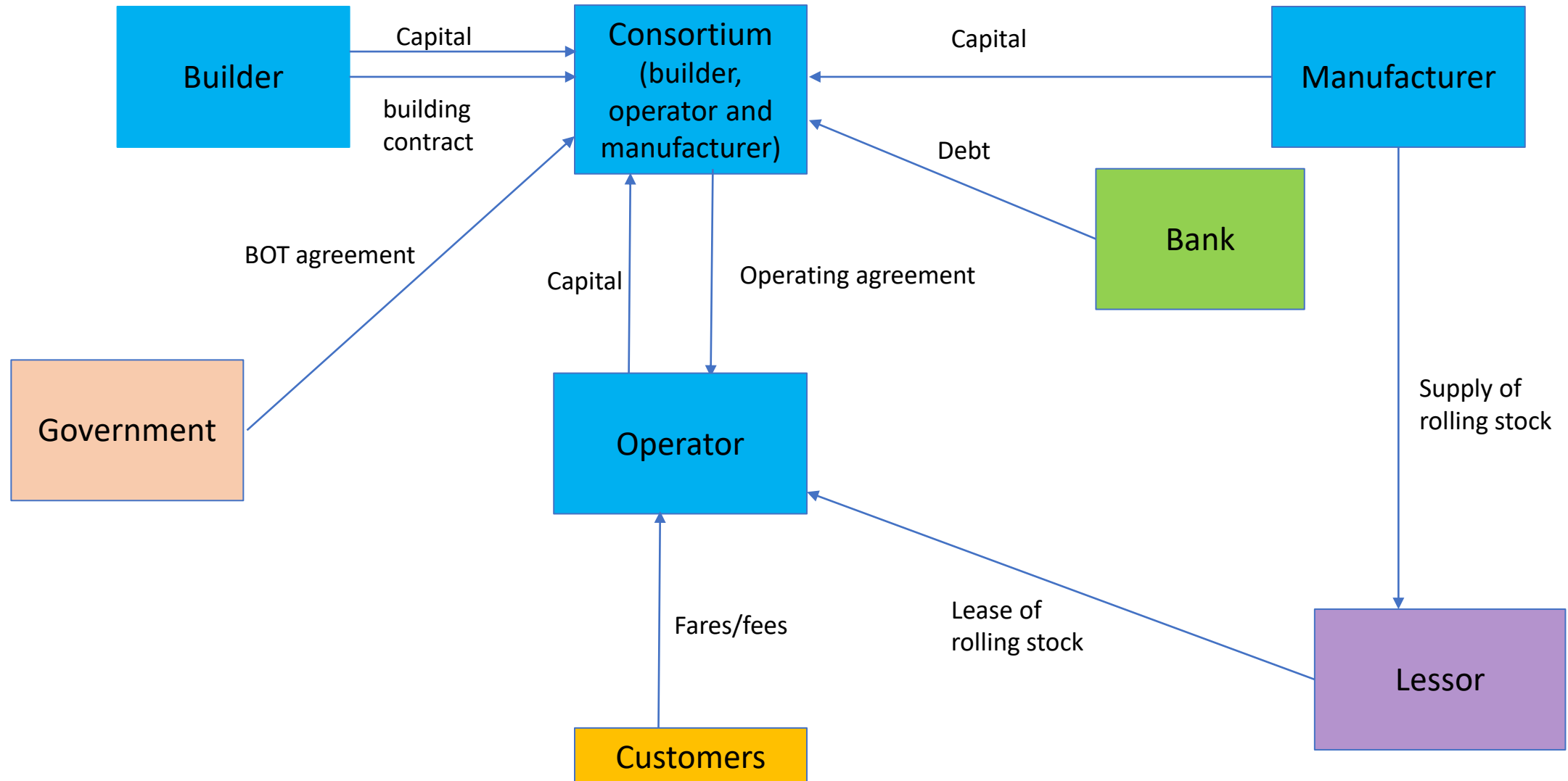
- Operating Leases are critical ways to provide private sector secured finance independent of government
- Operating lessor owns the rolling stock and leases it for less than its useful life; lessee pays only part of the cost
- **Operating leasing is a key component in the success of the aviation sector in the last 40 years**
 - Lessee can be lightly capitalised**
 - Flexible instrument: lessor can carry maintenance, insurance and other liabilities**
 - Promotes a secondary market**

Operating Leases for the Railways

- An important part of any PPP strategy
- Unburdens balance sheet – and operator is no longer an asset manager
- Allocates practical and technological obsolescence and other risks where they can be most easily borne
- Opens up non recourse private financing of existing fleets
- Encourages foreign investment in the railways
- **Lowers the barriers to entry for new industry participants**

Financing Rolling Stock

PPP model

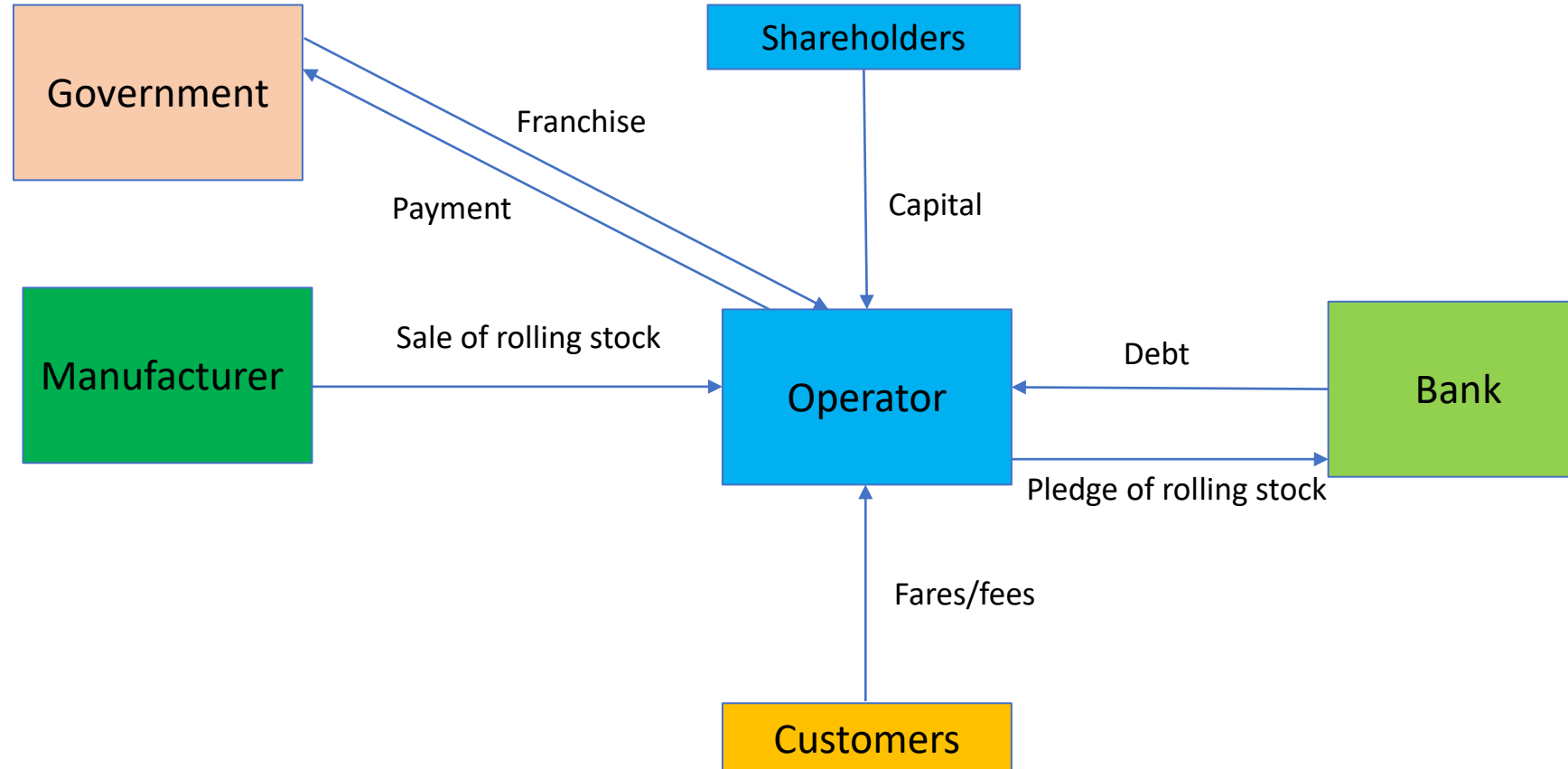


Financing Rolling Stock

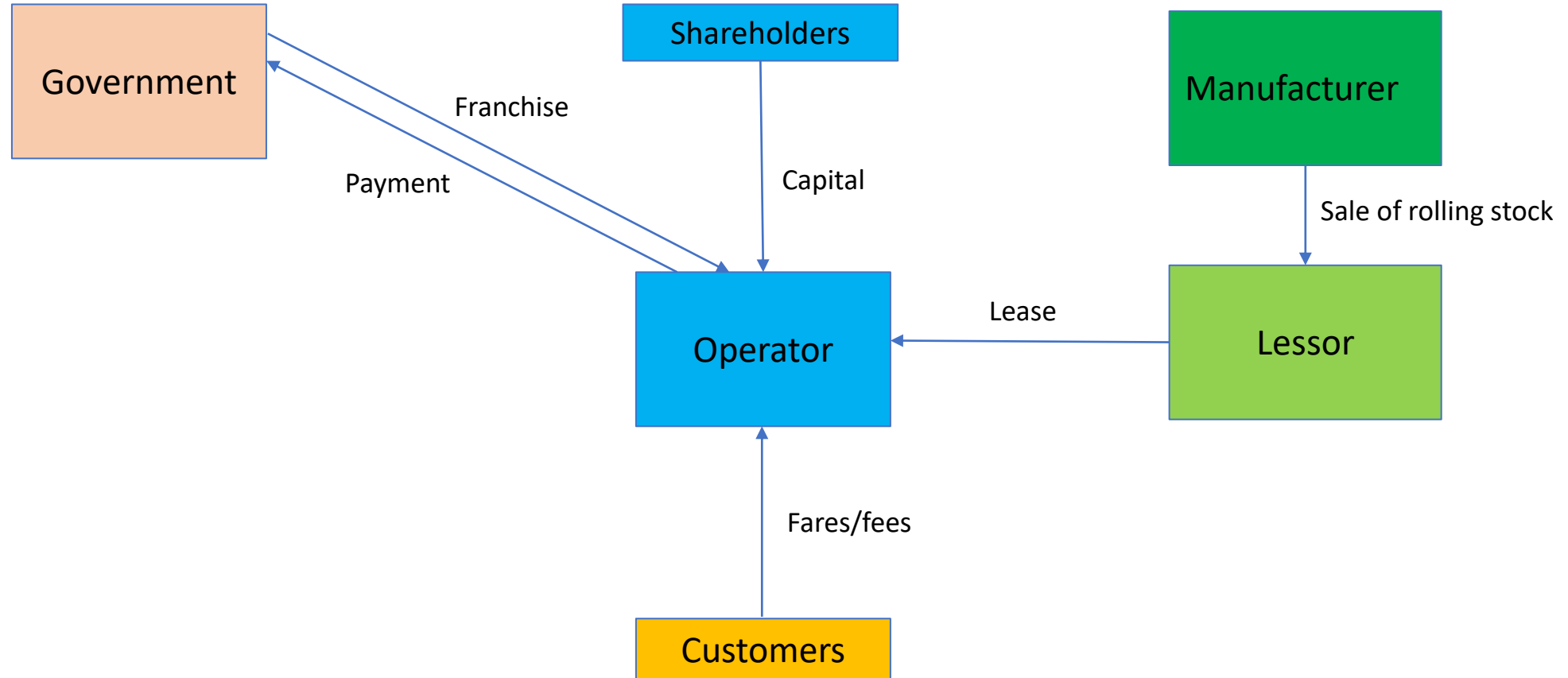
The trends

- Corporate
 - Separating infrastructure and operations
 - Separating operations from rolling stock
- Financial
 - PPP 2.0
 - ECA and MDB support
- Operational
 - Differentiate between Passenger and Freight
 - Open access
 - Franchises and concessions

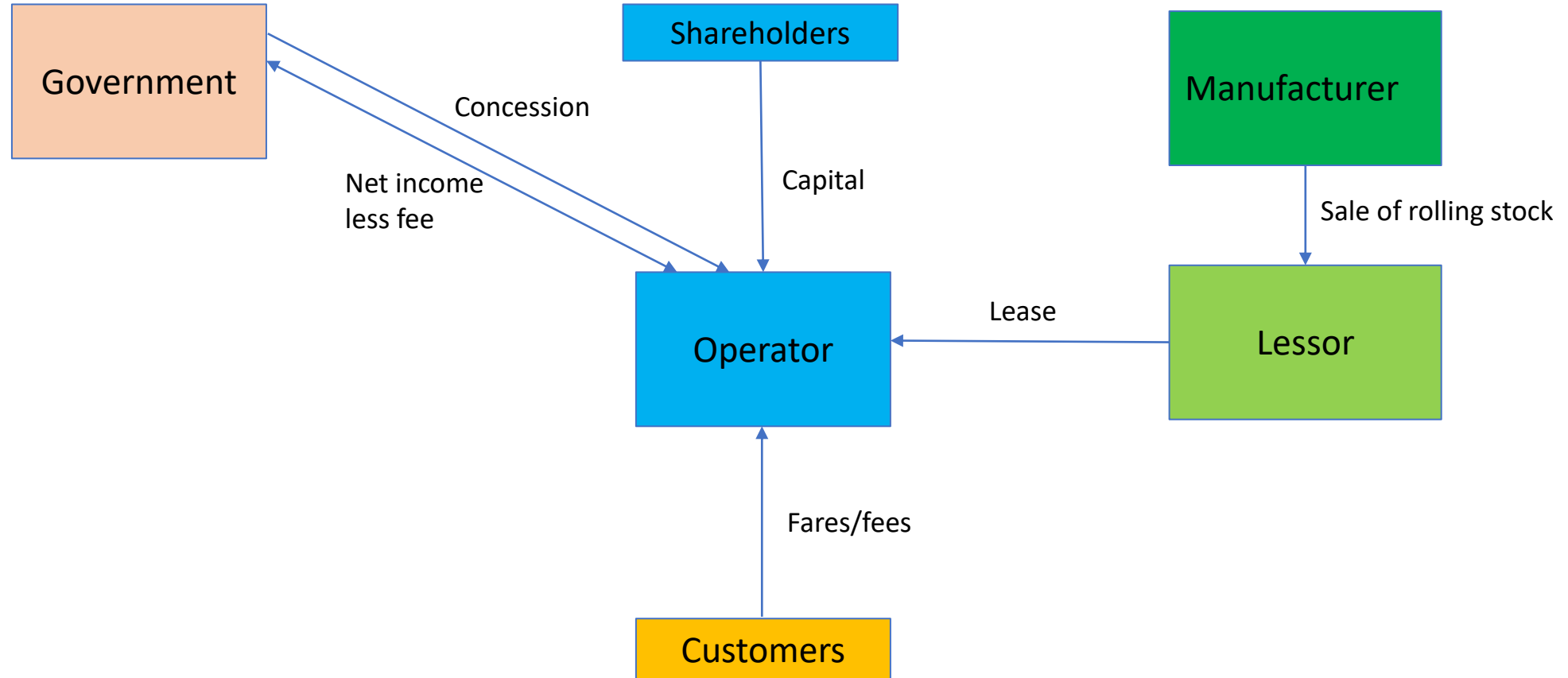
Franchise



Franchise



Concession



Problems of bringing in private capital

- No national title or security registry
- Identifiers unstable (from a creditor's perspective) and inconsistent across the sector
- Limited legal infrastructure domestically and internationally
- Repossession issues for creditors on debtor default or insolvency
- Public Policy and Public Interest
- Bank's capital requirements and Basel II and III
- Limited commercial tracking of assets
- Conflict of laws and cross border risks

But there's a solution

Introduction

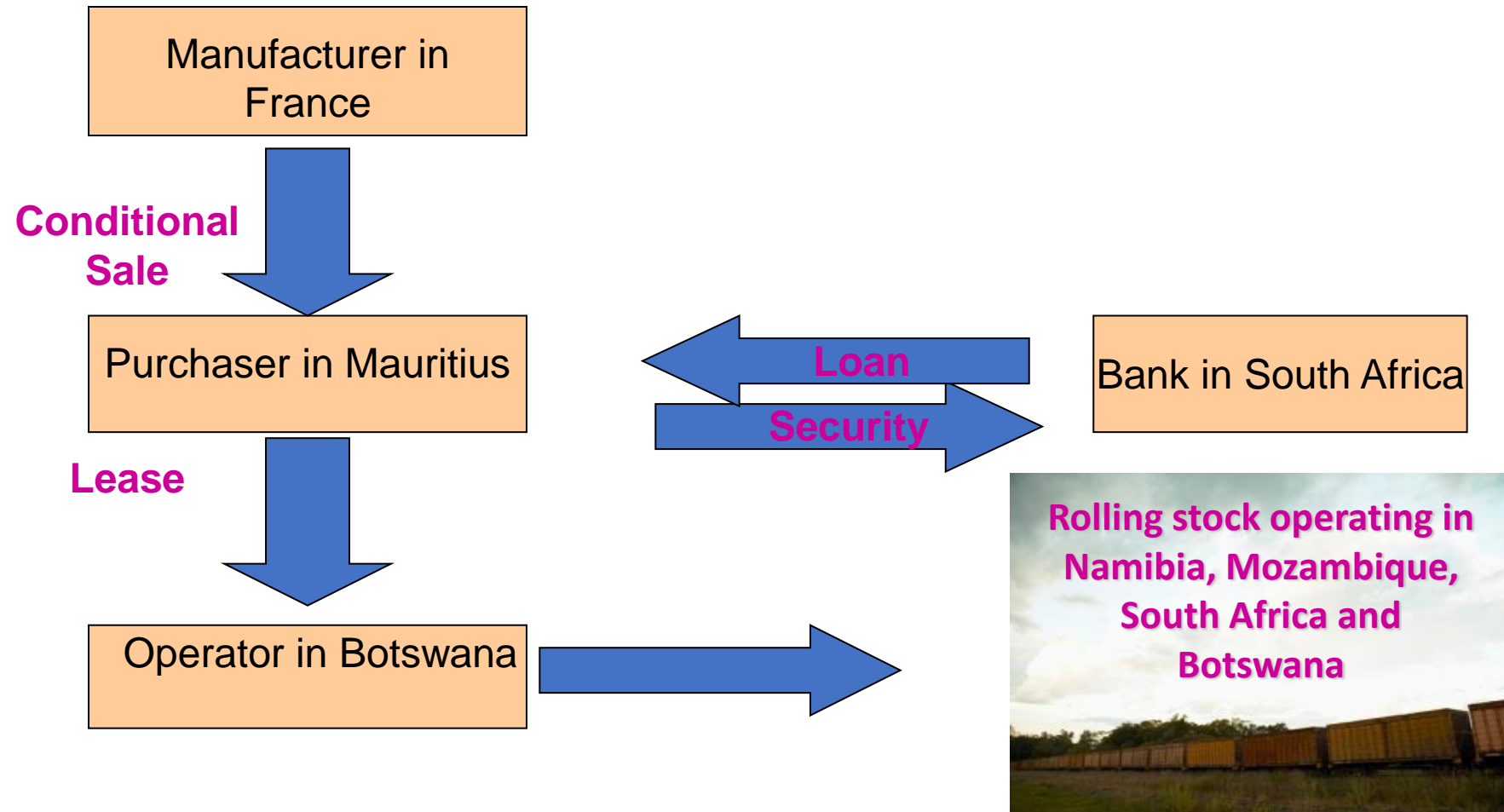
1. Setting the scene in Africa (Howard Rosen)
 - The Railways and Africa
 - How can rolling stock be financed?
 - What are the legal problems for creditors?
2. South Africa Case Study (Mesela Nhlapo)
 - Rail today in South Africa and the new 3rd Party Access
 - Funding requirements
 - Regional considerations (Mozambique)
 - The Luxembourg Rail Protocol as a solution for Africa
3. **A detailed look at the Luxembourg Rail Protocol (Howard Rosen)**
 - Legal provisions, questions and URVIS
 - Registry Regulations and Model Rules
 - Economic benefits
4. Q&A

Problems of bringing in private capital

- No national title or security registry
- Identifiers unstable (from a creditor's perspective) and inconsistent across the sector
- Limited legal infrastructure domestically and internationally
- Repossession issues for creditors on debtor default or insolvency
- Public Policy and Public Interest
- Bank's capital requirements and Basel II and III
- Limited commercial tracking of assets
- Conflict of laws and cross border risks

But there's a solution

Cross border issues



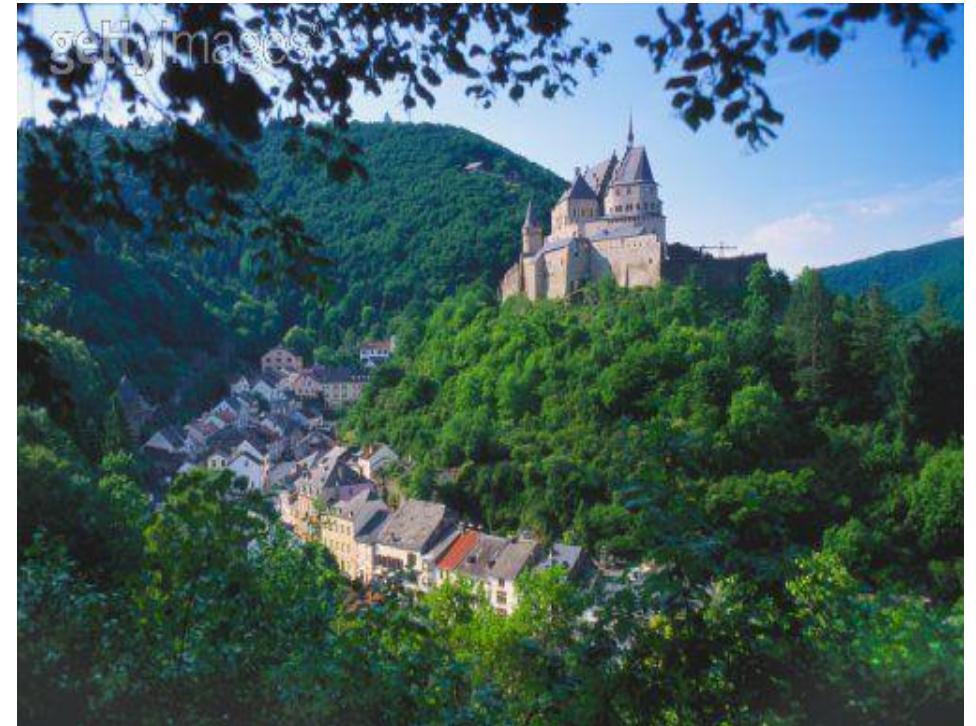
Problems of bringing in private capital

- No national title or security registry
- Identifiers unstable (from a creditor's perspective) and inconsistent across the sector
- Limited legal infrastructure domestically and internationally
- Repossession issues for creditors on debtor default or insolvency
- Public Policy and Public Interest
- Bank's capital requirements and Basel II and III
- Limited commercial tracking of assets
- Conflict of laws and cross border risks

But there's a solution - the Luxembourg Rail Protocol

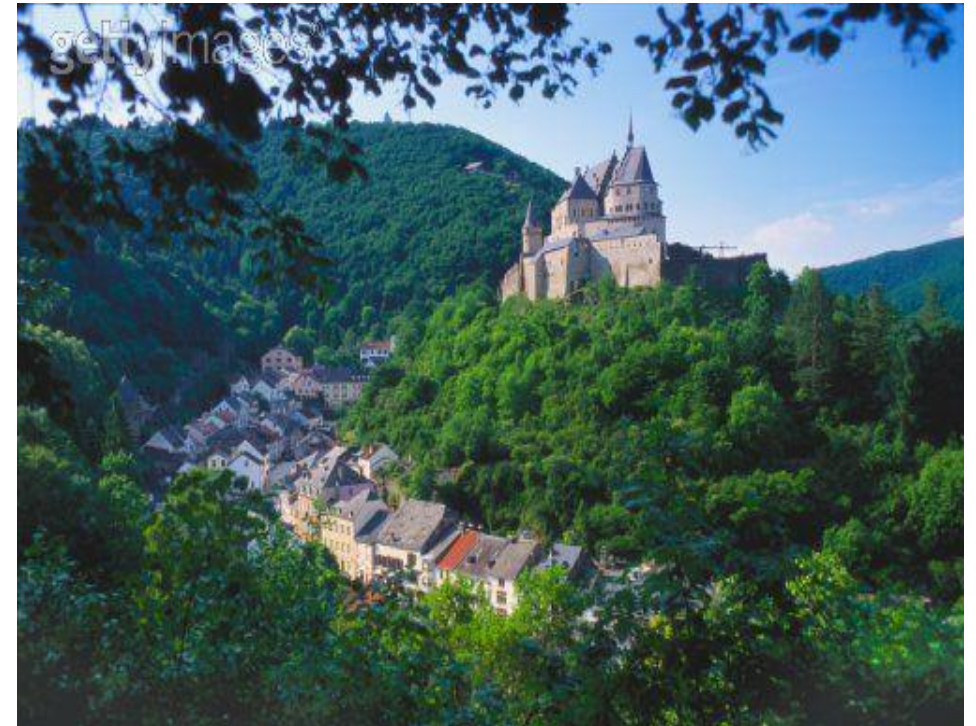
Luxembourg Rail Protocol

- Diplomatic Conference in Luxembourg in 2007:
- Attended by 42 states and 11 international organisations including 7 African States and SADC
- Sponsoring intergovernmental organisations UNIDROIT and OTIF – both with African members

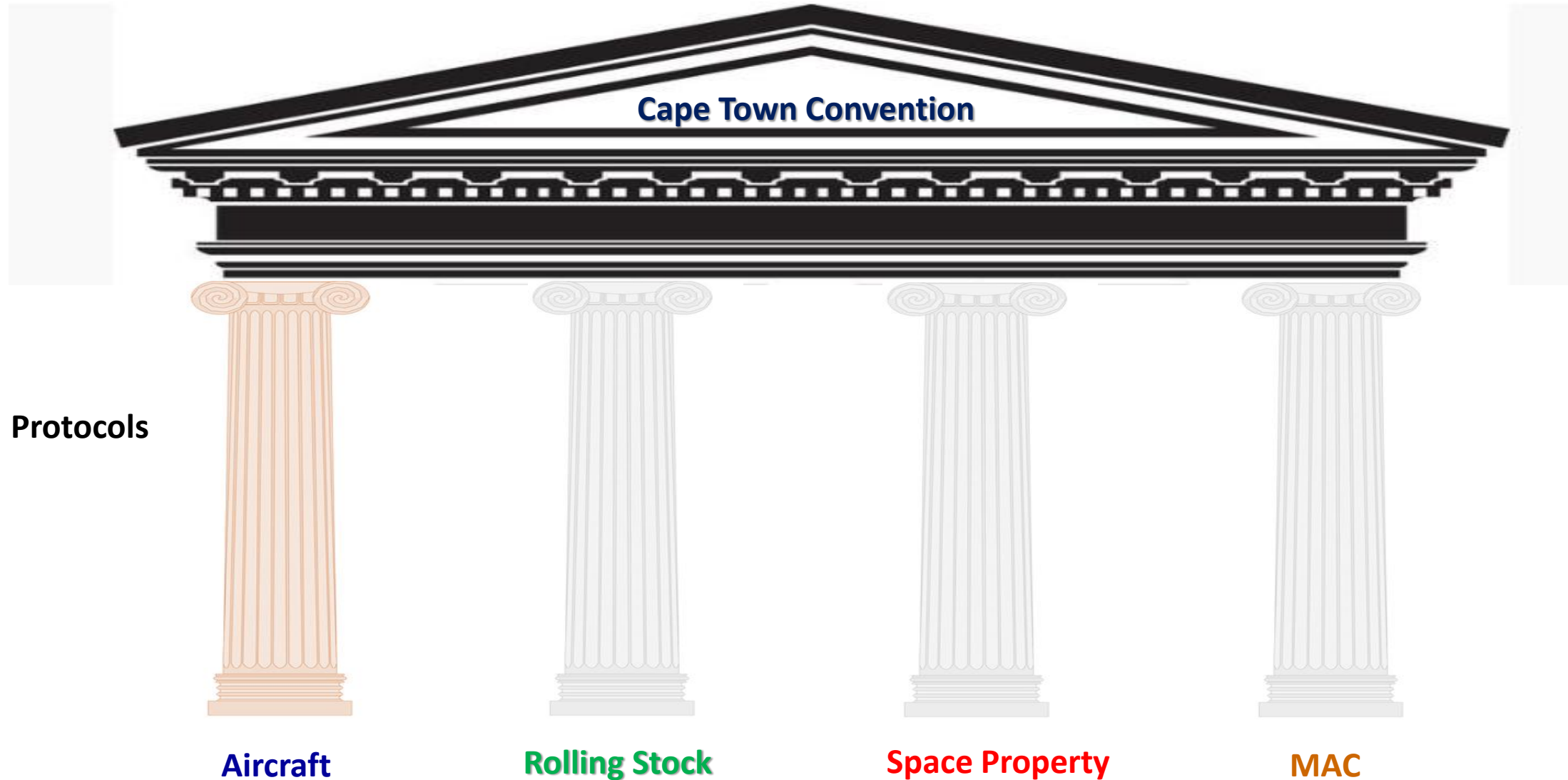


Luxembourg Rail Protocol

- Applies the Cape Town Convention to rolling stock **when debtor is located in a contracting state**
- International registry in Luxembourg
- Registrar responsible to contracting states
- Will introduce global unique identification system for railway equipment (URVIS)



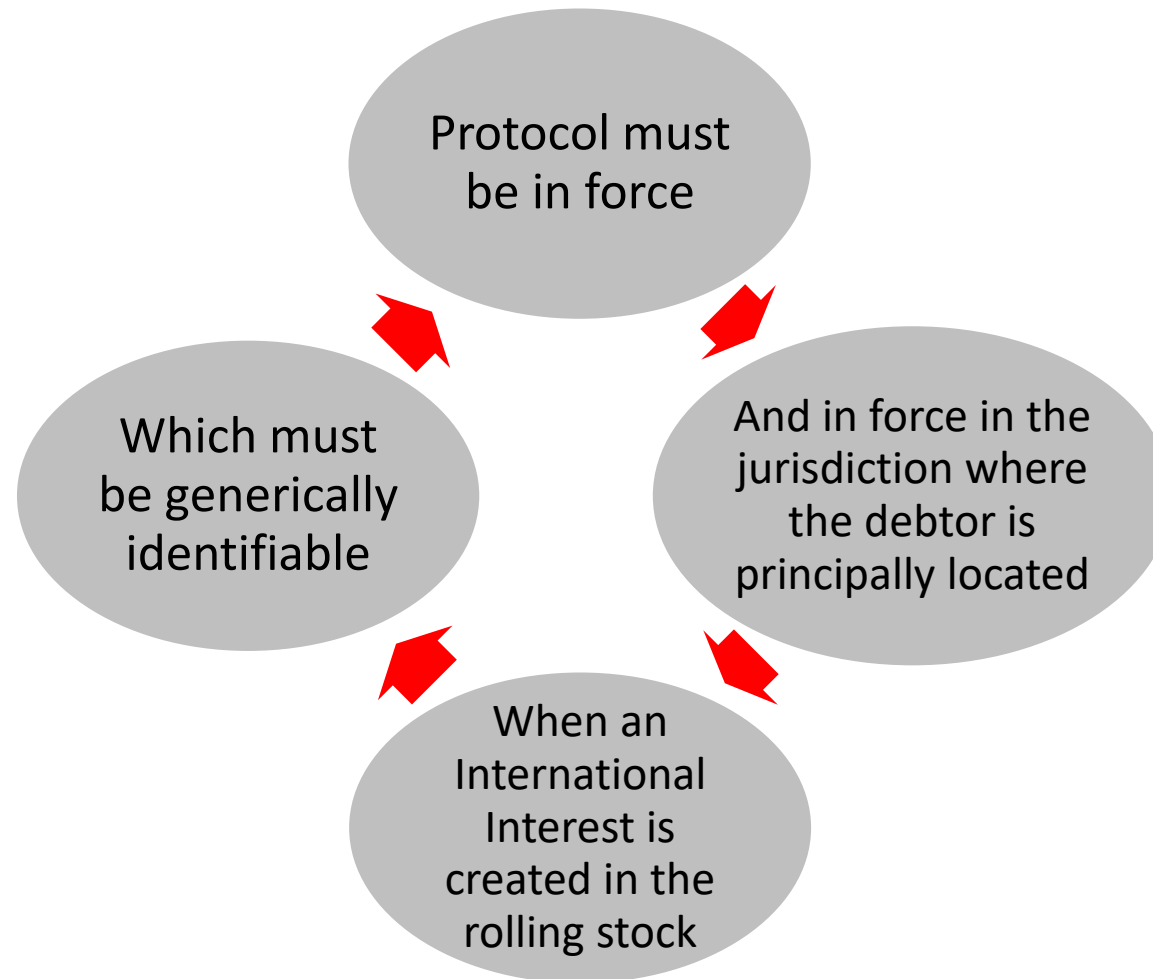
How the Convention works



The Rail Protocol Applies to ALL Rolling Stock

- Wherever manufactured, whatever gauge and operability standards
- Broadly defined: “..vehicles movable on a fixed railway track or directly on, above or below a guideway.” This covers:
 - Inter-urban and urban rolling stock
 - Specialist boring and other rail mounted equipment
 - Metro and light rail trains and trams
 - Monorail trains and cable cars
 - People movers/shuttles at airports, hyperloop pods
 - Cranes and gantries at ports

When does the Luxembourg Protocol apply?



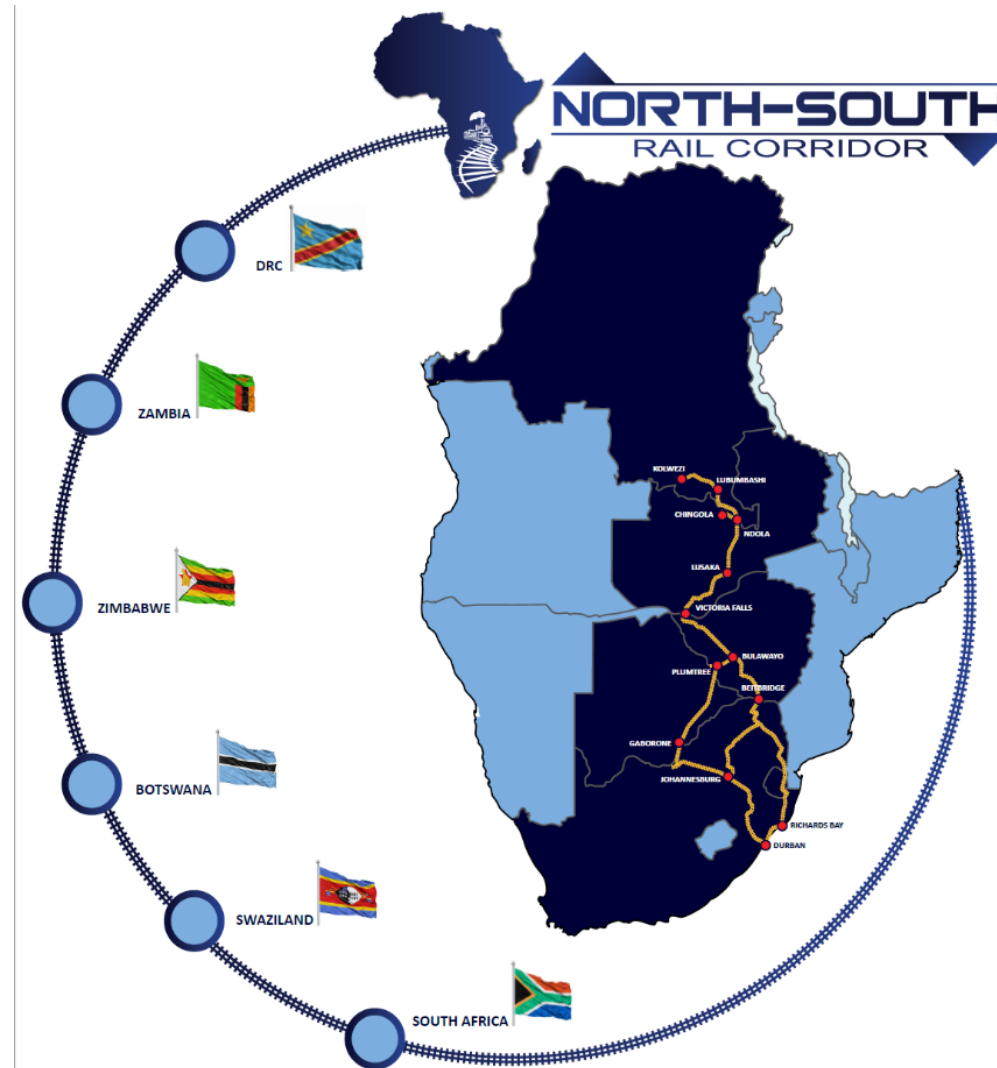
The Protocol's Status

- Adopted in 2007 (4 ratifications and active registry required to enter into force – expected during 2022)
- Appointment of Regulis SA (SITA subsidiary) as Registrar in December 2014
- Ratified by Gabon, Luxembourg and Sweden (and the EU)
- Signed by Italy, Spain, South Africa, Germany, France, Mozambique, Switzerland and UK - all moving towards ratification
- Under review in Africa, by Mauritius, Burkina Faso, Egypt, Uganda, Senegal, Namibia and Ethiopia

The problem of contiguity

- The Protocol applies by reference to where the debtor has its centre of operations
- Not by reference to where the rolling stock is located
- What are the creditor rights when the rolling stock is situated in a jurisdiction which is not a contracting state?
- And remember, there can be multiple creditors and multiple debtors in different jurisdictions

The problem of contiguity



Unique Vehicle Identification

- Rolling stock must be uniquely identifiable to register interest
- Unique Vehicle Rail Identification System (URVIS) will be established by registry regulations
- First global unique and permanent identification system for rolling stock
- 16-digit number allocated by the Registrar in Luxembourg that will never be re-used
- Affixed **permanently** to each item of rolling stock by the manufacturer, maintainer or keeper

URVIS Benefits

- URVIS
 - Important for immatriculation – admission to rail system
 - Will support regional regulatory co-operation and interoperability systems
 - Defence against fraud on purchasers and creditors of rolling stock
 - Key element of AI/autonomous operation

URVIS Hidden Benefits

- URVIS
 - One system applicable worldwide on all rail assets
 - Real-time tracking of condition and location of assets domestically and in other jurisdictions (and tracks)
 - Facilitates more efficient asset management
 - Underwrites customised predictive maintenance
 - Makes lifetime asset management and costs much easier for operators, manufacturers and financiers

URVIS Hidden Questions

- URVIS number must be “affixed to the item of railway rolling stock” (Article XIV)
 - Who affixes?
 - How is it affixed?
 - Is it permanent – and how permanent?
- Type, size, location and cost of identifier
- Readability?
- Legal liabilities
- UN ECE Model Rules

Public service railway rolling stock

- What's going on?
- Initial declaration under Article XXV
 - *“Continue to apply”*
 - Application to rolling stock
 - “railway rolling stock habitually used for the purpose of providing a service of public importance” (Art XXV (1))*
 - Compensation to the creditor (usually)
- the 2nd, fatal, declaration
- Subparagraph 6

The Economic Benefits

- Macro and Micro Economic Benefits
- Looking at the micro economic benefits
 - More security = lower risk = lower financing rates
 - Easier documentation and legal structures
 - Clear legal position encourages new sources of investment
 - Export Credit Agency support rates decrease
 - Supports cross border operations
 - URVIS facilitates more efficient asset management
 - Operating leasing - higher residual values plus manufacturing economies of scale

The Luxembourg Rail Protocol to the Cape Town Convention

*Its positive impact on the
cost of financing railway
rolling stock in Africa*

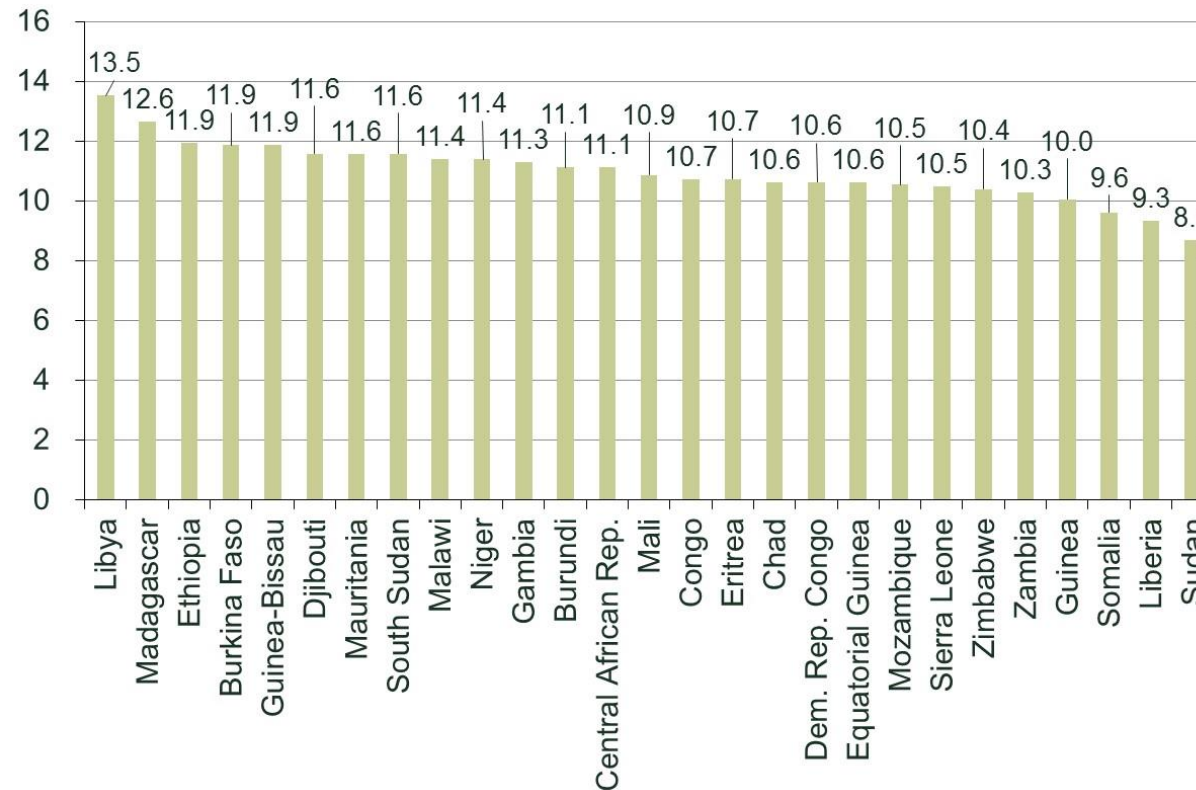
Prepared for



Results of the analysis (1/3)

Countries with an OECD country risk classification of 7

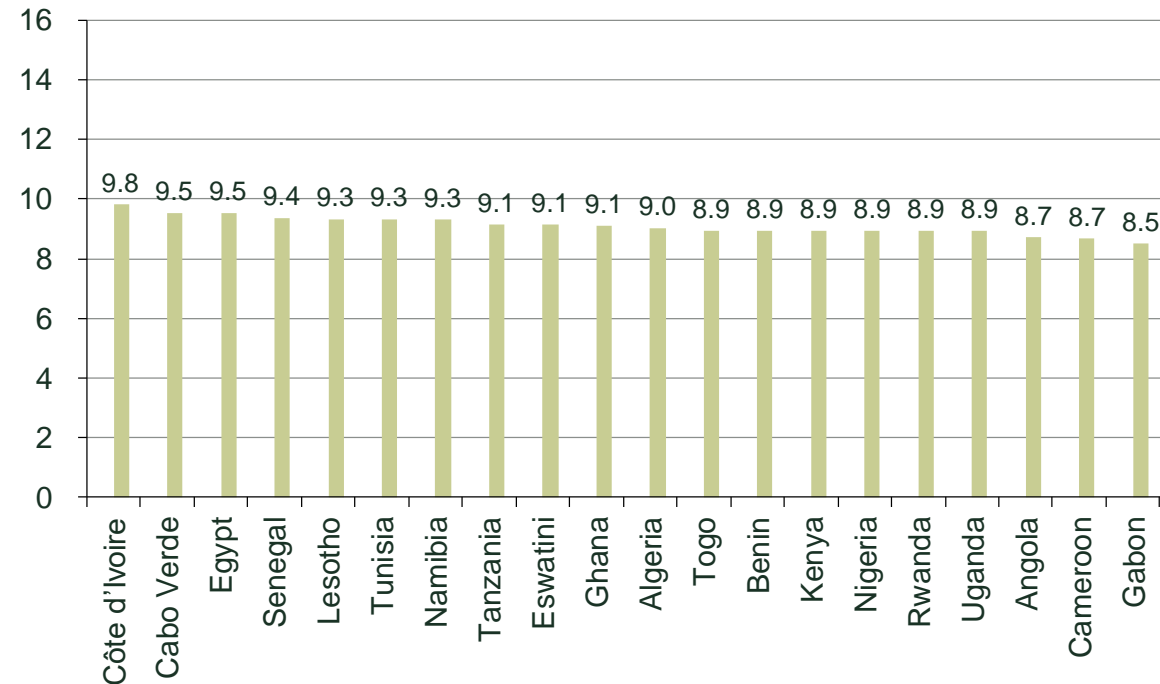
Net present value of benefits (in \$m) for an initial rolling stock value of \$100m



Results of the analysis (2/3)

Countries with an OECD country risk classification of 5-6

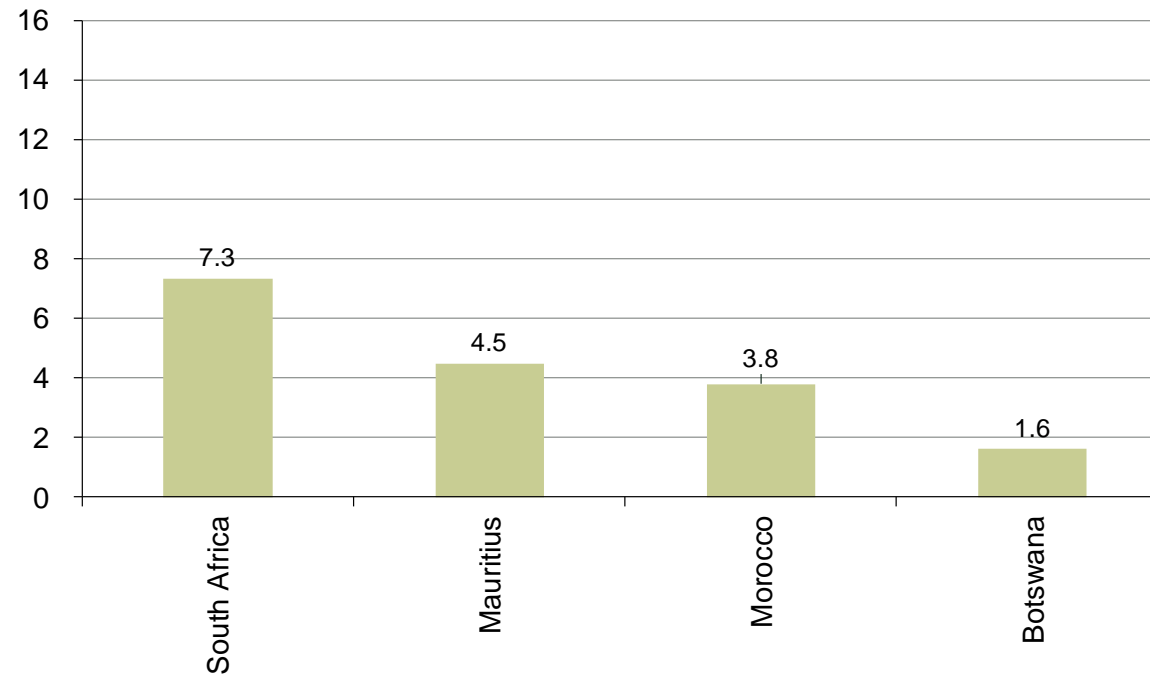
Net present value of benefits (in \$m) for an initial rolling stock value of \$100m



Results of the analysis (3/3)

Countries with an OECD country risk classification lower than 5

Net present
value of
benefits (in
\$m) for an
initial rolling
stock value
of \$100m



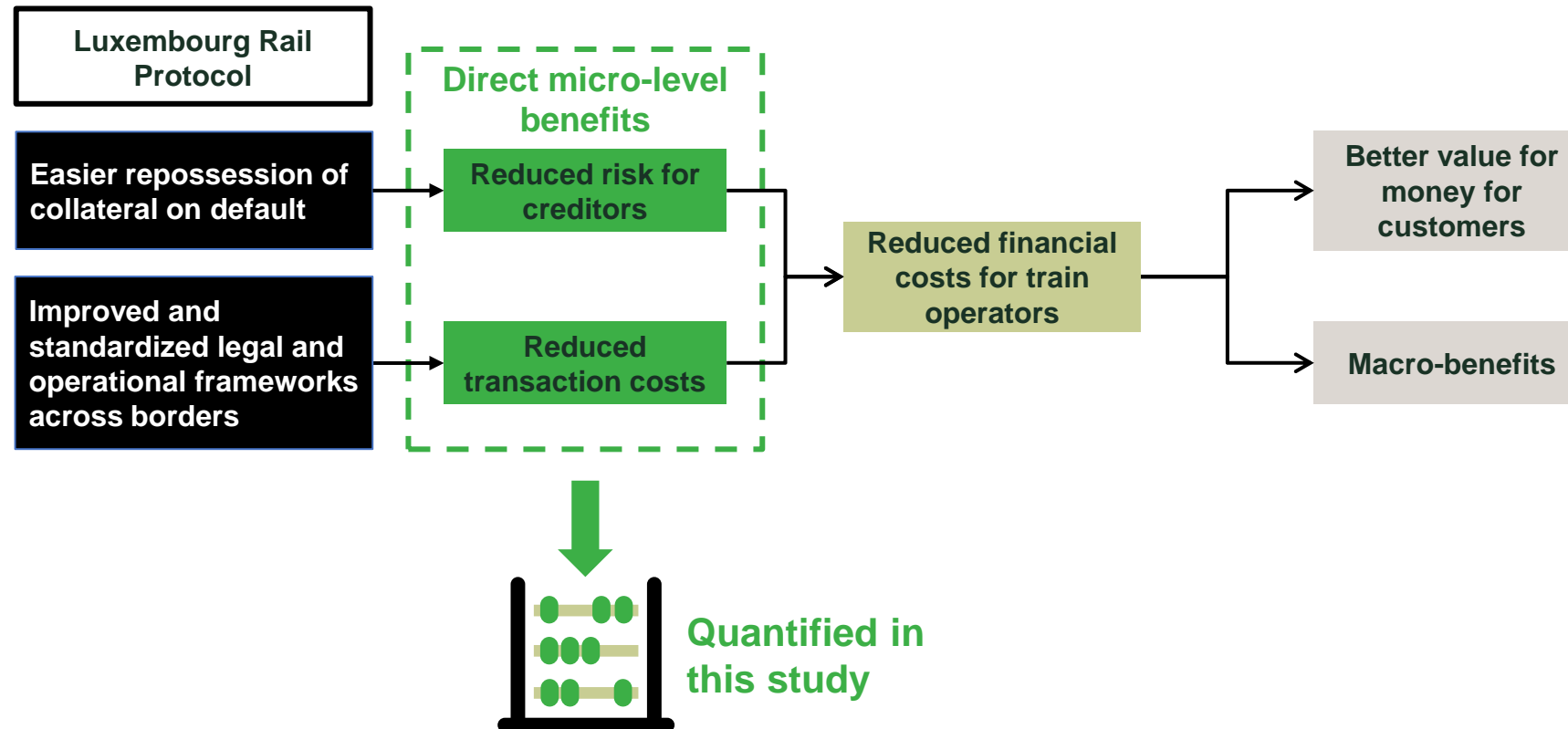
Summary

Depending on countries, direct micro-benefits assessed as between 1.6% and 13.5% of the present value of rolling stock



Many additional micro- and macro-economic benefits also expected

This study focuses on the direct micro-level benefits



This study focuses on the direct micro-level benefits

Indirect micro-level benefits

Not quantified

- facilitates **operating leases** which
 - open up the market to new competition
 - provide more flexibility for operators
 - drive standardisation of equipment
- potentially cuts **Export Credit Agency finance premiums** (following the example of the Aircraft Protocol)
- the **unique global identifier** enables more efficient asset location and status tracking, leading to savings on insurance, maintenance, and reductions of many other costs
- registration of creditor claims provides **protection for creditors and operators on cross border routes** even without ratification by the state where the rolling stock is located





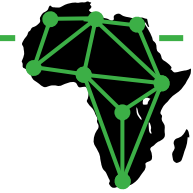
This study focuses on the direct micro-level benefits

Indirect micro-level benefits

- facilitates **operating leases** which
 - open up the market to new competition
 - provide more flexibility for operators
 - drive standardisation of equipment
- potentially cuts **Export Credit Agency finance premiums** (following the example of the Aircraft Protocol)
- the **unique global identifier** enables more efficient asset location and status tracking, leading to savings on insurance, maintenance, and reductions of many other costs
- registration of creditor claims provides **protection for creditors and operators on cross border routes** even without ratification by the state where the rolling stock is located

Not quantified

Macro-benefits

- reduction in polluting greenhouse gases 
- lower unemployment 
- increased productivity and GDP 
- increased transport safety, less congestion 
- new markets for African rolling stock manufacturers and operators 
- regional integration and interoperability
- underwrites the African Continental Free Trade Area and the planned African Infrastructure High Speed Rail Network

Not quantified

Increased demand for rail services under the AfCFTA

Why the Luxembourg Rail Protocol will help

- Offering new security it will create new private credit sources
- Creating a common security system for lenders and lessors even when rolling stock crosses borders
- It will lower the barriers to entry for private lenders and operators so
 - more attractive financing rates and cheaper Export Credit Agency/AfDB support
 - more competition and efficiencies
 - flexible rolling stock procurement strategies by underwriting operating leases – in turn creating a catalyst for standardised equipment leading to manufacturing economies of scale
 - non-discriminatory access and sound, fair regulation

Increased demand for rail services under the AfCFTA

Why the Luxembourg Rail Protocol will help

- And facilitate investment in new technology
- The new global system for uniquely identifying rolling stock (URVIS) leads to
 - easy real time tracking of the location and status of rolling stock for creditors and others
 - cheaper and easier insurance
 - predictive maintenance – saving money by calibrating servicing to utilisation
 - more effective regulator monitoring and safer cross border operations

Conclusion

- Expansion and rehabilitation of the railways are a critical component of a sustainable development agenda for Africa
- Railways are the key to open and free trade across Africa
- States cannot carry this burden alone: private entrepreneurs and private capital are needed – and will be available to finance rolling stock if the security conditions are right
- The Luxembourg Rail Protocol creates a new global legal regime for securing creditors, with minimal cost, facilitating more and cheaper asset based financing of railway equipment **without state support**

Introduction

1. Setting the scene in Africa (Howard Rosen)
 - The Railways and Africa
 - How can rolling stock be financed?
 - What are the legal problems for creditors?
2. South Africa Case Study (Mesela Nhlapo)
 - Rail today in South Africa and the new 3rd Party Access
 - Funding requirements
 - Regional considerations (Mozambique)
 - The Luxembourg Rail Protocol as a solution for Africa
3. A detailed look at the Luxembourg Rail Protocol (Howard Rosen)
 - Legal provisions, questions and URVIS
 - Registry Regulations and Model Rules
 - Economic benefits
4. **Q&A**

UNIDROIT International Summer School

“Financing of high value equipment: Railway Rolling Stock”

Rome, 11th July 2022

Howard Rosen
Chairman Rail Working Group
Switzerland

www.railworkinggroup.org

Follow us on  and  RailWorkingGrp



Embracing Technology

- Technology is opening up new opportunities
 - Hybrid, cleaner diesel and hydrogen/fuel cell locomotives
 - Artificial Intelligence
 - Convoying and driverless trains
 - Supercapacitor trams
 - Quieter wagons
 - Variable gauge rolling stock
 - GPS rolling stock tracking in real time
- This needs \$billions of investment

Quantifying the Benefits

South Africa (Transnet)		ZAR	
Without			
Capital cost*		87,756	
interest rate		8.000%	per annum
interest rate		0.667%	per month
lease term		10	years
term		120	months
Future value	50%	43,878	
Monthly payment		- 819	
Annual payment		- 9,833	
aggregate monthly payments		- 98,330	
With			
Capital cost		87,756	
interest rate		6.600%	per annum
interest rate		0.550%	per month
lease term		10	years
term		120	months
Future value	50%	43,878	
Monthly payment		- 738	
Annual payment		- 8,853	
aggregate monthly payments		- 88,528	
Annual Saving		- 980	
Aggregate saving		- 9,802	
Present value of saving		- 6,733	
percentage of capital cost		-7.6720%	
* written down value from Transnet AFS to 31.3.20 (includes containers)			
<i>All amounts in ZAR Mio</i>			

Quantifying the Benefits

South Africa (Transnet)		US\$	
Without			
Capital cost*		5,874	
interest rate		8.000%	per annum
interest rate		0.667%	per month
lease term		10	years
term		120	months
Future value	50%	2,936.95	
Monthly payment		- 54.85	
Annual payment		- 658	
aggregate monthly payments		- 6,581.67	
With			
Capital cost*		5,874	
interest rate		6.600%	per annum
interest rate		0.550%	per month
lease term		10	years
term		120	months
Future value	50%	2,936.95	
Monthly payment		- 49.38	
Annual payment		- 593	
aggregate monthly payments		- 5,925.56	
Annual Saving		- 66	
Aggregate saving		- 656	
Present value of saving		- 451	
percentage of capital cost		-7.6720%	
* written down value from Transnet AFS to 31.3.20 (includes containers)			
<i>All amounts in USD Mio.</i>	forex \$1 = ZAR	14.94	

Quantifying the Benefits

South Africa (Transnet)		ZAR	
Without			
Capital cost*		87,756	
interest rate		8.000%	per annum
interest rate		0.667%	per month
lease term		10	years
term		120	months
Future value	75%	65,817	
Monthly payment		- 700	
Annual payment		- 8,404	
aggregate monthly payments		- 84,035	
With			
Capital cost		87,756	
interest rate		6.600%	per annum
interest rate		0.550%	per month
lease term		10	years
term		120	months
Future value	75%	65,817	
Monthly payment		- 609	
Annual payment		- 7,307	
aggregate monthly payments		- 73,065	
Annual Saving		- 1,097	
Aggregate saving		- 10,970	
Present value of saving		- 7,535	
percentage of capital cost		-8.5860%	
* written down value from Transnet AFS to 31.3.20 (includes containers)			
<i>All amounts in ZAR</i>			

Quantifying the Benefits

South Africa (Transnet)		US\$	
Without			
Capital cost*		5,874	
interest rate		8.000%	per annum
interest rate		0.667%	per month
lease term		10	years
term		120	months
Future value	75%	4,405.42	
Monthly payment		- 46.87	
Annual payment		- 562	
aggregate monthly payments		- 5,624.84	
With			
Capital cost*		5,874	
interest rate		6.600%	per annum
interest rate		0.550%	per month
lease term		10	years
term		120	months
Future value	75%	4,405.42	
Monthly payment		- 40.75	
Annual payment		- 489	
aggregate monthly payments		- 4,890.56	
Annual Saving		- 73	
Aggregate saving		- 734	
Present value of saving		- 504	
percentage of capital cost		-8.5860%	
* written down value from Transnet AFS to 31.3.20 (includes containers)			
<i>All amounts in USD Mio.</i>	forex \$1 = ZAR	14.94	

Europe



● Financial savings by country in billions of Euros

FINANCIAL BENEFITS

20 countries
€19.4bn total benefits

Refinancing
16%

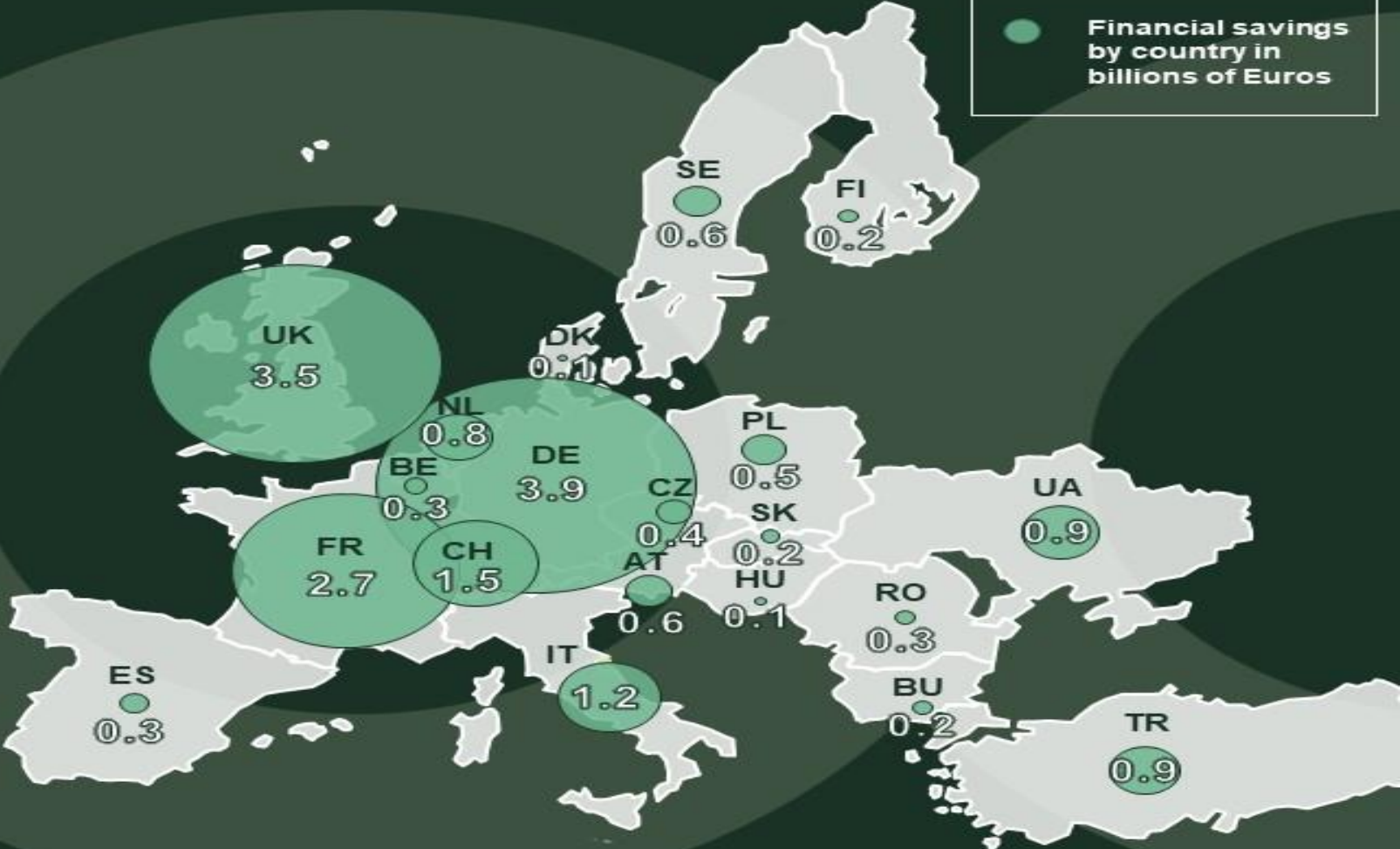


New deliveries
84%

Freight
12%



Passengers
88%



The way forward

- ❖ Africa should not be left behind
- ❖ Resolutions by:
 - Conference of African Ministers of Finance and Economic Planning (COM 2019) in Marrakech, Morocco
 - African Union Commission's Specialised Technical Committee meeting of Ministers of Transport in Cairo, Egypt (November 2019) during PIDA Week

to encourage AU member States to adopt, sign and ratify the Rail Protocol

Mauritius as a Financial Services Centre

