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Blending in the transport sector

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Directorate-General for International Cooperation and Development
European Commission

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Preface

Blending is an instrument for achieving European Union (EU) external policy objectives, complementary to other aid modalities and pursuing the relevant regional, national and overarching policy priorities. Blending is the combination of EU grants with loans, risk capital or guarantees from public and private financiers. The idea behind the instrument is that the EU grant element can be used strategically to attract additional financing for important investments for development in EU partner countries.

This and three other sector reference documents provide basic information on the main supported sectors in EU partner countries and on how potential support can be provided by EU blending operations in:

- energy;
- transport;
- water and sanitation;
- private sector development.

The four sector reference documents complement the *Guidelines on EU blending operations*, which is the central guidance document on blending operations and which summarises the key features, modalities and operational aspects of blending applicable to all sectors.

The main audience for these documents is the staff of the EU Delegations and of the Directorate-General for International Cooperation and Development (DG DEVCO) and the Directorate-General for Neighbourhood and Enlargement Negotiations (DG NEAR).

Abbreviations and acronyms

DAC	Development Assistance Committee	GDP	gross domestic product
EU	European Union	PPP	private-public partnership

Table of contents

List of figures

List of tables

CHAPTER 1

Sector overview

Transport is fundamental for the sustainable development of society and for regional, national and transnational cooperation. The sector should contribute to improving a region's or country's global competitiveness through transport infrastructure development and efficiency and quality of services provided on the basis of equal treatment.

The future prosperity of countries and continents will depend on their ability to be fully and competitively integrated in the world economy. Sustainable transport systems — in terms of efficient and effective infrastructure networks, as well as good governance in transport — are critical to ensuring such integration.

Global development and growth requires good transport connections, interconnectivity and interoperability of transport services. Effective transportation and mobility are one of the key drivers of progress in all sectors, including economy, education, provision of health services, agricultural production and distribution, energy and environment. Furthermore, transport enables conditions for peace and security, especially in isolated areas.

As societies become more dependent on mobility, transport policy goals and relevant projects focus on specific issues that affect all countries, such as traffic congestion, oil dependency and greenhouse gas emissions. National policies on transport recognize the sector's importance and aim at creating a competitive, user-friendly and long-term sustainable transport system.

Implementing this vision requires the development of suitable transport infrastructure, the availability of rolling stock in line with the latest technologies and the introduction of organisational innovations in the transport sector. This also requires close relations between different transport modes and the promotion of sustainable behaviour through better mobility planning to strengthen opportunities offered by urban environments and enhance cross-modal transport and interconnectivity.

Mobilisation of private capital through the expanded use of blending mechanisms, including private-public partnerships (PPPs), mixing of grants and loans, and financial guarantee instruments, needs to be a joint effort by governments, interested private companies and financial institutions. This type of financial arrangement is necessary because developing countries require massive increases in both public and private sector financing in order to meet the infrastructure investment needs over the next decade.

1.1 Sub-sectors

AIR TRANSPORT

Air transport is an important strategic sector that provides vital contributions to a country's economy and employment. Despite the current economic crisis, global air transport is expected to grow by around 5 % annually until 2030.

- Over 3 billion passengers travelled globally in 2014 by modes of transportation that achieved new safety records.
- Global trade and the integration of emerging markets are very dependent on sustainable air services.
- The tourism sector, which greatly contributes to global gross domestic product (GDP), hinges on air

transportation, as 51% of international tourists now travel by air.

- Cargo demand has remained stagnant. Airlines transported 51.6 million tonness in 2013. The industry states that this stagnation is due to the 'on-shoring' of production, which is decreasing cargo business.

- Emerging and developing countries experienced strong growth in 2013. While air traffic in terms of available seat kilometres grew modestly in the United States and Europe, strong growth rates of over 12% were maintained in the Middle East and China, as well as 7.4% in Latin America; traffic in Africa and the Asia-Pacific region grew at 5.2%.

- Continued growth is forecasted in emerging countries, which requires investments in airports and air traffic control infrastructure. However, this mode remains vulnerable, especially to rising fuel cost and sudden economic downturns.

- Governments need to continue to liberalise and facilitate the sector, while ensuring safety and security through compliant regulatory oversight.

RAIL TRANSPORT

Rail plays a pivotal role in delivering a competitive and environmentally friendly transport system, supporting developed economies, enhancing personal mobility and supporting social cohesion. An integrated transport system, with rail as its backbone, continues to enable a more competitive world economy with each mode playing to its strengths.

According to the latest research, the volume of railway transport has declined. Due to the economic recession, freight volumes plummeted by 30%. State stimulus packages and rescue plans launched in a bid to stimulate economic recovery encompassed initiatives for the transport sector. Many of these packages are supporting projects led by public sector rail operators, which rely on the government for funding. Market growth is expected to accelerate to a yearly rate of 8% between 2011 and 2016, bringing the market to almost USD 286 billion. Sector consumption volumes reached almost 11 000 billion freight/tonne kilometre in 2011.

The global passenger rail sector represented a USD 169 billion market in 2010, after 6% expansion year on year. Reports predict that the sector will generate almost USD 210 billion in 2015, or 24% growth in five years. In 2010, the global passenger rail sector expanded by 4%, reaching almost 2.775 billion passenger kilometres. In terms of volume, the global passenger rail sector is predicted to exceed 3.300 billion passenger kilometres in 2015, representing 19% growth in five years.

The main challenge in this sub-sector is construction of missing links and integration within international corridors.

ROAD TRANSPORT

Road transport plays a vital role in the wider economy, providing for the transport of goods and passengers. Road infrastructure is vital to the smooth functioning of the transport system. Road transport is moving towards environmentally friendly principles by focusing on energy-friendly vehicles compliant with environmental standards.

- Passenger transport involves buses, taxis and car rentals, providing efficient ways to get passengers to their destinations; freight transport is primarily performed by trucks.

- Over the coming years, leading players in global road transport will continue to concentrate their efforts on minimising traffic congestion to keep mobility fluid. Transportation networks worldwide will also evolve in accordance with environmental requirements. Legislative requirements encourage greener modes of transport.

- Apart from making important changes in road transport requirements to protect the environment, governments will also focus on bringing road and highway networks up to date and opening new networks to ease existing congestion. Safety will play an important role in government initiatives in the context of road transport to foster economic growth.

URBAN AND SUBURBAN TRANSPORT

Worldwide, cities' ongoing urbanisation, economic growth and motorisation have transformed the national urban landscape over the past decade. Transport infrastructure has undergone rapid and massive transformation, including through new and expanded arterial roads, boulevards, ring roads and access-controlled expressways, among others.

- In recent years, authorities in many cities have increasingly recognised the importance of improving public transport conditions, including investments in rail-based mass transit, in bus rapid transit, light rail transit and interconnectivity between railway suburban network and urban light rail transit network, especially through tram/train systems.

- Major cities worldwide have started providing (or plan to provide) advanced bus rapid transit and light rail transit services, as well as tram/train systems. However, the lack of upfront integration of road and rail design, public transportation planning, transport/demand management, land use planning and early-stage public consultation has created challenges to providing high-quality public transport services on many of the new urban corridors.

- Future development of urban and suburban transportation should be carried out in line with Sustainable Urban Transport Planning principles. In practice, effective transport planning requires a long-term vision to plan financial requirements for infrastructure and vehicles, design incentive schemes and promote high-quality public transport, in coordination with land use planning at the appropriate administrative levels. Solutions need to be tailored based on consultation with the public and other stakeholders, and targets must reflect the local situation.

WATERBORNE TRANSPORT

Waterborne transport covers maritime transport and inland navigation. The development and growth of maritime transport include a number of actions such as modernisation of infrastructure and harmonisation of standards related to equipment and procedures. Improving maritime safety and protecting the marine environment are also priorities.

- Historically, maritime transport has been a catalyst of economic development and prosperity. Maritime transport ensures the security of the supply of energy, food and commodities and provides the main mode of transporting imports and exports from one continent to another. The quality of life on islands and in peripheral maritime regions depends on good maritime transport services. Overall, maritime industries are an important source of employment and income for the global economy.

- The considerable potential of river transport — certainly the most environmentally friendly inland transport mode — has yet to be largely developed.

- The potential for increasing the modal share of inland waterway transport is significant. Compared to other modes of transport, which are often confronted with congestion and capacity problems, inland waterway transport is characterised by its reliability, low environmental impact and capacity for increased exploitation.

- Inland waterway transport is a competitive alternative to road and rail transport. It offers an environmentally friendly alternative in terms of both energy consumption and noise and gas emissions. Its energy consumption per kilometre/tonne of transported goods is approximately 17 % that of road transport and 50 % that of rail transport. Its noise and gas emissions are modest. In addition, inland waterway transport ensures a high degree of safety, particularly for transportation of dangerous goods. Finally, it contributes to de-congestion of the overloaded road network in densely populated regions.

- According to recent studies, the total external costs of inland navigation (in terms of accidents, congestion, noise emissions, air pollution and other environmental impacts) are seven times lower than those of road transport.

In addition to the above-mentioned transport sub-sectors, the capacity to combine different

modes of transport in a flexible way is one of the cornerstones of the **sustainable mobility** concept (see Box 1.1). The intermodality of transport, which enables national networks to be integrated into the wider transport network, is becoming a general trend. Transport should be seen as a system whose services must be provided by all transport modes in a synergistic manner. Specific points where several transport corridors interconnect have the potential for constructing inter-modal centres; such centres require specific infrastructure to be developed so as to create effective links between the transport corridors and routes.

Inter-modal transport is an essential component of the common transport policy for sustainable mobility. In this context, ports can be seen as crucial connecting points, transferring goods and passengers between maritime and land-based modes of transport. Improved port efficiency will contribute to the integration of modes into a single system — provided there is interoperability and interconnection between systems (a common information system, reduction of administrative procedures and standardisation of loading units).

1.2 Regional overview

All regions and countries are implementing their transport strategies in an effort to respond to day-to-day transport issues and, more importantly, to target medium- and long-term development goals. Although regions and countries differ in many ways, their priorities regarding transport sector development should be compliant and coherent since transport should be considered a system and not an isolated sector. However, the situation differs greatly from one region to another, as well as between different transport modes within the same region.

EU NEIGHBOURHOOD (EAST AND SOUTH)

Structural rigidities remain a key constraint to growth in the East and South Neighbourhood, which affects transport sector development. The situation has begun to change as a result of successful structural reform projects. Transport infrastructure development remains high on the agenda in the Neighbourhood policy countries. To date, there have been few private investments in the road and railway transport sector in the East European Neighbourhood countries. Most of the projects financed by private investors were related to airports.

Modernisation of transport infrastructure, connectivity with the Pan European corridors and public transport enterprise reform remain key goals in this area.

CENTRAL ASIA

Central Asia has been the slowest to recover from the financial crisis, reflecting slow adjustment of the region's current account balances; a lack of resolution of non-performing loans to free up credit; and stalling of reform progress on governance, business restructuring, and other structural rigidities that have

BOX 1.1 Transport in the Sustainable Development Goals

Seven of the 17 Sustainable Development Goals include one or more targets that address transport, both rural and urban. While some cite transport directly, many of the targets incorporate transport by recognising the importance of access in achieving advances in education, health care and other critical needs.

- **Goal 2:** End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- **Goal 3:** Ensure healthy lives and promote well-being for all at all ages
- **Goal 7:** Ensure access to affordable, reliable, sustainable and modern energy for all
- **Goal 9:** Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation
- **Goal 11:** Make cities and human settlements inclusive, safe, resilient and sustainable
- **Goal 12:** Ensure sustainable consumption and production patterns
- **Goal 13:** Take urgent action to combat climate change and its impact

dampened private investment and the recovery. One of the main issues related to the transport sector in Central Asia is high transport costs; this is also a major constraint to economic development. Central Asia has the potential to become an important transit route connecting East Asia and Europe, as well as South Asia and the Russian Federation. Transport projects in Central Asia would contribute significantly to increased trade among Central Asian countries, as well as with the rest of the world. Therefore, transport development through upgrading, construction and rehabilitation of key corridors across the region and simplifying and harmonising the regulations that govern cross-border trade in the region are essential for the development of Central Asia.

There is a lack of reliable year-round roads and a lack of sustainable urban transport systems in this area. This issue will be the key challenge in coming years.

EAST ASIA AND THE PACIFIC

This region remains the world's growth engine despite a challenging external environment. Developing economies in East Asia and the Pacific grew by 7.2% in 2013.

Sustained growth in the region of over 7% annually over the past 15 years has steadily raised transport demands in most countries, although this demand has varied in magnitude and nature depending on economies' evolving structure and rate of growth. It is estimated that, over the next five years, some USD 37 billion in annual investments will be required in transport. The transport sector response has thus far varied enormously. For instance, between 1990 and 2000, road networks expanded by about 23% in Indonesia, and over 100% in Vietnam.

Traffic congestion in most of the region's major cities is worsening with the tremendous economic growth and increased use of motor vehicles. Some major cities are undergoing a boom in transport infrastructure development that is expected to last well into the next century. In addition to new infrastructure, managing the growing demand for transport services for both people and goods will more importantly require appropriate planning and capable institutions which are responsive to local dynamics, fiscal conditions and transport/demand management.

With the rapid urbanisation of the main cities in the region, urban and suburban transport are expected to be the focus.

AFRICA

Africa is characterised by an enormous potential for transport development (see Boxes 1.2 and 1.3). The most compelling problem is the lack of road infrastructure. Some 70% of Africa's rural population lives more than 2 kilometres from an all-season road. The cost of transporting goods in Africa is the highest in the world. Not only do high transport costs raise the cost of doing business and thereby impede private investment, but they create an additional barrier to African countries' potential to benefit from rapid growth in world trade. This is especially true for Africa's many landlocked countries, where high transport costs mean that, even if they liberalise their trade regimes and finalise their primary transport networks, they will remain effectively landlocked.

Many African countries and governments recently launched ambitious investment programmes to alleviate infrastructure bottlenecks and increase export capacity. Nevertheless, poverty and unemployment remain high in many countries across the region. Governments in the region have stepped up investment spending. Public investment in most countries continues to be geared towards the provision of basic infrastructure, such as roads and port facilities, which remain critical for improving regional competitiveness.

As African economies continue to grow and expand, the transport sector has become even more critical for promoting a sustainable development agenda. Planning for affordable, safer and cleaner transport systems is a smart and cost-effective way of addressing people's mobility needs and the impact of rapid urbanisation across Africa. Current transport trends in many countries are still too focused on individual car use rather than mass transit. And in much of Africa, rural areas continue to be isolated from access to markets and essential services.

BOX 1.2 Transport in Africa

According to the European Union–Africa partnership on infrastructure, the focus in the transport sector is:

- to reduce the cost and improve the quality of infrastructure and services by promoting optimum use of existing multimodal transport systems and supporting adequate maintenance of the existing infrastructure and then completing trans-African and regional networks;
- to improve road conditions and decrease road blocks and delays at custom posts in order to reduce travel times and, more importantly, travel costs to ports and regional distribution centres, which will result in an increase in business and trade between adjacent countries;
- to improve transport services and thereby make farming more profitable as better access to markets will allow poor people to benefit from growth, expand their farming production and diversify into more profitable crops;
- to improve roads and transport services, which will increase access to health care facilities, reducing time lost to illness and increasing household productivity and life expectancy, particularly in rural communities.

Source: EC, 2007.

BOX 1.3 Programme for Infrastructure Development in Africa

The overall goal of the African Development Bank's Programme for Infrastructure Development in Africa (PIDA) is to promote socioeconomic development and poverty reduction on the continent through improved access to integrated regional and continental infrastructure networks and services. Transport is considered a priority sector to be supported through the programme to 2030.

Source: http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/programme-for-infrastructure-development-in-africa-pida/

In the coming year in Africa, the challenges in the transport sector will be in mass transport systems and in the integration of urban-rural and regional and inter-city transport networks mainly focusing on road transport infrastructure.

LATIN AMERICA

In Latin America, transport development is focused on an integrated view of the different types of passenger and freight transport (road, urban, rail, air, ports) in combination with the strategic areas of road safety, freight logistics, sustainable transport and intelligent transport systems.

Transport projects take into account the characteristics of each country, regional integration, gender dimensions and environmental, social and fiscal interventions; while emphasising the importance of public investment growth and private sector participation in infrastructure financing. Transport can improve Latin America's economy but, right now, it is an obstacle to growth in the region.

Building a sustainable transport future in Latin America will require the cooperation of multiple stakeholders: transport and city leaders as well as development and business communities.

To mitigate a massive reduction in public and private investment in transport since the 1980s — which resulted in excessive transportation and logistic costs that penalise trade — the priority is to increase the sources, quality and productivity of investments, in all transport modes, with a focus on urban and suburban transport.

Rapid urbanisation of the main cities in Latin and Central America is the driver behind the need for infrastructure projects in urban and suburban transport, as well as in road and rail interconnectivity.

1.3 Objectives

The transport sector should be considered in conjunction with other sectors. The main objectives of the transport sector should be formulated within the wider context and benefits which other sectors

stand to gain from an effectively organised transport system.

Transport objectives in the development context are as follows.

- **Integration of national transport networks into international networks and corridors:** Achieving this objective entails a systemic approach to the rehabilitation, reconstruction and construction of transport infrastructure, as well as developing and rationalising transport networks in line with country/regional goals for sustainable development. Improved connectivity between international transport networks and the urban and suburban transport systems of major cities is an important aspect of transport system development.

- **Efficient use of comparative advantages of each mode of transport:** To achieve this objective will entail considering efficient transport modes for reducing external expenses, and introducing fair rate systems for using infrastructure and sustainable maintenance schemes for all modes of transport.

- **Strengthening inter-modal, multimodal and combined transport:** This strengthening is necessary to shift transport demands towards more socially acceptable modes of transport.

- **Upgrading the service quality of the transport system:** To achieve this objective means increasing the effectiveness of all modes of transport and the transport system as a whole through better organisation of transport operations based on economic, safe and environmentally sustainable practices. It is important to apply results-oriented planning and management of transport flows. It is also necessary to develop a unique transport system in line with user requirements as well as the efficient and effective fulfilment of demands for individual mobility.

- **Increase traffic safety and the security of transport systems:** Achieving this objective necessitates decreasing the number of road fatalities and the number of accidents from other modes of transport. More than 1.2 million people are killed, and up to 50 million are injured, on the world's roads every year. Low- and middle-income countries account for 90% of these deaths, although they own just half the world's motor vehicles. According to recent studies, urban air pollution — largely linked to transport — leads to the death of an estimated 800 000 people each year. Transport of dangerous goods is another element which needs to be taken into account in terms of a safe and secure transport system.

- **Strengthen the transport market through strong sectoral reform:** To achieve this objective, conditions for stronger competition among transport modes and within modes on the transport market need to be put in place; regulatory, operational and managing functions need to be established; gradual and justified deregulation and liberalisation of the transport market need to be accomplished where relevant and the necessary compensation measures implemented; local operator competitiveness in domestic and international markets needs to be strengthened; and cooperation among state bodies and companies in the transport sector needs to be promoted.

- **Decrease the negative impact of transport on the environment in accordance with the principles of sustainable development:** Transport systems need to be developed in line with the principles of sustainable development, environmental protection (decrease air pollution, noise and causes of global warming) and social responsibility. Transport contributes about 15% of global greenhouse gas emissions. With motorisation on the rise, that share is expected to grow.

The aforementioned objectives can only be achieved if the following constraints, identified in the DG DEVCO Operational Handbook for transport infrastructure, are addressed systematically and effectively:

- inadequate financial means for funding both maintenance (routine and periodic) and new investments in the sector at the same time due to economic constraints;

- largely insufficient institutional capacity, with weak public administrations and limited human resources;
- country transport sector programmes are non-existent or inadequate;
- non-existent intermodality and interconnectivity;
- inadequately addressed governance issues;
- non-existent or weak private sector;
- cross-cutting issues (gender, environment, etc.) are only marginally taken into account;
- overly traditional funding system which does not leverage new funding instruments (blending and PPPs).

These objectives require stable financial engineering mechanisms, which include blending different financial resources. Public funding alone will not be sufficient to cover needs. Blending facilities, which combine grants — from the European Union (EU) budget and other sources — with additional non-grant resources — such as loans from public finance institutions, commercial loans and investments as well as national budget funds — is an ideal mechanism to support transport development goals.

Blending operations require a favourable legal environment and strong capacities of the administration responsible for programme/project management — in particular, laws which regulate PPPs and concessions, budget systems, and laws which regulate planning and construction.

In this context, the EU Agenda for Change (EC, 2011) emphasises that the EU will further develop blending mechanisms to boost financial resources for development, building on successful experiences such as the European investment facilities and the EU-Africa Infrastructure Trust Fund. In select sectors and countries, a higher percentage of EU development resources should be deployed through existing or new financial instruments, such as blending grants and loans and other risk-sharing mechanisms, in order to leverage further resources and thus increase impact.

1.4 Main actors

A large number and wide diversity of actors are involved in the identification, development, approval, financing, construction and operation of transport investment projects. Implementation, maintenance and operation of transport investment projects reflect the structural organisation of the state.

NATIONAL GOVERNMENT IN PARTNER COUNTRIES

The national or sub-national (regional) governments are key actors in most transport projects. These actors have the following roles.

- **Policymakers and regulators in the transport sector:** These include those responsible for transport development policy, transport legislation, global strategy and sub-sector strategies — e.g. in establishing tariff policy for the use of public infrastructure.
- **Executives related to the implementation of the regulatory provisions:** In some cases, regulatory and executive authority is delegated to the executive agencies — e.g. for regulation of the railway market.
- **Project owner:** In the transport sector, infrastructure is primarily owned by the state or companies owned by the state.
- **Project sponsor:** In this case, the project is co-financed from national resources.
- **Facilitator/intermediary:** In this case, the national government is not directly involved, but it supports and facilitates the project.

Transport infrastructure is considered of national importance, and major railway lines and road corridors are generally under the competence of central-level institutions.

REGIONAL (SUB-NATIONAL) AND LOCAL GOVERNMENT/ADMINISTRATION

Suburban and urban transport networks and local transport networks (mainly roads) are often managed by regional/local governments and/or by municipalities. These administrations could take the following roles: project owner, project sponsor or facilitator/intermediary.

PROJECT PROMOTERS/BENEFICIARIES

Project promoters take the initiative and assume the initial risk in identifying and developing a project in the transport sector. These can be public entities (e.g. the responsible ministries), railway infrastructure managers, national railway undertakings, national authorities responsible for road management, or national authorities responsible for waterways or private stakeholders (e.g. transport and logistics developers or fund managers).

In most cases, promoters/beneficiaries are also responsible for preparation of project documentation, as well as for operational implementation and project monitoring. Project promoters and beneficiaries could be public or private entities, or have a mixed structure. For example, transport project beneficiaries could be public (e.g. publicly owned infrastructure manager) or have a private owner or a mixed ownership structure (e.g. a company jointly established by the state and a private investor in the case of a PPP project).

In the event of on-lending or fund structures, there are two levels of beneficiaries.

- Local private or public banks (on-lending) or investment funds (equity) are intermediary beneficiaries. The borrower and intermediate financial institute for a credit line or the investment fund could be public (e.g. the government or a public bank). In many cases, private banks are involved, or a separate entity is set up with public and private shareholders to manage the fund.
- Final beneficiaries are the loan takers and the actors that make the investments.

PUBLIC ENTERPRISES

A characteristic of the transport sector — mainly with regard to railways, waterways and roads — is that some of the major companies operating in the sector are 100% state owned. This is generally the case for railway infrastructure and road management. Responsibility for management of major road networks remains under the jurisdiction of the state, where a specific public company is responsible for operational activities. Those companies are also responsible for organising road maintenance services.

In inland navigation, the waterways network is still generally owned by the state, even though the chief ports are mainly operated by private companies through PPPs and/or concessions.

PRIVATE SECTOR IN THE PROJECT BENEFICIARY COUNTRY

The private sector in the project beneficiary country could play different roles in blended projects in the transport sector depending on the type of project. In most cases, the private sector interest lies in project implementation. Private sector representatives (construction companies, equipment providers, engineering companies) could be members of the implementation teams or subcontracted to perform specific assignments.

DONORS

Donor assistance includes loans provided by the international financial institutions under favourable conditions (in terms of repayment period, grace period, grant components, etc.) as well funds provided by bilateral donors. Recipients of donor assistance could be developing countries or multilateral agencies. In addition to the financial flows, technical cooperation could be included in the aid.

NON-GOVERNMENTAL ORGANISATIONS

Non-governmental organisations — whether international, national, regional or local — play an important

role in supporting the public sector in adopting and implementing transport and environmental policies, as well as in safeguarding the development impact of transport investments. Non-governmental organisations want to ensure that key principles relevant to the preparation and execution of transport investment projects such as cost-benefit analysis, 'decoupling' and strategic environmental assessment are followed.

1.5 Enabling environment

An increase of investments in the transport sector is linked with access to a wider range of financing mechanisms than traditional loans and grants (PPPs, concessions, project bonds), but also with several other interrelated issues, including:

- issuance of permits, which are necessary for completing documentation and beginning construction (location permit, construction permit, procedure for expropriation of property);
- procedure for property registration;
- access to credit (sufficient fiscal space);
- protection of investors;
- taxation policy;
- contract enforcement.

Progress in reforms, together with improved access to financing mechanisms, will ensure a better environment for implementation of investments in the transport sector.

The sustainability of investments in the transport sector depends strongly on the resources available for regular maintenance and timely improvement/modernisation of the installed systems. The introduction of contemporary maintenance systems (e.g. performance-based maintenance of roads or railway maintenance based on track condition analyses) will enable effective maintenance principles to be applied. Limited grant funds could be used to introduce such infrastructure maintenance principles.

Investments in the transport sector should be based on an accurate assessment of current transport infrastructure conditions: realistically projected traffic flows, and effective connectivity between different transport modes and various corridors and routes. Technical aspects of certain transport investment projects require strong institutional ownership, the capacity of institutions to manage the project and correct execution of existing legislation.

As noted earlier, it is commonly accepted that the transport sector contributes to the socioeconomic development of a region or country. The main development drivers which stimulate investments in transport can be split into three main categories, as shown in Table 1.1. Several barriers work against these driving forces; these are summarised in Table 1.2.

TABLE 1.1 Drivers of transport investment

POLITICAL DRIVERS	INSTITUTIONAL DRIVERS	MARKET DRIVERS
• **Reduction of public expenditures** for transport investments through the involvement of private capital and/or innovative financing mechanisms and the introduction of contemporary investment **risk-sharing principles** • **Regulatory and fiscal policies** favourable for investments in the transport sector, including investments in new technology which will improve transport sector performance • **Favourable taxation policy** promotes investments in the transport infrastructure • Contribution to **long-term skilled employment** as a generator for prosperity by providing transport accessibility to universities and business centres • **Reduction of rural poverty** with more efficient and long-lasting accessibility solutions; this includes the gradual transformation of lower- and middle-income countries into countries with a more globally competitive market	• **Increased urbanisation and public transport usage** initiate the development of integrated transport solutions, which include both infrastructure development and the application of Sustainable Urban Transport Planning principles and new technologies (intelligent transport systems), contributing to improved urban and suburban mobility • **Increased cooperation** between various institutions operating in the transport sector, leading to better transport policy and infrastructure investment planning	• Transport investment projects **boost construction and related industries** (steel, chemicals, building stone, building materials, components and units, construction companies, engineering services) and create a strong financial and economic leverage effect • The transport sector combines products and process innovations in its efforts to **increase the range and improve the quality of transport infrastructure, equipment and services**, and ultimately to increase market shares and enter into new markets

TABLE 1.2 Barriers to transport investment

POLITICAL BARRIERS	INSTITUTIONAL BARRIERS	MARKET BARRIERS
• Very general and not sufficiently coherent strategic objectives between different transport sub-sectors at the country level, which allows selection of transport projects which are not of significant strategic relevance • Inadequate legal framework — notably, those laws which regulate the fields of planning and construction, budget planning and issues related to PPPs, concessions and other forms of blending — to allow/promote the use of blending facilities • Inadequate borrowing policy of the country — public debt has attained critical levels in some countries, and access to bank lending and capital markets has become more difficult	• Lack of institutional cooperation and capacity regarding budget planning and general investment planning and sustainable transport development • Lack of transport demand planning and management; lack of integrated demand and transport management measures in sector policies and planning (e.g. when planning a hospital, transport should be considered) • Lack of financial return for some roads and railway lines — feasibility studies which demonstrate the cost-benefit ratio of an investment must be based on accurate, realistic and reliable data	• The high capital intensiveness of innovation in the transport sector is reinforced by difficulties in financing

CHAPTER 2

Project financing structures

According to the DG DEVCO Operational Handbook for transport infrastructure, the European Commission's support for a sector programme can take three different forms of possible funding:

- sector budget support;
- pool funding;
- project funding.

However, project approach remains the most frequently used traditional modality for transport infrastructure investments.

Transport project financing is mainly based on public sector operations and public financing. Very often, project management in transport infrastructure includes an agency (or administration) which is established for the sake of effective project implementation. The particular design of the instruments used and the governance regime that regulates the agency varies from country to country. Concrete and precise definition (in terms of scope and context) of the transport infrastructure project is a precondition for effective project implementation because that will serve as the basis for defining an optimal financing structure comprising both available public as well as private sources. It also determines the effective blend of grants and loans.

There are a number of challenges in financing transport sector projects. The financial and economic crisis has strained access to long-term financing for infrastructure service providers. The challenging outlook for traditional financing means that governments must consider alternative financing models to leverage private capital into infrastructure.

In principle, resources for transport infrastructure development in emerging economies are considered a general industry generator. Investments in transport infrastructure should also be supported by the public sector in the form of short-term low-interest rates from the main central banks. However, this support needs to be transformed into longer-term financial commitments, which may be perceived as high risk for financial investors which now place a greater emphasis on the political, legal and regulatory environment for investments.

It is crucial that borrowed resources are leveraged in the context of a growth-enhancing strategy that includes private sector development.

2.1 Public sector loan finance

Normally, loans are provided to the public sector in the context of development assistance, more precisely in accordance with Development Assistance Committee (DAC) terminology and rules. The DAC is the arm of the Organisation for Economic Co-operation and Development (OECD) which deals with development cooperation matters. Those loans are provided to governments, cities, municipalities/local authorities and public utility companies.

Official development assistance consists of grants or loans to countries and territories on the DAC list of official development assistance recipients (developing countries) and to multilateral agencies which (i) are undertaken by the official sector, (ii) promote economic development and welfare as the main objective, and (iii) include concessional financial terms (if a loan, having a grant element of at least 25%). In

addition to the financial flows, technical cooperation is included in the aid. The objectives of public sector loan financing, including transport sector loan-financed projects, are generally related to the promotion of economic growth and structural reforms.

2.2 Public-private partnerships/private co-financing

Apart from public sector borrowing for investments in the transport sector, there is also a need to involve private financiers for infrastructure development. This is feasible through joint ventures or PPPs where the benefits from investment can be captured and users made to pay for them. It could then allow private partners to recoup the investment over time. PPPs are also used to bring external knowledge to bear on the effectiveness of the transport project — information that is not easily available within the public sector itself.

Securing successful PPPs requires the appropriate legal environment and strong administrative capacity. There is a danger that an unfair portion of the risks will be placed on the shoulders of the public partner, generating a new cycle of indebtedness.

For example, for PPPs to emerge in Africa, countries need to improve the business environment. Serious constraints currently exist in many countries. The most frequently encountered constraints to establishing effective PPPs are largely a result of (i) an inadequate legal and regulatory framework for PPPs; (ii) a lack of technical skills to manage PPP programmes and projects; (iii) unfavourable investor perception of country risk; and (iv) Africa's limited role in global trade and investment, small market size, limited infrastructure and limited financial markets.

The private sector's role in transport infrastructure development has grown as a result of deregulation of formerly state-owned monopolies, and the move to joint projects with the private sector characterises many public investment choices. Given the limited fiscal space that reduces the scope for financing infrastructure development from public resources, the private sector is now increasingly seen as an additional, often complementary, source of finance. However the scope for such co-financing arrangements is limited by administrative and procedural conditioning.

Incorporating the private sector into the co-financing of public infrastructure requires distinguishing between two different types of investments and financing structures accordingly:

- those that are of wider public interest and produce benefits to the economy more generally, such as measures to combat climate change or degradation of the environment;
- those that are of interest to particular specific groups of users.

In the first case, the infrastructure project has to be carried out by the government and be financed exclusively from the public budget. Nevertheless, private financing could be (and often is) used to finance budget operations — e.g. through bank loans or government bonds. Mobilising this type of resource from the private sector is a practical demonstration that a project is cost-effective and financially justifiable. The taxpayer must ultimately redeem these advances.

In the second case (excludability), transport infrastructure investments could be financially viable in terms of their revenue-generating capacity, which allows a revenue stream to be earmarked to the servicing of project-specific debentures. In this case, as said above, there is scope for including the private sector in infrastructure development — e.g. through build-operate-transfer (BOT) or build-own-operate-transfer (BOOT) project financing and other forms of PPPs. In these cases, a private investor may finance, design, construct and operate an infrastructure project while recouping the investment and operating and maintenance costs from user fees on the basis of a concession from, or a contract with, the government. Such schemes are typical for transport sector projects.

2.3 Access to capital markets/project bonds

The traditional — and still predominant — instrument for mobilising external funding for transport infrastructure investments remains loans from banks, including from international financial institutions. The recent financial crisis has significantly restricted bank lending due to market uncertainties, risk aversion and a new regulatory environment.

As an alternative to involving a private operator/financier, or an operator with access to capital markets, into infrastructure development, authorities could attempt to tap the capital market directly by issuing bonds (see Box 2.1 for a practical example). This practice would allow them to split financing from realisation, choosing more freely among possible operators and hence, perhaps, reducing implementation costs and risks for investors. A special case could be a so-called project bond that is strictly earmarked for a singe project. This instrument could be tailored to specific needs through adequate structuring of financial risks.

By issuing this type of bond, the government could obtain access to resources from national and international capital markets. And by accessing the institutional bond market, companies are potentially able to reduce project funding costs. Local institutional bond investors, while willing to take on performance risk, generally are not prepared to take on any form of construction risk. However, these resources are strictly confined to financing a particular project that generates monetary returns on the investment — proceeds that can be earmarked to serving the debt.

Rather than blending public money with resources from the private sector through PPPs or through project bonds directly, governments can also stimulate private sector involvement indirectly by guaranteeing loans or otherwise hedging risks. Note that government guarantees are a form of risk taking, and the provision of such guarantees, as possible venture capital by the public sector, must always be subject to the limiting rules for the budget. This does not exclude innovative, but fixed-price, financial market instruments (e.g. insurance) to hedge against certain types of risks in support of transport infrastructure and private sector development.

Project bonds are not designed to finance the general budget. They are tied to specific projects whose financial returns are earmarked and explicitly assigned to servicing project-specific debt. For projects whose benefits accrue more generally or where there is political reluctance to let users pay, the earmarking of certain taxes, or shares of taxes, to service project bonds could be an alternative.

BOX 2.1 Practical example: project bonds

Project bonds have been successfully used in Europe and America to fund infrastructure projects. In Europe, corporate bond markets continue to grow in spite of increased market volatility. Further, it is anticipated that the use of corporate bonds to fund infrastructure projects in Europe will play a significant role in boosting the economy.

In Africa, project bonds have successfully been implemented in Kenya and Nigeria. Both countries have a growing institutional investor base. In Nigeria, corporate bonds are tax exempt; Kenya has specific exemptions for infrastructure bonds which encourage their use as an alternative funding mechanism.

The rest of Africa is still in a preliminary stage in the development of project bonds. While the need for infrastructure development is clear, it will require investors to collect more funds, borrowers to gain confidence in the bond market and governments to create an environment which will encourage the issuance of project bonds.

CHAPTER 3

Types of blending projects

3.1 Sector blending portfolio

Blending facilities could be used for activities and projects which aim to contribute to:

- smart transport planning solutions to boost growth;
- the creation of sustainable transport infrastructure;
- increased social inclusion by providing access to transport services;
- the promotion of innovation and partnerships in the transport sector

More precisely, blending funds in the transport sector could be applied to the types of projects presented in Table 3.1; the percentages in the table provide indicative numbers of grants and shares of projects with the grant component, by transport sub-sector.

3.2 Uses of EU grants to support transport projects

As shown in Figure 3.1, transport sector projects provide a good foundation for applying modalities and mechanisms of the blending facilities.

Most of the transport projects supported through the blending facilities require substantial support from grants. Grants provided for concrete transport projects could contribute to their effectiveness, quality and efficiency:

- to allow for better leverage;
- to attract financiers to projects which would not have been realised, i.e. create leverage;
- to allow sub-investment grade projects to become bankable;
- to allow beneficiaries facing a lower credit cost to implement their projects.

FIGURE 3.1 Scheme for applying blending facilities in transport sector

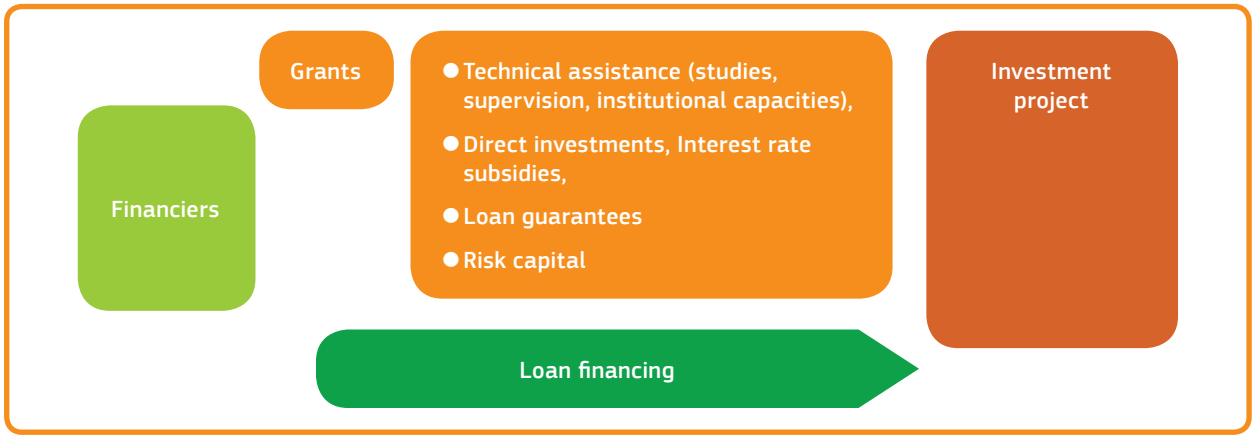

TABLE 3.1 Application of blending funds in the transport sector

SUB-SECTOR	PROJECT TYPE	% OF PROJECTS	
		IN TRANSPORT SUB-SECTOR	IN WHICH GRANTS ARE INVESTED
Air transport	Construction and/or renewal of airports, introduction of SESAR systems, improvement of safety and services	5.4	6.5
Rail transport	Construction and/or modernisation of railway stations, upgrading of railway lines removing bottlenecks on the rail network, construction of missing links within and/or between corridors, construction of connectivity centres, purchasing of new rolling stock, organisational and structural changes to public enterprises	10.5	16.1
Road transport	Construction and reconstruction of main corridors and roads, construction of bypasses, access to inter-modal centres, construction of border-crossing facilities, implementation of intelligent transport systems, introduction of new management principles such as performance-based maintenance of roads, use of contracting methods that increase implementation efficiency when suitable (design-build, design-build-operate)	36.8	35.5
Urban and suburban transport	Construction and/or renewal of bus and rail stations, construction of metro systems, construction of connectivity centres, light rail transit and bus rapid transit projects, new rolling stock, promotion of integrated public transport solutions including planning/demand and development issues	22.8	12.9
Waterborne transport	Construction and/or renewal of ports, dragging and hydro-technical works on rivers and channels, implementation of river information services, suppression of critical sections on waterways, modernisation of locks, deployment of aids to navigation, vessel traffic monitoring and information systems	10.5	12.9
Inter-modal transport	Construction of inter-modal terminals and development of multimodal logistics platforms, elaboration of integrated master plans	14.0	16.1

Transport projects could be supported in the following ways.

- **Technical assistance:**
  - activities related to the preliminary preparation of investments (e.g. to carry out a feasibility study);
  - advising beneficiaries during project formulation and/or implementation to include:
    - overview of the respective project including measuring and monitoring and evaluation of relevant past performance;
    - elaboration of detailed long-term forecast of features relevant to the respective project (traffic volumes, types of vehicles, maintenance costs);
    - description of key assumptions and modelling methodology;

- description of main drivers for traffic growth, including correlations between traffic and macroeconomic measures, including retail price index/GDP;
- evaluation of long-term traffic forecasts performed by concession companies;
- assist in discussions and negotiations with the relevant concession companies and other counterparties and advisors in view of problems (including but not limited to traffic and revenue decline, delays in construction) which have led to the concession companies;
- asssist in preparation and execution of any tendering process.

- technical assistance to undertake research and analysis to facilitate the development of investments in a particular sector or sub-sector;
- technical assistance to support policy reforms necessary for effective execution of the given transport project and improvement the investment climate.

For a practical example of technical assistance, see Box 3.1.

BOX 3.1 Practical example of technical assistance

To improve urban transport in the city of Dhaka, Bangladesh, the Asian Investment Facility contribution consists of a grant of EUR 2.85 million for technical assistance, training and studies. This technical assistance will reinforce capacity building for the Dhaka Transport Coordination Authority, whose mission is to plan, regulate and coordinate a sustainable and comprehensive multimodal transport system within the city. The grant's intent is to provide better interconnectivity between transport modes, to increase protection of the environment and to promote sustainable and equitable socioeconomic development.

- **Direct investment grants** are provided for specific project components, as well as incentive schemes based on performance of implementing institutions. For a practical example, see Box 3.2.

BOX 3.2 Practical example of direct investment grant

For efficient implementation of an urban transport project in Balti, Moldova, the EU provided a EUR 1.6 million investment grant which was blended with EUR 3 million provided by a loan from the European Bank for Reconstruction and Development. The Bank's bilateral donors provided EUR 0.5 million for technical assistance.

- **Conditionality/performance-related grants** set interim milestones which need to be achieved as a precondition for eventual receipt of the grants.
- **Interest rate subsidies** provide a lump-sum amount to ensure that the loan finance needed for the investment project can be made available at reduced interest rates. Cost of borrowing may be reduced where the need is justified; this is a facility provided by particular international financial institutions. For a practical example, see Box 3.3.

BOX 3.3 Practical example of interest rate subsidy

For safety improvement of the Faleolo airport in Samoa, the EU contribution consists of a EUR 6.75 million grant which provides an interest rate subsidy to assist the European Investment Bank in aligning its pricing with the World Bank and supports the Government of Samoa in enhancing its fiscal situation.

- **Loan guarantees** are provided by a third party in the event the borrower defaults. The loan is quite often guaranteed by a government agency, which will purchase the debt from the lending financial institution and assume responsibility for the loan.

- **Structured finance products** are synthetic investment instruments specially created to meet specific needs that cannot be met using the standardised financial instruments available in the markets. Structured products can be used (i) as an alternative to a direct investment, (ii) as part of the asset allocation process to reduce the risk exposure of a portfolio, or (iii) to utilise the current market trend.

- **Insurance premia** is funding allocated to provide coverage under a given insurance plan for a defined period of time.

CHAPTER 4

Key issues in project development

This chapter summarises the main issues that need to be addressed in developing a project in the transport sector and in assessing its potential for blended finance. The key issues are summarised below.

- The project should comply and be aligned with **existing transport strategies** of the EU and of the partner country. These strategies often define financing priorities. If they have not yet been developed, the intervention should support/promote their development.

- The full range of **development impacts** should be considered based on a comprehensive assessment framework.

- The project should aim to **build awareness** of the transport services to which the project is contributing to, including project development and financing, and related capacity of the primary stakeholders.

- The level and design of the EU intervention should **consider possible market distortions**.

- In the case of infrastructure projects, the **charging methodology** for using the infrastructure is key to the feasibility and sustainability of the project.

- **Climate aspects** should be extensively considered in project development and assessment, as most transport projects have a large impact on greenhouse gas emissions. Transport infrastructure is vulnerable to extreme climate events such as storms, floods, droughts and heat waves. In addition, changes in the patterns of particular climatic systems — such as monsoons — can have an extensive impact as they may induce more severe effects and natural disasters than changes in mean variables. Moreover, societies are rarely prepared to face extreme weather events efficiently, having become dependent on predictable, long-term climatic patterns. Extreme events have consequences that are difficult to predict. Their variability covers a large spectrum, such as sudden and transient temperature changes, rapid retreats of sea and lake ice, bouts of abnormally high precipitation, intensive storms, storm surges, extended droughts, heat waves and wildfires, and sudden water release from melting glaciers and permafrost slumping — all of which may have substantial impacts.

4.1 Ensuring development impact

The development impact is meant as the long-term effects produced by the blended project. It is the broader, longer-term change which a blended project can (directly or indirectly) bring about. Projects in the transport sector supported by blending facilities should address at least several of these issues to secure the necessary development impact. One key impact expected is on poverty alleviation. The project should directly or indirectly promote substantial social or global public goods returns and its poverty alleviation impact.

In project identification and design, the development impact should be explicitly considered. The application for EU support requires extensive information on the expected impact of the proposed project.

Support provided through the blending facilities should be strictly results oriented. This would ensure

performance assessment logic to be applied when it comes to allocation of funds available for transport sector projects in accordance with performance assessment framework guidance. Table 4.1 provides an example of some of the impact indicators relevant for transport projects.

4.2 Avoiding market distortions

Market distortions occur when the support given to transport projects (grants, concessional finance) provides the beneficiary with a competitive advantage in the local market. An example of such a distortion would be where an inter-modal terminal project supported by the EU is competing with other operators of inter-modal terminals which have had to attract capital at commercial rates and did not receive any grants, e.g. for feasibility studies.

JUSTIFICATION FOR SUBSIDIES

Justification of subsidies in transport investment projects could include the following.

- Justified subsidies can be instrumental in the **development of innovative business** lines and financial products by financial institutions, especially in the riskiest environments.
- Justified subsidies can be related to **provision of basic transport services** to low-income people to provide them with access to health, social services, education and job opportunities.

AVOIDING MARKET DISTORTIONS

Market distortions in the transport sector can be avoided in the following ways, depending on the type of project and market characteristics:

- subsidies for technical assistance and capacity building **support sustainable policy and market reforms** and the creation of an enabling institutional framework for commercially driven transport investments;
- subsidies focus on **attracting independent private operators** in a competitive, non-discriminatory manner.

4.3 Climate aspects

Rapid global economic development and urbanisation are fuelling massive growth in the demand for transportation. Current practices of meeting increased transport demand — mostly by growing automobile fleets and road network capacity — are unsustainable. A study for the United Nations Environment

TABLE 4.1 Impact Indicators for the transport sector

INDICATOR	UNIT	DEFINITION
Increased GDP	Percentage	The indicator covers the improved competitiveness of the country due to upgraded transport infrastructure.
Decreased travel time	Minutes	The indicator demonstrates that improved transport infrastructure and/or better quality services lead to a reduction of travel time (freight and passenger).
Reduced carbon dioxide emissions	Percentage	The indicator presents an increase of the modal split in favour of environmentally friendly transport modes (rail, inland waterway), or introduction of new rolling stock.
Reduced fatalities	Number	The indicator demonstrates that the transport infrastructure constructed in accordance with contemporary safety standards contributes to a reduction of accidents.
Reduced poverty	Percentage	The indicator demonstrates that improved accessibility to job opportunities contributes to a reduction of poverty.

Programme estimates that transport-related externality costs in developing countries may range as high as 10% of GDP (Dalkmann and Sakamoto, 2011).

Unless comprehensive changes in policy are made, car ownership worldwide is expected to triple to over 2 billion, trucking will quadruple and transport-related greenhouse gases will increase by 80% (IEA, 2009). A 2-degree Celsius climate protection goal certainly cannot be met without a considerable contribution to carbon dioxide mitigation by the transport sector.

Transport accounts for between 25% to more than 80% of various local air pollutants in cities that cause and intensify respiratory illness, heart disease, premature death and cancer. Air pollution is estimated to cause approximately 2 million premature deaths worldwide per year, with more than half of this burden borne by people in developing countries (WHO, 2005) (see Box 4.1).

BOX 4.1 Examples of transport/climate change and air quality indicators

- Indicator A1: Annual fossil fuel consumption per person for personal transport and annual fossil fuel consumption per tonne for freight
- Indicator A2: Annual transport fossil fuel consumption by mode and related greenhouse gases
- Indicator A3: Transport-related pollution contributions and number of days cities are in non-attainment of World Health Organization Air Quality Guidelines for key pollutants including particulate matter 10 and 2.5, nitrogen dioxide and ozone
- Indicator A4: Share of passengers and freight trips and passenger kilometres and tonne kilometres by mode and distance-averaged vehicle load factors by mode
- Indicator A5: Vehicle fleet size, average fuel efficiency and total vehicle kilometres travelled by mode

Source: Draft declaration for Rio+ 2020.

Transport projects are also often vulnerable to climate change, including to extreme weather events. Therefore, measures increasing the climate resilience of transport infrastructure may be considered 'insurance policies', which are planned and implemented in order to limit future operational and rehabilitation costs incurred by incremental climatic changes, such as temperature and mean sea level rise, and/or extreme weather events. Note that adaptation to climate change does not only involve managing risks, but may also offer opportunities to develop innovative and technologically advanced transport infrastructure systems and services.

4.4 Sustainability of projects and results

Sustainability should be addressed at two levels: sustainability of the project, and sustainability of the project results contributing to development objectives.

SUSTAINABILITY OF THE PROJECT

The following questions could be asked in assessing project sustainability.

- Under which conditions will the project be sustainable when the grant support expires? Sustainability considerations and criteria differ by project type and by the type of financial support provided by the blending facilities.
- What other incentives are necessary to enhance project sustainability?
- If technical assistance is provided, how will it contribute to the effective implementation of coming investments?
- How are environmental and social aspects considered in the project?
- How is maintenance of the project ensured during project implementation and operation (if relevant)?
- Is the legal framework adapted and relevant?

SUSTAINABILITY OF PROJECT RESULTS SUPPORTING DEVELOPMENT IMPACTS

EU support to investment projects aim for development impact that is broader and longer term than that of the investment project itself; this is referred to as sustainability of project results. It is addressed by the following questions, among others.

- Does the grant funding help support further or parallel activities to ensure that benefits continue beyond the lifetime of the project?
- Does the project lead to follow-up investments, and if so, under what conditions?
- Could the project results be transferred to other sectors or geographical areas?
- Does the grant funding contribute to structural reforms and/or support changes to legislation, regulation or policy?
- Does the grant finance enable demonstration effects for other participants in the marketplace?

CHAPTER 5

Risks and risk mitigation

This chapter describes the main risks associated with investments in the transport sector. It begins with a generic overview of the main risks, and then lists in Table 5.1 the risks and possible mitigation measures related to the construction and operation phases of transport infrastructure projects.

Risks during the construction phase are primarily related to availability of funds and the capacities and capabilities of the contractor to implement the project in a timely manner and in accordance with the contract conditions. Very often during the construction phase, many claims are made from the contractor's side, as well as from the beneficiary's side. This leads to higher than projected investment costs. Most of transport investment projects are implemented in accordance with International Federation of Consulting Engineers (FIDIC) contract conditions, which are applied depending on the type of investment project.

As to the project operation phase, a properly and reliably done feasibility study should define most of the risks pertaining to operations and identify possible mitigation measures.

The following generic risk categories can be distinguished:

- **Political risk** is generally related to potential government change but may also include specific risks arising from transfer risk, sovereign risk, exchange rates and inflation.
- **Policy and regulatory risk** encompasses changes in public policy, e.g. subsidy policy, affecting infrastructure profitability.
- **Business/strategic risk** affects the viability of the business, e.g. the risk of technological obsolescence.
- **Market risk** includes the risk of an increase in the price of commodities and other inputs, a decrease in price in case of economic crisis, or the risk of insufficient demand (traffic risk).
- **Financial risk** includes, among others, access to capital.
- **Building and testing risk** includes the risk of property damage or third-party liability arising from mishaps during the building or testing of new infrastructure.
- **Operational risk** includes e.g. the unavailability of resources, infrastructure damage or component failure and the lack of capable contractors.
- **Environmental risk** includes climate change and the risk of damage to the environment caused by the infrastructure, and the liability arising from such damage.

TABLE 5.1 Project risks and mitigation measures related to construction and operations phases

RISK	TYPICAL MITIGATION MEASURE
CONSTRUCTION PHASE	
Completion delay	• Selection of experienced, creditworthy construction contractor • Financial penalties (liquidated damages) payable from the contractor to the project beneficiary to cover loss of revenues due to completion delay
Failure of completion for ancillary infrastructure	• Definition of the overall workplan including main and ancillary infrastructure which is required to operate the project financed through the blending facility and strict monitoring of implementation of the workplan
Cost overrun	• Engagement of a technical consultant to supervise the adequacy of project budget expenditure
Force majeure	• Usually extensions of time and relief from liability • Project beneficiary will also seek financial protection from insurers
Investor credit risk	• Project beneficiary will assess investor creditworthiness and potentially require letters of credit sufficient to cover investor's equity commitments
OPERATION PHASE	
Insufficiently analysed demand for the project causing problems with sustainability at the operation stage	• Comprehensive feasibility study with cost-benefit analyses based on correct and justifiable input data
Feedstock supply	• If applicable, usually mitigated through a robust, long-term feedstock agreement with a creditworthy counterparty
Sales	• Contracted sales through an off-take agreement which clearly specifies agreed volumes/capacity/pricing • In case of non-contracted sales where market risk is a factor, independent market study and appropriate financial structuring done in order to ensure sufficient downside protection
Operations and maintenance	• Experienced operator with a strong track record of operating assets of a similar nature and size; contract to include liquidated damages in case of poor performance • Long-term maintenance agreements, typically with the original equipment manufacturers
Political and legal context (e.g. war, regulatory, permitting)	• Procurer risk in most PPP frameworks, with financial relief availed to the project beneficiary • Thorough analyses of legal and financial system conducted, focusing on issues related to implementation of blending facility project financing; assessment of the political framework and regional circumstances is also important
Cash flow	• Robust project model with significant granularity at both the operational and financing levels prepared • Cash flows stress tested under a number of downside scenarios (e.g. reduced transport demand, increased input/output pricing, macroeconomic shock) • Additional project cash flow protection through lender cash reserve accounts
Currency and inflation	• Currency risk is either borne by the government (if a PPP framework) or through matching the currency of revenues and debt financing • Inflation risk can either be contractually passed on through sales or mitigated through creating sufficient head room in the project economics
Interest rates	• Interest rate risk is typically largely hedged as a lender/investor requirement

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