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SUSTAINABLE TRANSPORT (EST) FORUM IN ASIA**

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**Transport Challenges and Opportunities for Landlocked Countries for
achieving Sustainable Development Goals (SDGs)**

(Background Paper for EST Plenary Session-2)

Pre-Final Draft

This background paper has been prepared by Mr. Robert Earley, for the Eleventh Regional EST Forum in Asia. The views expressed herein are those of the author only and do not necessarily reflect the views of the United Nations.

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Abbreviations and Acronyms

ADB	Asian Development Bank
AEO	Authorized Economic Operators
AIIB	Asian Infrastructure Investment Bank
BCE	Before Common Era
BRI	Belt and Road Initiative
BRT	Bus Rapid Transit
CAR	Central African Republic
CCTV	Closed Circuit Television
CEMAC	Economic and Monetary Community of Central Africa
EST	Environmentally Sustainable Transport
EU	The European Union
GDP	Gross Domestic Product
ICT	Information Communication Technology
IGA	Intergovernmental Agreement
ITS	Intelligent Transportation System
Lao PDR	Lao People's Democratic Republic
LLDC	Landlocked Developing Country
LRT	Light Rail Transit
PRC	People's Republic of China
SAFE	Secure and Facilitated Global Trade
SASEC	South Asia Sub-Regional Economic Cooperation
SDG	Sustainable Development Goals
TOD	Transit Oriented Development
UN-ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UN-OHRLLS	United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States
UK	The United Kingdom of Great Britain and Northern Ireland
WCO	World Customs Organization

Executive Summary

Transportation systems are evolving quickly across Asia. New technologies and geopolitical trends are creating new opportunities for cities and countries to participate in the global economy, and these opportunities are of key importance especially to landlocked developing countries (LLDCs) in Asia – Asian countries that have no access to global trade over the open seas. Asia’s LLDCs include According to the UN-OHRLLS, there are ten LLDCs in Asia, namely (in alphabetical order): Afghanistan, Bhutan, Kazakhstan, Kyrgyzstan, Lao People’s Democratic Republic (Lao PDR), Mongolia, Nepal, Tajikistan, Turkmenistan, and Uzbekistan. Of these countries, five are members of the Regional Environmental Sustainable Transport (EST) Forum in Asia: Afghanistan, Bhutan, Lao PDR, Mongolia, and Nepal, and these countries will be the primary focus of this paper, in addition to the Central African Republic, which is an observer country to the Regional EST Forum in Asia.

LLDCs face myriad challenges with respect to connectivity and transportation. Not only is infrastructure often underdeveloped and come at extremely high cost to their developing economies (many LLDCs are considered “Least Developed Countries” by the United Nations), but they also lack technology, policies, procedures and even trust with trading partners to efficiently and effectively move goods and people through 3rd countries (transit countries) to and from port, thus increasing risks and costs to their trade and economies. Inefficient border crossings, where goods can be held up for days or weeks, mean that not only might goods be damaged, stolen or spoiled, traders must keep more goods in inventory than perhaps necessary, thus directly driving up costs to consumers. That most LLDCs move goods by relatively old trucks means that as the trucks move across the country, they use more fuel than more developed neighbours, and produce higher levels of air pollution, thus putting national populations at risk.

Yet there are new opportunities are arising for LLDCs in Asia. While the UNESCAP has supported the Asia Highway Network and the Trans-Asian Railway network for decades with some success, new initiatives such as the Belt and Road Initiative, initiated by P.R. China and inspired by the trading done along the silk road in times past, are rekindling interest in the installation of standardized rail, road, pipeline, energy and data networks across Asia – and in many cases to or through LLDCs. If LLDCs are able to properly harness this new source of public and private capital, technology and infrastructure, they may have the opportunity to shift from their old status of “land locked” to “land linked”, providing transit services to freight by road and rail across Asia or even to Europe and beyond. LLDCs will need to work carefully to balance the cost of infrastructure and finance with their own economic development in order to control risk. After all, new infrastructure may come at a dear cost to economies. Yet if planned well, and if development is suited to their national development plans, new infrastructure may also bring thus far unknown connectivity to these countries so that they may offer not just goods, but also services (such as logistics, consulting and financial services) to companies along the way.

A connected Asia has the potential to bring many opportunities to LLDCs that were not before available. While connectivity is not a panacea, and indeed carries risks, it also carries the potential for countries to improve their economies, reduce emissions from the transport sector as well as from supply chains, and lift people out of poverty thus helping to achieve Sustainable Development Goals, as well as many of the goals of the Bangkok Declaration for 2020. This paper reviews the challenges and opportunities for LLDCs, examines the situations of Afghanistan, Bhutan, Lao PDR, Mongolia, Nepal and the Central African Republic, and attempts to draw conclusions and set forth a path forward for sustainable transport in LLDCs in Asia.

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1. Background

1. Transportation systems across Asia are evolving quickly. New technologies and new geopolitical trends are driving change faster than the region has witnessed in decades. The internet, along with e-commerce, is bringing countries and their economies closer together, reducing the barriers to joining global markets; there is a renewed interest in railways that traverse long distance and fast speed to move both people and goods; and, the rise of emerging economic giants such as the People's Republic of China (PRC) through its Belt-and-Road Initiative (BRI), has the potential to bring greater investment capital as well as diversity of both overland and marine transport connections across Asia, and around the world. These megatrends are seeing the outlay of new sea ports and land ports, railways and roadways across the entire Asian continent with the promise of bringing connectivity to countries and economies along the way.
2. These important technological and geopolitical changes have direct relevance to landlocked countries both in Asia and in the rest of the world. Landlocked countries – meaning those countries that have no direct access to international waters through a sea port – could have the opportunity to benefit from the development of efficient and low-cost road, rail, air transport and high-speed data routes across Asia. They also have the opportunity to benefit from increased finance and investment to improve the transportation within their countries so as to join newly forming global value chains, and increasing their participation in the global economy, helping to bring them out of poverty.
3. There are also opportunities to take advantage of these trends to avoid the lock-in of dirty and unsustainable transport systems. The Sustainable Development Goals agreed upon by all countries and the United Nations, along with other key guiding agreements such as the Bangkok Declaration for 2020, offer regions, countries and cities strategic guidance for planning and adopting best practices in transportation for bringing their countries, economies, and societies into an era of green and healthy development.
4. Landlocked countries – and particularly landlocked developing countries (LLDCs) face special challenges in harnessing opportunities and achieving these development goals. Of the 48 least developed countries, 20 are LLDCs.¹ Goods and people from LLDCs must depend upon and transit third-party countries before entering global markets. Additional border crossings and long distances from major markets, coupled with cumbersome transit procedures and inadequate infrastructure, substantially increase the total expenses for transport and other transaction costs, eroding the competitive edge of LLDCs, reducing economic growth and subsequently negatively affecting their capacity to promote sustained economic development, human and social progress and

¹ UNCTAD. 2017. The Least Developed Countries Report 2016: The Path to Graduation and Beyond – Making the Most of the Process. http://unctad.org/en/PublicationsLibrary/lcd2016_en.pdf p. 56.

environmental sustainability. As a result, “landlockedness” is a major contributor to the relatively high incidence of extreme poverty and structural constraints in landlocked developing countries.”²

5. Although some countries, such as Switzerland, Luxembourg, Liechtenstein, Austria are known as wealthy countries, being landlocked is most often an indicator of being more difficult to develop, with many economic and infrastructure challenges. In order to distinguish the developed from developing landlocked countries, in this paper – as in others, we shall address the Land Locked Developing Countries (LLDCs), a convention also adopted by the United Nations office of the High Representative for the Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States (UN-OHRLLS).
6. According to the UN-OHRLLS, there are ten LLDCs in Asia, namely (in alphabetical order): Afghanistan, Bhutan, Kazakhstan, Kyrgyzstan, Lao People’s Democratic Republic (Lao PDR), Mongolia, Nepal, Tajikistan, Turkmenistan, and Uzbekistan. Of these countries, five are members of the Regional Environmental Sustainable Transport (EST) Forum in Asia: Afghanistan, Bhutan, Lao PDR, Mongolia, and Nepal, and these countries will be the primary focus of this paper, in addition to the Central African Republic, which is an observer country to the Regional EST Forum in Asia.
7. The challenges faced by LLDCs are far from new. As alluded above, LLDCs are a specific focus of the UN-OHRLLS. Additionally, however, there have been several major international agreements and work programmes to attempt to address these problems. The key examples of multilateral efforts to resolve the issues of LLDCs include:
 - The United Nations Convention on the Law of the Sea, Part X: Right of access of land-locked states to and from the sea and freedom of transit, which guarantees land-locked countries access by all modes of transport through transit countries to the sea;³
 - The Almaty Programme of Action (2003)⁴ which highlighted five development priorities for LLDCs: Policy improvements and reduction of customs bureaucracy and fees; Improved rail, road, air and pipeline infrastructure (where projects are to reflect local transport modes, particularly rail in South Asia, road in Africa); International trade measures to give preferential treatment to landlocked countries’ goods; Technical and financial international assistance; and, Monitoring and follow-on agreements (including review before the General Assembly)
 - The Vienna Programme of Action (2014)⁵ further highlighted priorities for LLDCs: Resolving fundamental transit policy issues; Infrastructure and

² UN-OHRLLS. 2017. *Vienna Programme of Action for LLDCs for 2014-2024*. Online: <http://unohrlls.org/custom-content/uploads/2017/07/Vienna-booklet-ENGLISH-1.pdf> As viewed 30 July 2018, p. 1.

³ http://www.un.org/depts/los/convention_agreements/texts/unclos/part10.htm

⁴ <http://unohrlls.org/almaty-declaration-and-programme-of-action/>

⁵ <http://unohrlls.org/custom-content/uploads/2017/07/Vienna-booklet-ENGLISH-1.pdf>

maintenance of (a) transport infrastructure and (b) energy and information and communications technology infrastructure; International trade and trade facilitation; Regional integration and cooperation; Structural economic transformation; and, Means of implementation.

- There is an active stream of research and activity centered around the UN-OHRLLS updating efforts on trade and trade facilitation for LLDCs.
8. While several multilateral international efforts strive to address the issues related to trade and economic development in LLDCs, it is the Sustainable Development Goals (SDGs) that aim to address a broader perspective on development. Transportation is not represented by its own Sustainable Development Goal, but as an overarching and connecting theme, is addressed across a number of SDGs, both directly and indirectly (Annex 1). The Bangkok Declaration for 2020 – Sustainable Development Goals for 2010-2020 take a deeper look at the needs and solutions for transport in Asia – including those of the LLDCs (Annex 2).
 9. This paper aims to describe the sustainable transportation challenges and opportunities faced by LLDCs, and in particular the LLDCs that are members of the EST in Asia Forum, to achieve SDGs and other development goals to maximise the sustainable benefit of development to their societies.

2. Transport issues and challenges for landlocked countries

10. LLDCs face multiple issues and challenges in the transport sector that in many ways are directly linked to the economic and geopolitical challenges they face as well. Yet each LLDC also faces its own individual challenges stemming from its unique history and geography. This section will outline in general terms, the issues and challenges that LLDCs face for implementing sustainable transportation practices, as well as some specific issues facing individual countries – with deeper analysis of LLDCs in Asia to be explored in Section 4 on case studies.
11. The challenges facing transportation in LLDCs can be divided along several axes. The first is between urban transport, inter-urban transport, and international transport. Each of these categories of transport challenges manifest in different ways and impact different parts of the transport equation. The other axis would be between freight and personal transportation. Within each of these categories, the topics of transport efficiency, availability, affordability and sustainability; quality of transport infrastructure; border crossings; safety and security issues while in transit; and other challenges exist and can be explored.
12. One overarching challenge for many LLDCs is that much of the literature and multilateral action on transport for these countries is that it has focused primarily on the international connections needed to ensure economic linkages outside of the country, and ensuring access of these economies to global markets. Less literature has focused on the domestic transportation challenges that the cities of these LLDCs face (in the context of being landlocked), and this in itself is a challenge.

2.1. General challenges for LLDCs

13. Landlocked Developing Countries (LLDCs) face numerous issues and challenges not only in the area of transport, but in the area of overall development – and these two areas are intimately linked, especially in LLDCs. LLDCs in Asia are not only under-developed, but they lack many of the resources necessary to develop themselves, including but not limited to natural resources, human capital and connections to the rest of the world to generate foreign exchange. They also may lack adequate population and internal economy to develop with less foreign trade and foreign exchange. The borders of LLDCs are often in challenging geographical locations, far from population centres and difficult to control due to activities of criminal elements on one or both sides of the border.
14. Not only are these countries nearly completely dependent on third-party countries (known as “transit countries” for trade and travel, they often do not constitute large markets for trade of a diversity of goods, meaning that there is often little incentive for the private sector to develop networked infrastructure specifically to access those

countries. This section focuses on the areas of difficulty and challenge for LLDCs, giving examples from around the world while focusing on the situation in Asia.

15. The joint World Bank-United Nations report, Ten-year Review for Improving Trade and Transport for Landlocked Developing Countries⁶, undertook a comprehensive analysis of the challenges and opportunities that LLDCs face along their development pathways. The most obvious challenge that LLDCs face is that they do not have access to the sea, and therefore cannot through their own efforts alone, improve infrastructure and access to global trade. With international trade largely dependent on other transit countries, they face not only longer land distances from global markets, but also the need to develop cordial relationships with their neighbours in order to reduce transaction costs in terms of money and time at borders, both for the import and export of raw materials and products. LLDCs are completely dependent on the physical and trade infrastructure of transit countries, and are thus in a weak position.
16. Yet market access is only one of the problems that LLDCs face that are related to transportation. Due to their remoteness, these countries suffer from weaker border infrastructure for processing and clearing shipments and people as they cross the border. They often lack adequate domestic infrastructure for moving goods to and from the border, and as a result, vehicles are often not used, maintained or scrapped properly or often enough – resulting in higher fuel consumption, higher pollution and greater costs both to freight owners (through higher carriage rates), and to society through higher rates of pollution, traffic and other external costs.

2.2. Transport efficiency, availability, affordability and sustainability issues

17. Inefficient borders have broad impacts on economies and transportation. If truck drivers are not able to efficiently deliver their goods, and are stuck in traffic, they cannot make money through making more trips – they need to make money by bringing more goods per trip through overloading, and by charging higher fees per trip. Higher fees per trip are passed on directly to consumers through higher prices both through import and export, but truck overloading also brings the cost of infrastructure and vehicle wear and tear.
18. Truck overloading is frequently practiced in situations where there is a low frequency of truck trips, but where each truck trip could result in high profit – such as at poorly managed land border crossings that do not efficiently process transit cargo. Truck overloading results in damage to vehicles and roads, and significantly increases the risk to personal and public safety of freight movement. Furthermore, overloading is managed differently in different jurisdictions, leading to uneven management and even corrupt practices.

⁶ World Bank Group; UN-OHRLLS. 2014. Improving Trade and Transport for Landlocked Developing Countries : A Ten-Year Review. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/21800> License: CC BY 3.0 IGO.

19. Overloading is a difficult challenge to overcome without solving other traffic, inspection and border-crossing related issues. However, an opportunity to resolve overloading comes from developing consistent regional standards for the management of overloading. These regional standards could come from consistent standards for roads, axle weights of trucks and the total dimensions of trucks amongst other technical standards that would lead to predictable enforcement across international borders throughout a freight region.
20. In addition to making fewer trips, experiencing higher fuel consumption due to operating older and less-efficient vehicles (especially in road transport), and facing greater personal safety issues, landlocked countries also face the issue of criminal monopolies or syndicates at their borders or in trucking fleets. These illegal organisations are able to raise prices on freight services and fuel indiscriminately to the detriment of society, particularly in places where land border infrastructure is not properly configured to reduce traffic (such as with dry ports away from borders), or where electronic customs procedures are not in place, thus making rent seeking on drivers easier when processing border documents far away from central government eyes. Finally, LLDCs tend to import more containers of goods than they ship away. As a result, they need to pay the cost of returning empty containers without the advantage of exporting any goods inside of them.
21. Put together, these costs mean shipping a container to its destination to or from an LLDC can add up to between 30-100% of the actual cost of transportation,⁷ a significant burden for any society.

2.3. Quality of transport infrastructure

22. Quality of infrastructure necessarily varies between LLDCs. However, what is clear is that most lack the necessary domestic or interior transportation linkages to support the scale-up of their international trade, even if they have good international linkages supported by international donors. UN-ESCAP devised an index and ranking of LLDCs in Asia, which in 2017 ranked Asian LLDCs in terms of their access to physical infrastructure:

⁷ http://unohrrls.org/UserFiles/File/LLDC%20Documents/TheCostsOfBeingLandlocked_Willoughby.pdf

Table 1 Ranking of the Landlocked Developing Countries in Access to Physical Infrastructure⁸

2007-2009	2013-2015
Kazakhstan	Kazakhstan
Uzbekistan	Azerbaijan
Armenia	Armenia
Azerbaijan	Kyrgyzstan
Kyrgyzstan	Uzbekistan
Tajikistan	Tajikistan
Turkmenistan	Turkmenistan
Bhutan	Bhutan
Nepal	Mongolia
Mongolia	Lao PDR
Lao PDR	Nepal
Afghanistan	Afghanistan

23. The key motivators that changed the rankings were not necessarily that countries had lost access to infrastructure, but rather that some had improved access to infrastructure faster than others. Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan had been linked by rail, as had the Islamic Republic of Iran and Afghanistan. Armenia started construction of the North-South Road Corridor, Azerbaijan upgraded Asian Highway 81 and Asian Highway 5, And the completion of a transport corridor across Azerbaijan, Georgia and Turkey helps to improve Azerbaijan's access to the Mediterranean Sea. Countries involved in the China-led Belt and Road Initiative (BRI), and the ADB-led Central Asia Regional Economic Cooperation Programme corridors have benefitted. Lao PDR is benefitting from greater railway connectivity as part of the BRI. Unfortunately, Nepal suffered infrastructure and border-crossing loss in the earthquake of 2015.
24. Not only do LLDCs face challenges with respect to road and rail transportation – they face challenges with regards to data and energy connectivity. ICT is now a key consideration for countries as they seek to take advantage of their intellectual skills and knowledge as well as natural resources for hosting internet infrastructure such as data centres, and improving their international exposure and competitiveness. ICT also enables important services for trade facilitation such as electronic banking, paperless single-windows systems and pre-clearance of shipments. Yet LLDCs face the challenge that they may receive internet connections from few sources and have little opportunity to update the capacity of those connections. In 2016, the International Telecommunication Union found that Lao PDR, Bhutan, Nepal, Mongolia, Afghanistan and Central African Republic were all in the lowest category of individual internet

⁸ Based on https://www.unescap.org/commission/73/document/E73_3E.pdf p. 4.

connectivity, where 76-100% of individuals did not have regular access to the internet, whereas developing countries with access to the sea could also access major internet backbone connections.⁹

25. One key aspect of good internet connections is the implementation of e-government and associated Intelligent Transport Systems – including intelligent border control. In 2018, The Central African Republic was the only case study country considered to have a “Low E-Government Development Index (EGDI <0.25) rating” in 2018. Bhutan, Lao PDR, and Nepal had “Middle EGDI” ratings in 2018, and significantly, Afghanistan had graduated from Low EGDI to Middle EGDI in 2018. Of the case study countries, only Mongolia had a rating of “High EGDI”, indicating good connectivity and access to government services in-country.¹⁰ Meanwhile, the Online Service Index rates the use of Information Communication Technology (ICT) to deliver public services at the national level. In this, case, Central African Republic and Lao PDR score “Low”, Bhutan scored “Medium”, and Mongolia and Nepal scored “High”. Those countries that score “High” may be in a better position than others to implement electronic border controls.

Table 2 Top 10 LLDCs for e-government plus additional case study countries. OSI = Online Service Index; HCI = Human Capital Index; TII = Telecommunication Infrastructure Index; EGDI = E-Government Development Index¹¹

Country	Region	Sub-Region	OSI	HCI	TII	EGDI	2018 Global Rank
Kazakhstan	Asia	Central Asia	0.8681	0.8388	0.5723	0.7597	39
Republic of Moldova	Europe	Eastern Europe	0.7708	0.7274	0.4787	0.6590	69
Azerbaijan	Asia	Western Asia	0.7292	0.7369	0.5062	0.6574	70
The Former Yugoslav Republic of Macedonia	Europe	Southern Europe	0.7153	0.6924	0.4859	0.6312	79
Uzbekistan	Asia	Central Asia	0.7917	0.7396	0.3307	0.6207	81
Armenia	Asia	Western Asia	0.5625	0.7547	0.4660	0.5944	87
Kyrgyzstan	Asia	Central Asia	0.6458	0.7628	0.3418	0.5835	91
Mongolia	Asia	Eastern Asia	0.5972	0.7899	0.3602	0.5824	92
Bolivia (Plurinational State of)	Americas	South America	0.5625	0.7148	0.3148	0.5307	103
Paraguay	Americas	South America	0.5556	0.6701	0.3507	0.5255	108
Nepal	Asia	South Asia	0.4748	0.6875	0.2413	0.4957	117
Bhutan	Asia	Southern Asia	0.4274	0.5000	0.3080	0.4743	126
Lao PDR	Asia	S.E. Asia	0.3056	0.1667	0.2246	0.5254	162
Central African Republic	Africa	Middle Africa	0.1584	0.2083	0.0322	0.2347	188

2.4. Safety and security issues in transit

26. Transit refers to the transit customs regime, which allows goods that have not been cleared by customs in a third country to move under customs control. This can occur

⁹ International Telecommunications Union. 2016. “ICT Facts and Figures 2016”. <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf>

¹⁰ United Nations Department of Economic and Social Affairs. 2018. “United Nations E-Government Survey 2018: Gearing E-government to Support Transformation Towards Sustainable and Resilient Societies”. <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2018>

¹¹ *Ibid.*

as goods move either through a country, crossing at a border and leaving at another border (international transit), or as they cross from a border to a facility inside the country where they are then processed by customs and imported into the country (national transit). A successful transit regime requires:

- Seals to secure vehicles and vessels;
- Accompanying and commonly-recognized documentation;
- An agreement by the owner of the goods and a guarantor that due is and taxes will be paid if a transit document or shipment is not discharged properly
- Guarantees, including financial securities, bank bonds or deposits.¹²



Figure 1 Customs seal on a freight container. Seals registered at border crossings by trusted shippers should allow freight to cross borders seamlessly.¹³

27. Typically, transit does not require inspection or precise valuation of goods at the border – it only requires a check of the guarantees in place, check of the customs seals on the shipment, as well as a coherent data management system that is commonly recognized by all related parties, and a secure transport corridor to the next port. Unfortunately, the transit regimes of many LLDCs and their transit countries are not well developed. In many cases, there are controls in place to transit shipments that are more strict than necessary, or transit shipments are not even separated from regular import shipments when being cleared at the borders of countries, meaning that long delays can occur at the borders of transit countries.
28. It is common at land borders to experience very long delays, with trucks waiting for days or even weeks for their shipments to be cleared. Not only does this slow down trade – in fact, it requires traders to have much more inventory on hand in order to ensure supply at the destination; it requires more trucks to be used in the transport system because they are stuck on the road at borders, and it requires truck freight services to charge higher fees because they cannot take as many trips while stopped at borders. If there is any disruption at all in the slow normal operation of land border

¹² World Bank Group; UN-OHRLLS. 2014. Improving Trade and Transport for Landlocked Developing Countries : A Ten-Year Review. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/21800> License: CC BY 3.0 IGO.

¹³ Source: Staudmedia, Licensed under Creative Commons CC0. <https://pixabay.com/en/container-sea-container-seal-1220876/>

crossings due to trade disputes, criminal activity, mechanical failures or other reasons, these problems can only become exacerbated putting real strain on the economy of the LLDC. From a sustainable development perspective, lower productivity at border crossings reduces the potential for truck drivers or owners to make enough money to purchase new or cleaner trucks or to properly maintain their trucks, leading to higher fuel consumption and air pollution from individual vehicles.

2.5. Human Resources in Transportation and Transit Regimes

29. Human resources are a key challenge for all customs and transit regimes. When goods cross borders, there are processes that, unless simplified, require large amounts of human resource – including skilled resources – to adequately assess the quality, quantity, safety and security of goods. Along borders of countries that do not have relatively open borders, requirements are high for processing shipments and monitoring transit of goods. Even highly developed economies require high amounts of human resources in order to ensure efficient trade activities. For example, in the face of the UK leaving the EU, the Netherlands has determined that it will need to hire between 750 and 900 officers in addition to its current force of 5000 officers in order to efficiently process trade in the context of greater trade barriers between the UK and the EU.¹⁴
30. Similarly, LLDCs and their trading partners will require adequate human resources to properly process shipments at borders, and to ensure shipments are secure in the case of transit of goods across 3rd party countries. Border patrols and customs officials require training in order to properly undertake their jobs and ensure that borders remain fast, efficient and secure. As an example, officials newly hired in the Netherlands for passport control at borders will require training consisting of 80 hours of self-study, eight on-the-job experiences and a three month internship.¹⁵
31. In order to adequately prepare for increased efficiency of international trade at borders, border control and customs officials must be trained in a variety of topics allowing them to properly capture, verify and record data about people and shipments that cross borders; where relevant to transform data into actionable intelligence about how to secure and facilitate the efficient and reasonable movement of people and goods; to manage people and goods throughout their travel within the borders of the country; to communicate with other border control management agencies; and, to utilize technologies to improve efficiency in processing goods and people related to the trade and movement of goods.¹⁶ Additionally, officials need to be made aware of, and actively trained and monitored in the areas of counter-corruption, and specifically in the area of anti-human trafficking.

¹⁴ Dutchnews.nl. “Netherlands to hire at least 750 extra customs officers for Brexit” (19 February 2018).

<https://www.dutchnews.nl/news/2018/02/at-least-750-extra-customs-officers-to-be-hired-as-netherlands-prepares-for-brexit/>

¹⁵ *Ibid.*

¹⁶ Adapted from ICAO (2017) “Working Final Draft: ICAO TRIP Guide on Border Control Management”. Version 1, Draft 4. <https://www.icao.int/Meetings/TRIP-Jamaica-2017/Documents/ICAO%20TRIP%20Guide%20on%20BCM-For%20validation-16-11-2017.pdf>

32. Human resource demands extend beyond the borders of countries in the area of customs and border control management. Strongly effective border control will include the improved skills and capacities of exporting companies to gain the trust of border control agencies in systems known as “Authorized Economic Operators” (AEOs). AEO is a concept that has arisen from the World Customs Organization and the WCO Framework of Standards to Secure and Facilitated Global Trade (SAFE) – See **Box 1**.

Box 1 Authorized Economic Operators (AEO)

If customs and border control agencies are able to trust certain exporting companies or organizations, it may be easier for them to process goods and people at the borders of countries along trade corridors in such a way that goods are not held up at international borders. AEOs are those economic operators that can demonstrate to customs organizations with recognition programs that they:

- Ensure the integrity of the information, that what is said to be in a container is really in the container and nothing else.
- Ensure the integrity of its employees, that they will not put goods in the container that should not be there
- Secure access to its premises to prevent unauthorized people from putting goods in the container

In order for AEO programs to be successful across regions, there must be a level of coordination between customs and border management authorities internationally. Such coordination could be achieved through common training programmes, international negotiations on trade and transit protocols, and common inspection programs that improve the trust between nations and between the public and private sectors on international recognition of AEOs.

3. Transport opportunities for landlocked Countries to achieve SDGs

33. Landlocked Developing Countries (LLDCs) do have several modes of opportunities for achieving Sustainable Development Goals through better transportation. Although a major component of the opportunities will arise from improved international trade opportunities, thus allowing LLDCs to increase their national revenues and directly improve facilities and services related to sustainable development in their countries, other opportunities exist that allow domestic or even urban transportation to become cleaner and more efficient, thus reducing the need to utilize foreign exchange or other resources to purchase imported fossil fuels or vehicles, while maintaining economic efficiency.
34. The primary SDGs that address transportation are found in Annex 1. While countries focus on all the SDGs, the most important goal and target for LLDCs with respect to transportation is Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. The specific direct target that LLDCs can work towards to achieve this Goal is Goal 9.1:

Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

35. Meanwhile, LLDCs face challenges related to air pollution, food security and climate change that are all related to connectivity:
- Old trucks and dirty fuels used inefficiently on old infrastructure increase air pollution in cities (*Goal 11.6: By 2030, reduce adverse per capita environmental impact of cities, including by paying special attention to air quality...*)
 - Slow and unreliable cross-border processing leads to food waste while waiting at borders (*Target 12.3: By 2030, halve per capital global food waste...and reduce food losses along production and supply chains, including post-harvest losses*)
 - Poor infrastructure and old, inefficient vehicles lead to higher direct automotive emissions than necessary due to more vehicles than necessary on the road; meanwhile, increased climate change increases the risk of climate disasters occurring on shaky infrastructure – floods and landslides being particular risk to mountainous landlocked countries dependent on valleys and bridges for connectivity (*Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries*).

3.1. Trade Corridors: From Landlocked to Land-Linked

36. Given that many LLDCs lack both internal infrastructure as well as infrastructure for accessing international markets, it is reasonable that both the Almaty and Vienna

Programmes of Work have focused on identifying trade corridors and improving the international infrastructure along those corridors. Key trade corridors that have been evolving in Asia include – and feature – the Belt and Road Initiative (BRI)¹⁷ that may eventually invest up to a trillion dollars in infrastructure to improve land and sea connections between Asia and Europe along a number of trade corridors. The Central Asia Regional Economic Cooperation Programme and Greater Mekong Subregion corridor programmes led by the Asian Development Bank aim to connect key parts of Asia, bringing systematic market access to countries along corridors while considering sustainable development.

37. The UN ESCAP initiative on the Asian Highway network has played an important role in the development and upgrading of highways in particular across Central Asia and Mongolia, spanning 32 countries with 142,000 km of highway to varying degrees of quality (As of 2017, 25,392 km were of Class I category, and 52,435km were of class II category).¹⁸ Another key ESCAP regional initiative is the Trans-Asian Railway network, which has identified production hubs and corridors linking countries – and giving LLDCs in particular important connections that enable them as transit countries themselves, thus giving them access to markets at multiple border crossings via rail transport. As of 2017, 19 countries had become parties to the Intergovernmental Agreement on the Trans-Asian Railway Network, including LLDCs such as Lao PDR, Mongolia, Nepal, Tajikistan and Uzbekistan.
38. A major aim of these corridor projects is to facilitate the development of rail infrastructure across Asia. Whereas marine transport is very low cost but also very slow in delivering freight to markets in Europe and elsewhere, and air freight is very expensive but also very fast and secure, rail freight is of both moderate cost and speed, bringing many more industries into the scope of higher-speed transport. Rail freight has the advantage of also being significantly cleaner than air transport, and even potentially cleaner than marine transport with its high particulate and black carbon emissions from dirty bunker fuel. Electrified freight trains powered by renewable energy such as hydroelectricity from present or future hydropower stations in Lao PDR or Nepal could be virtually air pollution free and make very low GHG emissions.
39. The development of corridors also enables secure installation of other infrastructure such as highways, pipelines and internet infrastructure, such as high-speed optical cable. The Rasuwagadhi Checkpoint on the border between Nepal and P.R. China, for example, is now the only land border crossing for trade between P.R. China and Nepal, particularly after the 2015 earthquake and landslides severely damaged the existing border at Tatopani, Nepal. This land border crossing is being equipped with a dry port facility on the Nepal side, Likewise, the dry port will be featuring a parking area, able to house up to 315 transport trucks at a time along with a storage facility (warehouse)

¹⁷ Previously known as the One Belt One Road (OBOR) Initiative

¹⁸ United Nations Economic and Social Commission for Asia and the Pacific (2017). Regional implementation of the Vienna Programme of Action for Landlocked Developing Countries for the Decade 2014-2024. Document E/ESCAP/73/3, re-issued 17 April 2017.

of 750 square meters.¹⁹ This border crossing has become the corridor for Nepal's fibre optic internet connection to P.R. China as well. Given that future railway is planned to pass from Gyirong, Tibet Autonomous Region, P.R. China to Kathmandu, Nepal, this corridor may also make a desirable land crossing.²⁰ Recent agreements have even suggested exploration of oil, gas and other energy resources in the surrounding area, along with storage facilities for refined fuels. Not only would this corridor connect P.R. China and Nepal by rail – in fact, by improving domestic rail service, Nepal could serve as a connection between India and P.R. China for trade – if that were found to be desirable by all parties involved. Such a connection may bring other benefits to Nepal as a transit country including access to value chains that would not have otherwise touched the country, intermediate processing of goods, and even finance.

40. Similar opportunities are forming for Mongolia, which is becoming an important railway transit country for trade not only between China and Russia, but China and Europe, and for Lao PDR which, at the heart of the Greater Mekong Subregion transportation corridor, will link P.R. China, Thailand and Viet Nam by rail along the Belt and Road Initiative route there, as well as the ESCAP Trans-Asian Railway Network, offering an important hub for goods distribution, intermodal and multimodal transportation, and finance.
41. By becoming transit countries for trade between major markets, these LLDCs have an opportunity to leverage demand for transit services to provide revenue to properly maintain strong and sustainable transportation infrastructure in and between their cities, and by building up services and industries near these transit corridors, LLDCs further have opportunities to improve economic development opportunities for domestic companies, centralizing finance and talent to create new and innovative industries and increasing national revenue and economic activity.

3.2. Opportunities for the Improvement of technical, institutional, capacities and governance for barrier-free transit

42. Barrier-free transit refers to the infrastructure, legal framework, institutions and procedures that serve trade corridors and reduce impediments to free flow of goods, services and payments across borders. The World Bank established a framework of key components for a barrier free transit system (*Box 2*).

¹⁹ <https://myrepublica.nagariknetwork.com/news/rasuwapadhi-dry-port-construction-to-begin-after-four-months/>

²⁰ To illustrate the risks faced by infrastructure in mountainous LLDCs, the bridge providing border crossing at Rasuwagadhi, Nepal was severely damaged by high rains on 28 July, 2018, closing the border to vehicle traffic for an undetermined amount of time. Significant amounts of soil around the bridge foundation have been washed away by heavy rains, allowing only for foot traffic to cross, and thus closing the Nepal-P.R. China border to freight traffic. (<https://myrepublica.nagariknetwork.com/news/rasuwapadhi-border-point-closed-down/>)

A transit system is composed of various infrastructure, legal frameworks, institutions and procedures to facilitate the movement of trade across borders:

1. Hard and soft infrastructure of the transit system:
 - Political commitment to allow transit trade
 - Physical infrastructure, including border checkpoints
 - Market for services available in the region, e.g. trucking, customs brokers, freight forwarders.
2. Institutions that enable the transit system to move goods and vehicles on the border:
 - Transit regime implemented by customs agencies, comprising the operating procedures that govern the movement of goods;
 - Transport policies and protocols to govern the movement of vehicles and regulate logistics services, recover infrastructure costs, and improve competition between and within modes of transport. Also to facilitate movement of vehicles and people – e.g. vehicle regulations, visas for drivers, insurance and law enforcement;
 - Initiatives to facilitate cooperation and build trust between transit countries and source and destination countries (including LLDCs), as well as between public and private participants, including the establishment of joint corridor management institutions and development of performance indicators and solutions.

3.3. Intelligent Transportation Systems for Safer and More Reliable Transportation

43. Intelligent transport systems are information and communication technologies or systems placed in transport infrastructure or in a vehicle. They provide for the transfer collection, processing and exchange of information between service providers of traffic and transport infrastructure users.²² Primarily, ITS consist of two types: on-vehicle and on-roadway. LLDCs in Asia may benefit from both these types of ITS:

44. First, on-vehicle ITS focuses on reminding drivers about dangerous situations or cases where drivers are performing unsafely. In LLDCs, particularly with regards to freight transport and increased connectivity, these tools could include, for example²³:

- Drowsy driver warning systems, which can use low-cost video technology to monitor eye movements of drivers, and when drivers show signs of fatigue, provide alerts to help reduce dangerous driving situations. A driver's own smartphone with an app could achieve this goal;
- Drink-driving warning systems, which can be installed in vehicles of drivers known to have, in the past, undertaken dangerous drink-driving behaviour, which does not allow the vehicle to be activated if alcohol is detected in the driver's breath;

²¹ From: Arvis, Jean-François, R. Carruthers, G. Smith and C. Willoughby. 2011. "Connecting Landlocked Developing Countries to Markets: Trade Corridors in the 21st Century". Washington, D.C.: The International Bank for Reconstruction and Development / The World Bank. pp. 7-8. http://documents.worldbank.org/curated/en/489041468154790373/pdf/608060PUB0Conn10Box_358332B01PUBLIC1.pdf

²² Janušová, Lucia and Silvia Čičmancová, *Procedia Engineering* 134 (2016) 14 – 22.

²³ Many examples are listed in: U.S. Department of Transportation, Research and Innovative Technology Administration. No date.

"Intelligent Transportation Systems Safety Solutions – Preventing Crashes and Saving Lives". Online: <https://www.its.dot.gov/factsheets/pdf/ITSA%20ITS%20Saves%20Lives.pdf> viewed 15 September 2018.

- Lane departure warning systems, which use cameras to detect the lane markings on roads and alert the driver if a lane line has been crossed. Some new vehicles, both passenger and freight, have these systems installed. These could be installed on public fleets where accident rates are high;
 - Automatic crash notification systems, which use vehicle sensors to judge if a crash has occurred and can automatically report the location information of the vehicle to traffic and medical authorities for faster and more accurate response.
45. Roadway safety systems involve technology that is installed in or beside roadways to monitor driver, passenger and pedestrian safety, and can include integrations of systems such as sensors, traffic signals, CCTV monitoring cameras, etc. to achieve more and faster awareness about safety issues on roads or other modes of transport:
- Automated speed enforcement, including red light and speed cameras, as well as mobile roadside speed control systems ensure that drivers understand there is a cost to speeding and reckless behavior;
 - Urban and motorway control systems create opportunities for variable speed limits based on current road traffic and maintenance conditions, weather warnings, etc.²⁴
 - Wildlife detection systems to warn drivers when large wildlife are approaching roadways with warning signs;
 - Emergency vehicle priority systems provide right-of-way to emergency vehicles at traffic lights giving them priority to quickly arrive and clear traffic incidents.
 - Real-time data sharing between emergency responders, police, traffic managers and others can be accomplished through cameras, sensors and other tools being centralized and distributed through common data services.
46. In order to properly implement ITS systems so that they are effective in facilitating traffic and helping to improve safety of roads and other modes of transportation, key data sources are needed²⁵:
- Traffic data – the status of traffic flow conditions, information about traffic accidents and changes in the organization and regulation of traffic data depending on the road surface conditions;
 - Evaluation of collected data over regions as well as along specific sections
 - Timely or real-time dissemination of data to all those responsible for transportation services, including but not limited to, urban land-use planners, road administrators, traffic police, public transportation operators, etc.
47. By collecting and analyzing data, and implementing good data management systems, cities and economies should reap the benefit of greater mobility for people and goods, safer transportation systems that help countries achieve zero traffic accident goals, and

²⁴ Regan, M., J. Oxley, S. Godley and C. Tingvall. 2001. Intelligent Transport Systems: Safety and Human Factors Issues. Royal Automobile Club of Victoria. Online: <https://www.monash.edu/muarc/our-publications/other/racv0101> viewed 15 September 2018.

²⁵ Janušová, Lucia and Silvia Čičmancová, *Procedia Engineering* 134 (2016) 14 – 22.

better energy efficiency as liquid-fuelled vehicles can operate at speeds close to their theoretical ideal, instead of being stuck idling in traffic jams, or in start-stop traffic.

3.4. Opportunities for finance for better connectivity in LLDCs

48. Finance has been one of the greatest barriers facing LLDCs in their plans to achieve sustainable development. Even when plans have been laid to promote transportation programmes, infrastructure programmes and other important investments to increase their capacity to improve social life in their countries, LLDCs are often faced with the challenge of being small markets, requiring careful analysis and management to ensure that debt can be taken on without risking social impacts.
49. New financing options and opportunities are being made available to LLDCs across Asia. P.R. China has established a USD 40 billion Silk Road Fund to support infrastructure development along BRI routes. The Asian Infrastructure Investment Bank (AIIB) is likewise a new bank with USD 100 billion in capital, with the aim of lending to infrastructure projects along the BRI and beyond, taking the experiences of other multilateral financing organizations and trying to streamline processes and avoid unnecessary bureaucracy while ensuring proper diligence and protections are in place. The Silk Road Fund and AIIB are new sources of funding that are still finalizing their internal processes and policies. The AIIB in particular partners with other Multilateral Development Banks (MDBs) to utilize their compliance and evaluation systems to decide about how and when to finance projects.
50. The China Development Bank is a huge lender in Asia and globally to developing countries in general, and the Asian Development Bank has a separate fund for LLDCs in Central Asia. The 2017 Global Infrastructure Forum concluded that development finance banks would contribute to development of infrastructure not only by bringing their own capital to bear to build up projects, but to make use of their expertise to make projects more attractive to private capital from other sources such as pension funds, sovereign wealth funds and insurance companies to scale up investment from the billions currently available,²⁶ to the approximately USD 8 trillion dollars that will be needed globally to achieve sustainable transport by 2030 – in Asia alone.²⁷
51. One model of financing that may be of particular interest for the development of railways is the model championed by Japan for long-distance rail development, and by Hong Kong for subway development, focusing on large-scale Transit Oriented Development (TOD), and is now in use in locations around the world, known as the Entrepreneur Rail model.²⁸ This model advocates that by finding or creating enough real estate development around a railway station, private developers can generate the capital to not only build the development but also to build, own and operate some of

²⁶ https://www.un.org/esa/ffd/wp-content/uploads/2017/01/Closing-remarks_Mr.-Alexander-Trepelkov.pdf

²⁷ <https://www.adb.org/news/events/adb-transport-forum-2018>

²⁸ Newman, P., E. Jones, J. Green and S. Davies-Slate. 2016. "Entrepreneur Rail Model" Discussion Paper. Curtin University.

all of the line. In both Japan and Hong Kong, this model of development has led to railways that are rated highly for service, that are well-maintained and which are, remarkably, profitable in many cases. While this model of financing may not be applicable in every case in developing countries especially, it is something that can be considered, especially when multilateral or other development banks may be able to help reduce the risk to private investors by bringing expertise and capital to projects.

4. Case Studies

52. As regional and intra-country transport connectivity has improved significantly in the last decade, describe how sustainable intra-country and regional transport connectivity could help to improve economic development, social integration, and environmental protection of the landlocked countries. Also, provide documentation on good causes and best examples from the following landlocked countries.

4.1. Afghanistan

Income Group	Low	UN-OHRLLS
Transit Country (ies)	Pakistan, Iran	UN-OHRLLS
Population (2012-13) millions	30	World Bank
Urban population (2012-13) %	24	World Bank
GDP Growth 2009-2013 (avg. annual %)	10.8	World Bank
Share of Top Five Products in Total Goods Exports (2012)	2012 (93.9%): Iron and steel, Inorganic chemicals, Copper and copper products, wood	WITS, World Bank
Share of Top Five Export partners (2016)	Pakistan (47.5%), India (38.6%), Iran, Islamic Republic (3.2%), Turkey (2.0%), Iraq (1.88%)	WITS, World Bank ²⁹
Share of Top Five Import Partners (2016)	Iran, Islamic Republic (19.4%), Pakistan (18.4%), P.R. China (16.7%), Kazakhstan (9.5%), Uzbekistan (6.1%)	WITS, World Bank ³⁰
Logistics Performance (2012 to 2014 to 2016)	Score: 2.52 → 2.29 → 2.14 Rank: 107 → 143 → 150	World Bank ³¹
Cost to export/import containers (2012 → 2014) (US\$)	Export: 3,545 → 5,045 Import: 3,830 → 5,680	World Bank ^{32,33}
Time to export/import containers (2012 → 2014)(days)	Export: 74 → 86 Import: 77 → 91	World Bank ^{34,35}

4.1.1. Introduction

53. Afghanistan is a country covering approximately 647,500 km² of territory, with terrain across its regions, including deserts in the south, plains in the north and the Hindu Kush mountains which extend throughout much of the country. With an estimated population of 28.22 million residents³⁶, the country borders six others including the Islamic Republic of Iran, Pakistan, P.R. China, Tajikistan, Turkmenistan and Uzbekistan. Of those, Tajikistan, Turkmenistan and Uzbekistan are also LLDCs, and there is no official border crossing with the PRC at this time. The capital, Kabul, is located in the eastern part of the country, and is home to a large component of the settled population.

²⁹ <https://wits.worldbank.org/countrysnapshot/en/AFG>

³⁰ *ibid.*

³¹

https://view.officeapps.live.com/op/view.aspx?src=https://lpi.worldbank.org/sites/default/files/International_LPI_from_2007_to_2018.xlsx

³² <https://data.worldbank.org/indicator/IC.EXP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

³³ <https://data.worldbank.org/indicator/IC.IMP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

³⁴ <https://data.worldbank.org/indicator/IC.EXP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

³⁵ <https://data.worldbank.org/indicator/IC.IMP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

³⁶ United Nations Statistics Division. July 2018. 2. Population, latest available census and estimates (2016-2017) Population and Vital Statistics Report. As viewed on 3 August 2018. Available at: <https://unstats.un.org/unsd/demographic-social/products/vitstats/seratab2.pdf>

54. Afghanistan holds a unique history in geopolitics. The area has been a focal point of the silk road trading route and human migration, with archaeologists having found evidence of human habitation as far back as 50,000 B.C.E. In recent history, Afghanistan has been situated at the nexus of global powers activities in Asia such as the UK (through its control of India at the time), Russia, the United States, and China. It has been subject to conflict and war since the 1970s, leaving much of its previous transportation infrastructure either destroyed or in disrepair, and with a serious delay in the development of new, modern transport infrastructure.
55. As it is situated at such a key location, peace and security in Afghanistan is also dependent on peace and security with its neighbours. In 2002, after the fall of the Taliban, Afghanistan and all its bordering countries signed the Kabul Declaration on Good Neighborly Relations, which “determined that the people of Afghanistan should enjoy security, stability, prosperity, territorial integrity, democracy and human rights after so many years of conflict, suffering, and deprivation.”³⁷ Yet, conflict amongst the countries neighbours continue to have spill-over effects on Afghanistan³⁸. Today, efforts are underway to establish a stable government across the country, and with these efforts some new transportation infrastructure is being built or has been announced.
56. The primary mode of long-distance transportation in Afghanistan is by road. As of 2006, the country had 12,350km of paved road and 29,800 km of unpaved road for a total system length of about 42, 150km. The main highway infrastructure, Highway 1 or A01 (formerly called the “Ring Road”, connects the major cities of Kabul, Maidan Shar, Ghazni, Kandahar, Delaram, Herat, Sheberghan, Mazari Sharif and Puli Khumri. Its extensions connect to Pakistan along the Jalalabad-Kabul Road (which has been rebuilt by Pakistan), as well as to Iran, Turkmenistan, Uzbekistan and Tajikistan, although the conditions of these roads varies greatly. This highway is the longest route of the Asian Highway Network. Railway is also on the horizon. On 29 November 2016, Turkmenistan completed a rail link Atamyrat to Akina at the Afghan border along the Lapis Lazuli Corridor which is being developed to improve freight links from Central Asia across the Caspian Sea to the Caucasus, Turkey and Europe.³⁹
57. The focus now is to achieve regional win-win collaboration with Afghanistan as once of the centres of the region. The Regional Economic Cooperation Conference on Afghanistan was held for the seventh time in November 2017 in Ashgabat, Turkmenistan, where eighteen regional cooperation and investment projects were discussed, including the TAPI (Turkmenistan–Afghanistan–Pakistan–India) Pipeline; CASA-1000; TAP-500; Belt-and-Road Initiative; Lapis Lazuli Transit, Trade, and Transport Route; Chabahar International Transport and Transit Corridor; Five-Nation Railway Corridor; Afghanistan Rail Network; Trans-Hindukush Road Connectivity Project; and Digital Silk Road.⁴⁰

³⁷ United Nations Security Council. “The Kabul Declaration on Good-Neighbourly Relations”. 24 December 2002.

https://peacemaker.un.org/sites/peacemaker.un.org/files/AF_021222_AfghanistanGoodNeighbourlyRelationsDeclaration_0.pdf

³⁸ Haidari, M. Ashraf. “A Peaceful Afghanistan Key to Regional Connectivity in South and Central Asia” 26 January 2018. *The Diplomat*. <https://thediplomat.com/2018/01/a-peaceful-afghanistan-key-to-regional-connectivity-in-south-and-central-asia/>

³⁹ Railway Gazette. “Afghanistan and Turkmenistan open Lapis Lazuli Railway” 28 November 2016.

<https://www.railwaygazette.com/news/infrastructure/single-view/view/afghanistan-and-turkmenistan-open-lapis-lazuli-railway.html>

⁴⁰ Haidari, M. Ashraf. “A Peaceful Afghanistan Key to Regional Connectivity in South and Central Asia” 26 January 2018. *The Diplomat*.

4.2. Bhutan

Table 3 Bhutan Logistics Summary

Income Group	Lower-Middle	UN-OHRLLS
Transit Country (ies)	India	UN-OHRLLS
Population (2012-13) millions	1	World Bank
Urban population (2012-13) %	37	World Bank
GDP Growth 2009-2013 (avg. annual %)	7.3	World Bank
Share of Top Five Products in Total Goods Exports (2012)	93.9%: Iron and steel (63.4%), Inorganic chemicals (13.5%), Copper and copper products (11.6%), wood (2.8%)	WITS, World Bank
Share of Top Five Export partners (2016)	India (93.7%), Bangladesh (4.1%) Italy (0.4%), Japan (0.4%), Nepal (0.4%)	WITS, World Bank ⁴¹
Share of Top Five Import Partners (2016)	India (78.8%), Republic of Korea (3.12%), P.R. China (2.5%), Japan (2.4%), Austria (1.8%)	WITS, World Bank ⁴²
Logistics Performance (2012 to 2014 to 2016)	Score: 2.52 → 2.29 → 2.32 Rank: 107 → 143 → 135	World Bank ⁴³
Cost to export/import containers (2012 → 2014) (US\$)	Export: 2,230 → 2,230 Import: 2,505 → 2,330	World Bank ^{44,45}
Time to export/import containers (2012 → 2014)(days)	Export: 41 → 40 Import: 37 → 37	World Bank ^{46,47}

4.2.1. Overview

58. Bhutan has traditionally been a pastoral society with smaller urban population, more focused on regional transportation than with urban transportation. However, with economic development and influence of foreign culture, urban areas are also starting to grow. The Transport 2040 Integrated Strategic Vision acknowledges this change, identifying the need for municipalities to coordinate and provide urban services that are accessible, while also supporting economic development. As a result, public transportation is being explored in Bhutan in hopes of maintaining low energy consumption and low emissions, particularly in Thimphu, both from the perspective of Bus Rapid Transit (BRT), but also from the perspective of possibly installing Light Rail Transit (LRT).⁴⁸

<https://thediplomat.com/2018/01/a-peaceful-afghanistan-key-to-regional-connectivity-in-south-and-central-asia/>

⁴¹ <https://wits.worldbank.org/countrysnapshot/en/BTN>

⁴² <https://wits.worldbank.org/countrysnapshot/en/BTN>

⁴³ https://lpi.worldbank.org/sites/default/files/International_LPI_from_2007_to_2018.xlsx

⁴⁴ <https://data.worldbank.org/indicator/IC.EXP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁴⁵ <https://data.worldbank.org/indicator/IC.IMP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁴⁶ <https://data.worldbank.org/indicator/IC.EXP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁴⁷ <https://data.worldbank.org/indicator/IC.IMP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁴⁸ <http://www.uncrd.or.jp/content/documents/4943Background%20paper%20for%20EST%20Plenary%20Session%205.pdf>

4.2.2. Freight Movement

59. The same study encouraged exploration of the Roll-on Roll-off concept of rail linking to India which allows trucks to drive directly onto rail cars, taking them at speeds between 75 and 100 km/hour to or beyond the border, rather than the 20km/h experienced on the road linkages to India. According to the report, it is expected that increased trade between India and Bhutan as Bhutan develops will bring dramatically increased traffic to highways in the region. The Thimphu-Phuentsholing link may handle 2,000 vehicles per day by 2020, and up to 7,500 by 2040. A rail link would help increase speeds, reduce road traffic, reduce air pollution, and reduce costs, while maintain safety for drivers and increasing the utilization of their trucks through higher speeds, and improving their profitability.
60. In the meantime, Bhutan and India are expanding the number and operational times of land border crossings. Media reports indicate that border crossings at Loksan and Nagrakata are being upgraded to become permanent rather than seasonal, and permanent crossings will be established at Birpara, Rangapani, Upper Khogla and other locations following an agreement of the two countries to open up 16 new trade routes.⁴⁹
61. The country is also experimenting with dry ports. By mid-2019, the Phuentsholing mini dry port (4.5 acres in size, which can house 45 trucks), will provide customs clearing thus saving significant time at borders. The project, 80% funded by the Asian Development Bank (ADB) as part of the South Asia Sub-regional Economic Cooperation (SASEC) Road Connectivity Project, includes a diversion to ensure that truck traffic avoids urban areas.⁵⁰

4.2.3. Vehicle Technology

62. Bhutan has identified that hydroelectricity is an important resource to develop, not only to power homes and industries in the country, or to export, but also in order to power the transport sector. In 2015, Bhutan banned the import of second-hand vehicles, but also implemented a zero-tax policy for the import of electric vehicles. Electrification of the transport system would bring multiple benefits, primarily the reduction of the need to import refined fuels (which create a large account deficit for the country), reduce emissions of greenhouse gasses from the combustion of fossil fuels, and reduce air pollution that is emitted from internal combustion engines.⁵¹ The country hopes to provide electric vehicles at an affordable price, as well as making electric vehicle assembly a local industry that could create employment opportunities. The National Action Plan for Zero Emissions aims to make Thimphu a “clean electric city”, significantly reducing fossil fuel imports by 2020, enhancing the market share of EVs, and exploring the possibility of local vehicle conversion and assembly. Government fleets, public transport fleets and tourist vans could be the first targets for the utilization of electric vehicles in the country.

⁴⁹ <https://economictimes.indiatimes.com/news/economy/foreign-trade/indo-bhutan-trade-infrastructure-to-have-large-scale-upgradation/articleshow/61053997.cms>

⁵⁰ <http://www.businessbhutan.bt/businessbhutan/mini-dry-port-works-on-schedule/>

⁵¹ http://www.uncrd.or.jp/content/documents/22548EST-P2_Bhutan.pdf

4.2.4. Telecommunications

63. Telecommunications are now a focus of the Bhutanese government. Fibre optic cable and 3G mobile data technologies are being installed, with more than 85% mobile coverage across the country, allowing residents to avoid trips to obtain or provide some services. However, there is limited high capacity network available to outside the country, thus increasing prices both for fixed line and 3G/4G mobile internet users.

4.3. Lao People's Democratic Republic

Income Group	Lower-Middle	UN-OHRLLS
Transit Country (ies)	Thailand, Viet Nam	UN-OHRLLS
Population (2012-13) millions	7	World Bank
Urban population (2012-13) %	39	World Bank
GDP Growth 2009-2013 (avg. annual %)	8.1	World Bank
Share of Top Five Products in Total Goods Exports (2012)	76.6%: Refiner copper (21.3%), Wood products (18.8%), Mineral fuels (16.1%), Ores (15.8%), Art of apparel and clothing accessories (4.5%)	WITS, World Bank
Share of Top Five Export partners (2016)	China (40.1), Thailand (29.4%), Viet Nam (16.1%), India (2.8%), Japan (1.8%)	WITS, World Bank ⁵²
Share of Top Five Import Partners (2016)	Thailand (61.2%), China (18.9%), Viet Nam (10.4%), Japan (2.1%), Republic of Korea (1.7%)	WITS, World Bank ⁵³
Logistics Performance (2012 to 2014 to 2016)	Score: 2.50 → 2.39 → 2.07 Rank: 109 → 131 → 152	World Bank ⁵⁴
Cost to export/import containers (2012 → 2014) (US\$)	Export: 2,140 → 1,950 Import: 2,125 → 1,910	World Bank ^{55,56}
Time to export/import containers (2012 → 2014) (days)	Export: 25 → 23 Import: 26 → 26	World Bank ^{57,58}

4.3.1. Overview

64. The Lao PDR is in a unique position in the mountainous interior of Southeast Asia, sharing borders with Myanmar, Cambodia, P.R. China, Thailand and Viet Nam. Traditionally, the rugged geography of the country made overland travel difficult, and the Mekong River, which makes up the country's western boundary with Thailand, has been an important means of moving people and goods along the country's border. However, with significant foreign investment, this situation will change dramatically in the coming years, with the hopes of making Lao PDR not landlocked, but land-linked.

⁵² <https://wits.worldbank.org/countrysnapshot/en/LAO>

⁵³ <https://wits.worldbank.org/countrysnapshot/en/LAO>

⁵⁴ https://lpi.worldbank.org/sites/default/files/International_LPI_from_2007_to_2018.xlsx

⁵⁵ <https://data.worldbank.org/indicator/IC.EXP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁵⁶ <https://data.worldbank.org/indicator/IC.IMP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁵⁷ <https://data.worldbank.org/indicator/IC.EXP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁵⁸ <https://data.worldbank.org/indicator/IC.IMP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

4.3.2. International Connectivity by Rail

65. Until recently, the main rail connection in Lao PDR was a 3.5 km extension of the State Railway of Thailand to Thenaleng Railway Station near the capital, Vientiane. A plan has been approved in early 2018 to extend this railway to Vientiane, and in the meantime convert the Thenaleng Railway Station to a freight terminal to allow for more efficient movement of goods to and from Lao PDR.⁵⁹
66. The rail link to Thailand is only the beginning of a grand plan – part of the Pan-Asia Railway Network – to make Lao PDR a rail hub for all of Southeast Asia, connecting P.R. China, Cambodia, Viet Nam and Thailand together for efficient rail transportation. Rail links planned include: The Vientiane-Thakhaek-Mu Gia-Vung Ang sea port (Viet Nam) railway; the Laos-China Railway; the Savannakhet-Lao Bao railway to the port of Dongha (Viet Nam); the Thakhaek-Savannakhet-Pakxe-Vangtao Railway; and the Pakxe-Veunkham Railway to the border with Cambodia.⁶⁰
67. While other links are still in feasibility or early stages, the China-Laos railway project was said to be approximately 33% complete in July 2018.⁶¹ New railway connectivity by high-speed train is being provided through a USD 6 billion project called the China-Laos railway project, bringing connectivity from Kunming, P.R. China to the Boten-Mohan border between Lao PDR and P.R. China, then south toward Vientiane through the provinces of Luang Namtha, Oudomxay, and Luang Prabang. It is expected that this rail link, 59% of which will run through tunnels or over elevated rail,⁶² will provide new opportunities to conduct trade throughout the country and internationally, to bring tourists to various locations across Lao PDR, and to allow Laotian people access to services such as medical service and education both in Lao PDR and abroad. At the Southern border, the railway is expected to achieve an efficient connection to the State Railway of Thailand, which will eventually connect to countries further south. When completed in late 2021, passenger trains will run at 160 km/h in mountainous areas and up to 200 km/h on flat lands, while freight trains will run at 120 km/h⁶³ on the electrified, standard-gauge, mixed-traffic rail line.⁶⁴ While this rail line brings exciting possibilities to Lao PDR, it is also very expensive, and Lao PDR will need to make well through-out policy to take advantage of the railway to increase its economic output and provide social benefit while managing the debt burden of the project.

⁵⁹ <https://laotiantimes.com/2018/01/20/lao-thai-railway-begin-phase-ii/>

⁶⁰ http://www.xinhuanet.com/english/2017-11/30/c_136791307.htm

⁶¹ <https://www.bangkokpost.com/news/special-reports/1507722/the-great-rail-dilemma>

⁶² <https://www.bangkokpost.com/news/special-reports/1507722/the-great-rail-dilemma>

⁶³ <https://laotiantimes.com/2018/02/28/updates-from-the-laos-china-railway-project/>

⁶⁴ <https://laotiantimes.com/2018/01/09/laos-china-railway-project-16-complete/>



Figure 2 Kunming - Singapore Rail Plan. Used under License.⁶⁵

4.3.3. Urban Motion

68. Not only is Laos PDR investing in its international connectivity. The capital city, Vientiane, has taken on grants and loans of nearly USD 78 million, coordinated by the Asian Development Bank⁶⁶, to implement a Vientiane Sustainable Urban Transport project, which will see the installation of an 84 km Bus Rapid Transit (BRT) system including an 11.5km dedicated bus lane in the central urban area, as well as improved parking management and enforcement and traffic management systems, to be completed by 2021.⁶⁷ The plan is meant to help Vientiane avoid the negative impacts of increased motorization such as traffic congestion, unsafe and illegal parking, air pollution, and increased fuel consumption.

4.3.4. Movement of Information

69. The introduction of broadband internet has been limited in Lao PDR, but is quickly growing. As of 2018, 21.9% of individuals used the internet regularly, and the country had a growing rate of broadband connections at 36.7 wireless connections per 100 individuals and 0.36 wired connections per 100 individuals.⁶⁸ The cost of broadband internet in Lao PDR ranks second highest in Asia, representing up to 27% of household income in 2015.⁶⁹ In fact, in 2015, it was reported that only 1,000 websites existed in Laotian language, and many IT systems did not have Laotian language capabilities. The low population density and topological complexity of rural areas in the country are two reasons cited for the low rate of internet roll-out. However, in November of 2015, a telecommunications satellite 45% owned by Lao PDR was launched with the intention of bringing internet services to remote areas of the country.

⁶⁵ By Classical Geographer [CC BY-SA 3.0 (<https://creativecommons.org/licenses/by-sa/3.0/>)], from Wikimedia Commons. <https://commons.wikimedia.org/wiki/File:Kunming-Singapore.png>

⁶⁶ <https://www.adb.org/projects/45041-002/main#project-pds>

⁶⁷ http://www.xinhuanet.com/english/2017-01/10/c_135971172.htm

⁶⁸ United Nations Department of Economic and Social Affairs. 2018. "United Nations E-Government Survey 2018: Gearing E-government to Support Transformation Towards Sustainable and Resilient Societies". <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2018>

⁶⁹ http://www.cicc.or.jp/japanese/kouenkai/pdf_ppt/pastfile/h27/151013-4la.pdf

4.4. Mongolia

Income Group	Lower-Middle	UN-OHRLLS
Transit Country (ies)	P.R. China, Russian Federation	UN-OHRLLS
Population (2012-13) millions	3.07	World Bank
Urban population (2012-13) %	70	World Bank
GDP Growth 2009-2013 (avg. annual %)	9.3	World Bank
Share of Top Five Products in Total Goods Exports (2012)	92.9%: Mineral fuels (48.5%), Ores (38.4%), Natural/cultured pearls, precious stones (3.7%), Wool/other (3.1%), Salt, sulphur (2.2%)	WITS, World Bank
Share of Top Five Export partners (2016)	P.R. China (79.0%), United Kingdom (16.0%), Russian Federation (1.1%), Germany (0.9%), Italy (0.7%)	WITS, World Bank ⁷⁰
Share of Top Five Import Partners (2016)	P.R. China (33.2%), Russian Federation (25.8%), Japan (9.9%) Republic of Korea (5.9%) United States (4.2%)	WITS, World Bank ⁷¹
Logistics Performance (2012 to 2014 to 2016)	Score: 2.25 → 2.36 → 2.51 Rank: 140 → 135 → 108	World Bank ⁷²
Cost to export/import containers (2012 → 2014) (US\$)	Export: 2,555 → 2,745 Import: 2,710 → 2,950	World Bank ^{73,74}
Time to export/import containers (2012 → 2014) (days)	Export: 45 → 45 Import: 45 → 45	World Bank ^{75,76}

4.4.1. Overview

70. Mongolia is situated between the Russian Federation and P.R. China, made up of over 1.56 million km² of semidesert and desert plains, grassy steppe, and mountains in the west and southwest. The country shares a 4,630 km border with P.R. China, and 3,452 km border with the Russian Federation. With a population of 3.07 million people, and 70% of that population concentrated in the capital city of Ulaanbaatar, it is one of the least densely populated countries in the world. The country's industry is dominated by natural resources, requiring primarily land transport for bringing resources to market. Furthermore, as the country between P.R. China and the Russian Federation, Mongolia plays an important transit role as freight makes its way between P.R. China and Europe overland.

4.4.2. Accessing global markets

71. While Mongolia's primary trading partner is P.R. China, it is possible that in the future, the country will have access to larger markets through a China-Mongolia-Russia Economic Corridor (CMREC) that is currently under construction. The corridor is meant to ensure the facilitated movement of freight through the regions by rail and road according to a transit policy regime. According to media reports, the Mongolian cities of Manzhouli and Erenhot have been identified as railway hubs along the CMREC, and have in fact seen increases of up

⁷⁰ <https://wits.worldbank.org/countrysnapshot/en/MNG>

⁷¹ <https://wits.worldbank.org/countrysnapshot/en/MNG>

⁷² https://lpi.worldbank.org/sites/default/files/International_LPI_from_2007_to_2018.xlsx

⁷³ <https://data.worldbank.org/indicator/IC.EXP.COST.CD?locations=BT-AF-NP-CF-MN-LA>

⁷⁴ <https://data.worldbank.org/indicator/IC.IMP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁷⁵ <https://data.worldbank.org/indicator/IC.EXP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁷⁶ <https://data.worldbank.org/indicator/IC.IMP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

to 30% more rail traffic in 2017 compared to 2016. Mongolia also has access to Russian ports, including Vladivostok, Nahodka, Vanino and Vostochny on the Sea of Japan; St. Petersburg on the Baltic Sea; and Novorossiysk on the Black Sea.

72. Rail corridors are forming from sea ports in P.R. China towards Erenhot and Manzhouli as gateways into Mongolia. A railway freight service from Tianjin to Ulaanbaatar has been in operation since 1989.⁷⁷ But as transcontinental railways are more utilized, a greater number of freight corridors are opening up through collaboration on customs and trade facilitation. In April of 2018, the first shipment was made along the Republic of Korea-P.R. China-Mongolia shipment corridor, with containerized freight being brought from Incheon to Qinhuangdao in P.R. China by ship, and loaded on a train to be transferred to Erenhot and ultimately Ulaanbaatar.⁷⁸ P.R. China and Mongolia have an active dialogue on border cooperation, particularly on the topic of “3M”: Mutual exchange of information, mutual recognition of customs control and mutual assistance of enforcement along the “China-Mongolia-Russia” Economic Corridor.⁷⁹ New lines of secure containerized rail freight continue to be opened up. On August 9, 2018 the first instance of bonded containerized freight left the Nansha Guangzhou Bonded Port Area in southern China by truck towards the Dalang Railway station, where the containers were loaded on a train destined for Manzhouli in Mongolia, and later on to Russia.⁸⁰ The seamless customs regime demonstrates the trusted customs relationships between the three countries as well as the improved connectivity offered to Mongolia as a landlocked country. The rail trip from Guangzhou to Moscow only takes 15 days, significantly faster than ocean-going vessels.
73. In summary, while Mongolia has for decades enjoyed rail links to its trading partners, efficiency of logistics has been low due to administrative and infrastructure challenges in the transit countries. Through improved customs regime and improved efficiency at ports, transportation of goods from the global market to Mongolia is becoming faster and less expensive. A significant remaining challenge is that a large portion of costs to importing to Mongolia is the return of empty containers – something that can only be solved through improved exports of goods.

⁷⁷ http://unctad.org/sections/wcmu/docs/c3em26p29_en.pdf

⁷⁸ <http://english.customs.gov.cn/Statics/e868b2c3-f994-4e31-93d6-e8af1e044750.html>

⁷⁹ <http://english.customs.gov.cn/Statics/2f69652c-166f-4e7b-a8d0-647b453735ca.html>

⁸⁰ <http://english.customs.gov.cn/statics/5924b8a4-5ba0-4270-a052-8027f8a676e6.html>

4.5. Nepal

Income Group	Low	UN-OHRLLS
Transit Country (ies)	India	UN-OHRLLS
Population (2012-13) millions	28	World Bank
Urban population (2012-13) %	17	World Bank
GDP Growth 2009-2013 (avg. annual %)	4.3	World Bank
Share of Top Five Products in Total Goods Exports (2012)	74.8%: Carpets and other textile floor (15.4%), Art of apparel and clothing accessories (8.1%), Plastics (6.9%), Wool/other (3.1%), Salt/sulphur (2.2%)	WITS, World Bank
Share of Top Five Export partners (2016)	India (63.5%), United States (10.7%), Germany (4.1%), United Kingdom (3.1%), Turkey (1.9%)	WITS, World Bank ⁸¹
Share of Top Five Import Partners (2016)	India (60.6%), P.R. China (13.9%), United Arab Emirates (4.0%), Indonesia (1.8%), Switzerland (1.7%)	WITS, World Bank ⁸²
Logistics Performance (2012 to 2014 to 2016)	Score: 2.04 → 2.59 → 2.38 Rank: 151 → 105 → 124	World Bank ⁸³
Cost to export/import containers (2012 → 2014) (US\$)	Export: 1,975 → 2,545 Import: 2,095 → 2,650	World Bank ^{84,85}
Time to export/import containers (2012 → 2014) (days)	Export: 41 → 40 Import: 38 → 39	World Bank ^{86,87}

4.5.1. Overview

74. Nepal is a mountainous landlocked country sharing borders with only two countries, India and P.R. China. Although the country shares over 1,000 km border with P.R. China, the border is along the Himalayan mountains which rise up towards the Tibetan plain, which have acted as a natural barrier between the countries for all but the hardiest of travelers until recently. As a result, Nepal's primary trading partner is India, with which the country shares a long border with numerous border crossings. Even with these crossings, however, trade and connectivity between Nepal and India have not always been smooth. With Kathmandu, the main commercial area of Nepal, built in the Kathmandu Valley, road traffic must travel long distances to cross mountain passes allowing goods to travel smoothly to the Birgunj, the primary dry rail port that facilitates the majority of Nepal's international trade both with India, as well as to Kolkata Port in India which handles nearly all of Nepal's seaborne trade.⁸⁸ Nepal's two other busiest land crossings are located at Bhairahawa and Biratnagar, each which provide facilities for container storage, power for refrigerated containers, truck parking and clearance activities.⁸⁹

⁸¹ <https://wits.worldbank.org/countrysnapshot/en/NPL>

⁸² <https://wits.worldbank.org/countrysnapshot/en/NPL>

⁸³ https://lpi.worldbank.org/sites/default/files/International_LPI_from_2007_to_2018.xlsx

⁸⁴ <https://data.worldbank.org/indicator/IC.EXP.COST.CD?locations=BT-AF-NP-CF-MN-LA>

⁸⁵ <https://data.worldbank.org/indicator/IC.IMP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁸⁶ <https://data.worldbank.org/indicator/IC.EXP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁸⁷ <https://data.worldbank.org/indicator/IC.IMP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

⁸⁸ <https://dlca.logcluster.org/pages/releaseview.action?pageId=10133169>

⁸⁹ <https://dlca.logcluster.org/display/public/DLCA/2.1.6+Nepal+Biratnagar+Dry+Port>

4.5.2. Better Use of Existing Infrastructure

75. With 80% of Nepal's containerized imported goods coming from Kolkata Port, ensuring and improving infrastructure and technology has been key. One of the primary means of ensuring smooth transfer of freight from Kolkata Port has been the use of a rail connection which first brings freight from Kolkata to Raxaul, and then from Raxaul across the India-Nepal border into Birgunj where freight is cleared at the inland port. Other technologies have been put in place to help facilitate this process. In 2016, Nepal implemented a customs web portal to ensure that all relevant customs laws and regulations can be found with ease online.⁹⁰ In 2017, India and Nepal signed a memorandum of intent to pilot an electronic tracking system to ease transit of cargo by road and rail from Kolkata to four major customs points in Nepal: Birgunj via Raxaul, Sirsiya inland container depot via Raxaul, Biratnagar via Jogbani, and Bhairahawa via Sunauli. This system should reduce piracy along the rail route and allow for faster or even borderless clearance of goods in the future.⁹¹ The aim of this initiative is to ensure that freight is not stopped at the Nepal-India border for clearance, thus allowing for less border congestion and as a result, lower processing fees for goods. With less border congestion, it is possible that merchants may keep less inventory in-transit as supply chains could become more predictable. By implementing these technologies for reliability, Nepal may have an opportunity to reduce fuel consumption as well as to reduce waste in the supply chain.

⁹⁰ <http://www.nepaltradeportal.gov.np/index.php?r=site/index>

⁹¹ <http://kathmandupost.ekantipur.com/news/2018-07-26/nepal-jumps-up-10-spots-in-logistic-performance-index.html>

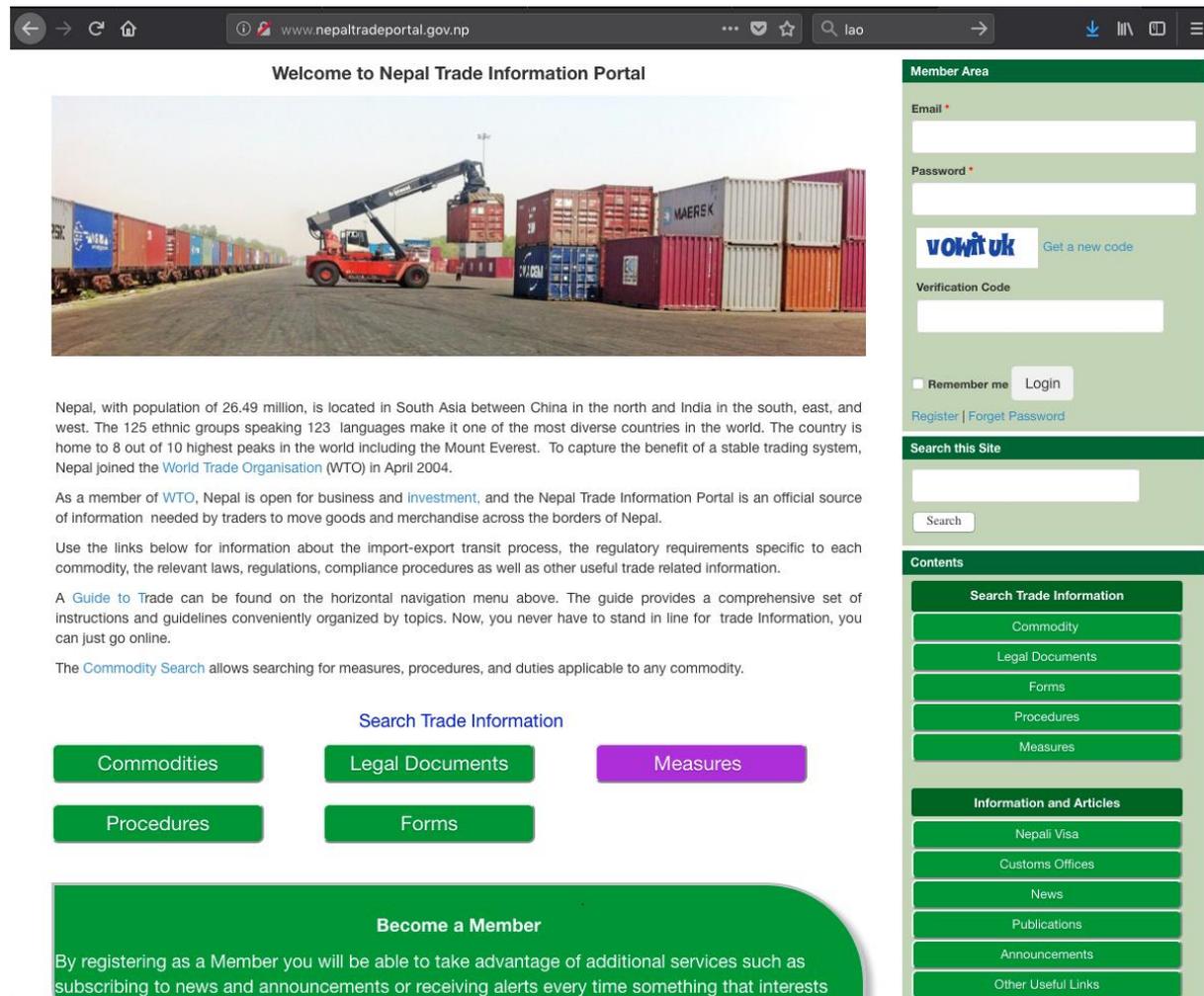


Figure 3 Screen Capture of the Nepal Trade Information Portal website, found at www.nepaltradeportal.gov.np

4.5.3. New Connectivity

76. In 2012, Nepal and P.R. China made a plan to open new ports of entry along the P.R. China-Nepal border, making a total of three ports for international trade, and three ports for bilateral trade, in theory opening up a new transit route for Nepal's imported and exported goods,⁹² and a transit agreement was made in 2016.⁹³ This plan expanded in at least three ways: First, a new fibre optic internet cable has been installed between Kerung in P.R. China and Rasuwagadi in Nepal. The fibre optic cable, which came online in January 2018, has eliminated the monopoly that Indian telecommunication companies have held over Nepal, with the hope that increased competition will bring lower prices and more reliable service – and eventually reducing the need for transportation services as more services can be offered by internet, and e-commerce can expand in Nepal.⁹⁴ Second, rail infrastructure and dry ports are being constructed with the eventual aim of connecting Lhasa and Kathmandu. Thus far, the railway has been extended from Lhasa to Xigatse, able to bring containerized freight closer to the Nepal border, and plans are in place to extend the railway further to Kerung, across

⁹² <http://np.chineseembassy.org/chn/zngxs/zywj/t1059642.htm>

⁹³ <http://kathmandupost.ekantipur.com/news/2017-07-03/nepal-to-seek-access-to-two-land-three-sea-ports-in-china.html>

⁹⁴ <https://www.reuters.com/article/us-nepal-china-internet/with-new-chinese-link-nepal-ends-indias-internet-monopoly-idUSKBN1F11JP>

from the Nepali locality of Rasuwa Gadi.⁹⁵ While it is believed that a very efficient and robust trading infrastructure – on both sides of the border, including both roads and rail – will be needed to make the connection economical, each side seems to be in preparation for this linkage, and the ability to further connect Nepal’s economy to the world.⁹⁶ In the meantime, work is underway to refurbish and build new broad gauge rail lines from India to Nepal, also with the aim of reducing truck traffic at borders and making freight transit more efficient – and making transport services open to passengers.^{97,98}

77. Finally, the P.R. China linkage is building up energy-related infrastructure. While hydroelectric infrastructure has been controversial in recent years, agreements have been made between P.R. China and Nepal to jointly explore the construction of electric power transmission lines for electricity produced at Nepal’s hydroelectric power stations to be exported to China where economical. It is hoped that these transmission lines will allow Nepal to more affordably construct its hydroelectric power stations, thus producing power for itself as well as its neighbours.⁹⁹
78. Although Nepal has many exciting new projects and agreements underway to increase its international and railway connectivity, the country still faces many domestic challenges. Nepal’s road network is primarily unpaved, and mountainous areas have roads that are narrow and treacherous – especially in seismically active areas where landslides can occur at any time. Even for main roads, freight travels at around 25km/h due to unexpected obstacles, improper use of the road, vehicle break-downs and other delays.¹⁰⁰ If Nepal is able to achieve its plans for multimodal, rail-heavy freight traffic, its roads will be left more open for passenger transport, and higher speeds without necessarily having to invest in further road infrastructure.

4.6. EST observer country – Central African Republic

Income Group	Low	UN-OHRLLS
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⁹⁵ <https://gloalkhabar.com/featured/coming-soon-the-tibet-train/>

⁹⁶ <https://thehimalayantimes.com/business/nepal-china-meeting-scheduled-for-july-end/>

⁹⁷ <https://www.hindustantimes.com/india-news/india-to-resume-services-on-rail-link-with-nepal-after-successful-trial/story-5dtfk4y10Lno21AEDRxmsM.html>

⁹⁸ <https://economictimes.indiatimes.com/industry/transportation/railways/first-nepal-india-broad-gauge-railway-likely-in-december/articleshow/64942625.cms>

⁹⁹ <https://mofa.gov.np/joint-statement-between-nepal-and-the-peoples-republic-of-china/>

¹⁰⁰ <https://dlca.logcluster.org/display/public/DLCA/2.3+Nepal+Road+Network>

Transit Country (ies)	Cameroon	UN-OHRLLS
Population (2012-13) millions	5	World Bank
Urban population (2012-13) %	39	World Bank
GDP Growth 2009-2013 (avg. annual %)	7.3	World Bank
Share of Top Five Products in Total Goods Exports (2012)	93.8%: Wood products (39.8%), Natural/cultured pearls, precious stones (34.5%), Cotton (14%), Aluminum and articles thereof (34.8%)	WITS, World Bank
Share of Top Five Export partners (2012)	France (63.6%), Chad (11.5%), Cameroon (8.8%), China (6.6%), Germany (3.6%)	WITS, World Bank ¹⁰¹
Share of Top Five Import Partners (2012)	France (21.1%), United States (12.2%), Zambia (9.6%), Arab Republic of Egypt (8.4%), China (6.6%)	WITS, World Bank ¹⁰²
Logistics Performance (2012 to 2014)	Score: 2.57 → 2.36 Rank: 98 → 134	World Bank ¹⁰³
Cost to export/import containers (2012 → 2014) (US\$)	Export: 5,491 → 5,490 Import: 5,734 → 6,335	World Bank ^{104,105}
Time to export/import containers (2012 → 2014) (days)	Export: 54 → 46 Import: 62 → 68	World Bank ^{106,107}

4.6.1. Overview

79. The Central African Republic (CAR) is, as its name suggests, located near the geographic centre of Africa. Having become independent from France in 1960, the country has faced political change and conflicts that have in the past hampered efforts to improve infrastructure for transportation and economic development. Today, CAR is a member of the Economic and Monetary Community of Central Africa (CEMAC), which facilitates high-level meetings between countries in the region to discuss and act upon common issues including trans-boundary trade and transit. Subsistence agriculture, together with forestry and mining make up the main components the CAR economy, with timber, diamonds and cotton making up the majority of exports.

4.6.2. Transportation Infrastructure and Conflict

80. Waterway transport along the Ubangi River, which joins the River Congo, was the preferred and traditional mode of transportation for export, through the river port at Bangui, the capital of the country. The waterway route would connect to the Congo-Ocean Railway at Brazzaville, bypassing the rapids of the lower Congo en route to the port at Point-Noire. However, due to conflict on both sides of the river since 1997, it is no longer possible to take this route.

¹⁰¹ <https://wits.worldbank.org/countrysnapshot/en/CAF>

¹⁰² <https://wits.worldbank.org/countrysnapshot/en/CAF>

¹⁰³ https://lpi.worldbank.org/sites/default/files/International_LPI_from_2007_to_2018.xlsx

¹⁰⁴ <https://data.worldbank.org/indicator/IC.EXP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

¹⁰⁵ <https://data.worldbank.org/indicator/IC.IMP.COST.CD?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

¹⁰⁶ <https://data.worldbank.org/indicator/IC.EXP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

¹⁰⁷ <https://data.worldbank.org/indicator/IC.IMP.DURS?end=2014&locations=BT-AF-NP-CF-MN-LA&start=2012>

4.6.3. Regional Transportation Integration Efforts

81. Although CAR and its neighbours have faced times of conflict and crisis over the recent decades, efforts have been made to shore up the ability of trade to occur, and most recently, to use an integrated regional approach to attempt to solidify a period of relative peace. In 2007, the World Bank approved a project to the Central African Republic, Cameroon and Chad to improve trade routes between the countries and address the landlocked isolation of CAR and Chad. The project involved \$65 million for rehabilitation of a roadway on the 157km-long stretch between Boaro and Bouar on the Douala-Bangui corridor, which is now the main route for cargo transit from CAR.¹⁰⁸ The project also included specific attention and funds to be spent on the Customs and Transport administrations of the three countries as part of the development of the CEMAC transit regime. Unfortunately due to economic and stability concerns, some of the work of the project was unable to be completed in a timely manner.
82. Today, CAR for the first time in its history has a democratically elected president and parliament, and relative peace and stability. The World Bank has continued with the three-country financing to upgrade the transport corridor, and has even taken the unprecedented step of engaging the Cameroonian Army Corps of Engineers to undertake road construction in the northern area of the country where satisfactory contractors could not be found.¹⁰⁹ In the CAR, where mass displacement of people has occurred due to conflict and crisis, the World Bank has approved USD250 million program through its International Development Association to focus on public finance management, reintegration of former combatants and displaced population, as well as job creation through a large road reopening and agriculture program.¹¹⁰ The IDA program includes support to the agricultural, mining and forestry sectors to regenerate major basins of production and jobs. Yet the country faces many security issues, disrupting many of the efforts being made to better prepare CAR to contribute to and benefit from the global economy.

¹⁰⁸ <http://documents.worldbank.org/curated/en/945521530285147714/pdf/Disclosable-Restructuring-Paper-CEMAC-Transport-Transit-Facilitation-P079736.pdf>

¹⁰⁹ <http://documents.worldbank.org/curated/en/638951508929961018/pdf/IL-FRESDATA-EXT-P079736-10-25-2017-1508929946117.pdf>

¹¹⁰ <http://www.worldbank.org/en/news/feature/2016/10/24/the-central-african-republic-breaking-the-cycle-of-fragility-and-conflict>

5. Conclusions and Recommendations

83. While each landlocked country faces challenges related to its unique geography, historical, political and economic conditions, together, they face the common issue of how to connect to the global economy and improve the conditions of their societies and achieve the SDGs. The primary challenge that these countries need to solve, both individually and collectively, is that they need to rely on neighbouring countries to connect them to global markets, or they need to rely on expensive air travel to facilitate the transport of people and goods.
84. Specific international agreements as well as the SDGs have made clear that connecting landlocked countries to global markets should be a priority of all countries globally for the achievement of equitable and sustainable development. However, practical and other challenges have persisted. High costs of shipment of goods, unclear or uncertain transportation policy, technology or infrastructure in transit countries, and having small populations that might not justify heavy infrastructure installation on their own merits are all barriers to change. Yet this paper and case studies have demonstrated that it is possible to improve conditions and facilitate better trade and transportation through good relationships, communication and trust-building with transit countries, as well as through participation in international agreements and initiatives.
85. When analysing the shortest overland distance between large global markets, landlocked countries often cover the shortest overland distance. The shortest overland trip between P.R. China and Russian Federation is through Mongolia; the shortest trip from P.R. China to Thailand is through Lao PDR. While in years past, these advantages could not be realized due to a lack of infrastructure, now, international agreements, improvements in rail technologies, and trends in geopolitics and global economics are making overland transportation more attractive for the large regional markets such as P.R. China, Federation of Russia and Europe. Agreements that were made in earlier decades such as the Trans-Asian Railway Network Agreement (signed 10 November 2006) and the Intergovernmental Agreement on the Asian Highway Network (IGA – adopted 18 November 2003) facilitated by UNESCAP, and have been adapted by countries – such as the P.R. China – into new continental trade networks such as the Belt and Road Initiative (BRI), giving Asian landlocked countries opportunities to be transport hubs rather than transport backwaters, or to no longer be landlocked, but to be land-linked. Both landlocked countries and the trading countries transiting them with new infrastructure must learn to take advantage of this new scenario.
86. Becoming land-linked poses problems of its own for LLDCs. Often they become responsible for heavy debt loads as they develop the infrastructure for other countries to transport their goods on. LLDC must prepare – and be assisted – to take advantage of the infrastructure running through their countries to improve their economic activities. Not only could roads and railway bring tourism to their countries. LLDCs could become centres for low-cost break bulk or intermediate processing of goods along supply and value chains, thus becoming more economically integrated with their neighbours, and generating greater revenue and cash flow to service debts and eventually to improve national socio-economic conditions. Such a

strategy would also require careful integration of technical standards and customs regimes such as bilateral or multilateral paperless single-window systems in order to ensure that goods can be transported without delay across borders to their intermediate and final destinations for eventual customs clearance.

87. Becoming more integrated into supply and value chains will also require and provide opportunities for data linkages to other countries. LLDCs need better data networks, and data connections could be part of transport infrastructure programmes. Data is not just necessary to improve domestic access to global value chains, but in fact is necessary to properly facilitate paperless trade, single window systems and appropriate transit security systems for transit freight. Landlocked countries face some of the highest broadband prices in the world, and if fibre optic linkages with neighbouring countries can also be considered as part of transportation infrastructure, LLDCs could benefit immensely with better access to trade and marketing information, as well as better access to lower-cost data cloud and other modern data infrastructure thus facilitating better electronic access to government services, banking and other business and social services.
88. Finally, LLDCs need to consider domestic and urban transportation infrastructure at the same time as considering international infrastructure such as cross-border road and rail. Without effective, efficient and low-polluting domestic transportation for goods and people, it will be difficult for LLDCs to make use of cross-border infrastructure to participate in value chains. Bus Rapid Transit (BRT) systems to facilitate efficient urban passenger transportation can ensure that traffic is efficient in major cities in LLDCs at relatively low investment cost. Meanwhile, for goods, inland ports or customs clearing centres with appropriate extra-urban ring road access both to domestic freight transport and international freight transport can ensure the efficient movement of trucks and goods to and from LLDCs.
89. None of these recommendations can be made possible without clear and frequent communication and agreement with neighbouring countries of LLDCs. It is of clear importance that LLDCs require permanent communication channels to neighbouring countries with regards to trade facilitation including:
 - Dialogue on customs regime, with an aim to establishing trusting relationships, aiming for seamless border transit without the need for shipments to be stopped at the border in either direction;
 - Dialogue on infrastructure and technology design, standards, maintenance, pricing and finance to establish fair and socially beneficial schemes to construct, operate and maintain transportation, transit and trade infrastructure that equitably distributes the risks, costs and benefits to each party with a focus on the development needs to LLDCs.

6. The Way Forward

90. While for many decades, the plight of LLDCs in Asia and beyond was only regarded as a concern of the international community, several trends are converging to give LLDCs the opportunity to change their situations. First, high-level dialogue and programmes of action through the UN-OHRRLLS including the Almaty and Vienna Programmes of Action and other associated trade and accessibility dialogues have brought attention and international consensus to the risks, needs, and opportunities for LLDCs as well as the action that is required to facilitate their effective participation in the global economy. In the meanwhile, trans-continental road and rail initiatives facilitated by UN ESCAP have paved the way for specific Asia-wide and Asia to Europe overland trade linkages that would dramatically speed up the movement of goods compared to marine shipping, at only a fraction of the financial and environmental cost of air freight. With a new interest in rolling out international transportation networks by the P.R. China in the form of the New Silk Road and Belt and Road Initiatives, finance, expertise and construction services are now being provided to bring these agreements into reality.

91. Improving connectivity to and between Asia's LLDCs is an excellent means of helping landlocked countries to achieve SDG outcomes. Yet significant inputs, assistance and communication will be required to allow LLDCs to maximise the benefit they gain from connectivity. A key means of doing this will be to leverage relationships that are provided through the Regional EST Forum in Asia as well as through other regional organizations such as UNESCAP. The regional EST Forum in Asia is an important platform for Asian countries – including LLDCs in Asia – to communicate with each other according to a broad spectrum of sustainable transportation goals, to improve relationships and common understanding, to understand the transportation needs of members, as well as to learn from each other. As the Regional EST Forum in Asia moves to develop the successor to the Bangkok 2020 Sustainable Transport Goals, a focus on LLDCs in Asia could be developed to discuss and resolve issues such as:

- Integrated land use and transportation planning for LLDCs to maximize sustainable participation in global value chains along international transit and cross-boundary transportation corridors
- The use of ICT not only to reduce the need for transportation, but also to allow domestic industries to better address the needs of global trading partners that could be accessed by cross-boundary transportation corridors
- The use of efficient urban and regional public transportation, as well as non-motorized transportation to provide access to cross-boundary transportation corridors, as well as to service or employment hubs that can serve value chains that are brought to LLDCs via cross-border transportation

- The strategic reorientation of road freight towards high-speed, cross-border rail corridors by means of inland ports, remote customs clearance and bonded warehouse districts or zones
- Adoption of Intelligent Transport Systems as well as intelligent trade clearance systems such as paperless and remote customs clearance, remote track-and-trace systems for secure freight management, and single window systems for efficient border clearance
- Railway safety in LLDCs
- Innovative financing for transit infrastructure in LLDCs, and strategies for avoiding exposure to burdensome debt, for example, through the use of diversified financing sources, and through innovative financing schemes such as the use of land use development rights to attract private sector investment into railway infrastructure.
- Maintaining institutions and good governance around domestic and cross-boundary trade and transportation management: maintaining good communication with bordering countries in order to gain advance knowledge of policy and economic changes, exchange views and experiences in technologies and standards, and ensuring equitable distribution of risks and benefits of infrastructure development in LLDCs.

92. With newfound attraction to overland freight and passenger movement, LLDCs have an excellent opportunity to harness cross-border transit and transportation infrastructure to change their fortunes. Through dialogue, information sharing, and goal-setting, the members of the Regional EST Forum in Asia have opportunities to create dramatic win-win solutions for the reduction of poverty, and improvement of society and environment for all across the continent.

Annex 1: Transportation and the Sustainable Development Goals

Adapted from: UN-Habitat, UNEP and SLoCaT, 'Analysis of the transport relevance of each of the 17 SDGs', Briefing Note, 24 September 2015, [https://sustainabledevelopment.un.org/content/documents/8656Analysis of transport relevance of SDGs.pdf](https://sustainabledevelopment.un.org/content/documents/8656Analysis%20of%20transport%20relevance%20of%20SDGs.pdf)

Direct Transport Targets found in the Sustainable Transport Goals	
Goal	Target
3. Ensure healthy lives and promote well-being for all at all ages (Road Safety)	3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents
7. Ensure access to affordable, reliable, sustainable and modern energy for all (Energy efficiency)	7.3 By 2030, double the global rate of improvement in energy efficiency
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (Sustainable infrastructure)	9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
11. Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable (urban) transport for all)	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
12. Ensure sustainable consumption and production patterns (Fuel subsidies)	12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities

Indirect Transport Targets of the Sustainable Development Goals	
Goal	Target
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture (Agricultural productivity)	2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment
3. Ensure healthy lives and promote well-being for all at all ages (Air pollution)	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
6. Ensure availability and sustainable management of water and sanitation for all (Access to safe drinking water)	6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all
11. Make cities and human settlements inclusive, safe, resilient and sustainable (Sustainable cities)	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management
12. Ensure sustainable consumption and production patterns (Food loss and waste)	12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses

13. Take urgent action to combat climate change and its impacts (Climate Change Adaptation & Mitigation)	13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries 13.2 integrate climate change measures into national policies, strategies, and planning
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Annex 2 Bangkok Declaration for 2020 – Sustainable Transport Goals for 2010-2020

Bangkok Declaration for 2020

– Sustainable Transport Goals for 2010-2020

We, the participants, who are representatives of Asian countries (Afghanistan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, People's Republic of China, Indonesia, India, Japan, Republic of Korea, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, the Philippines, Pakistan, Singapore, Sri Lanka, Thailand, and Viet Nam), international organizations, bilateral and multilateral agencies, nongovernmental organizations (NGOs), research organizations, and expert sustainable transport professionals, having met at the Fifth Regional Environmentally Sustainable Transport (EST) Forum in Asia, held in Bangkok, Kingdom of Thailand, from 23 to 25 August 2010, to draft and adopt a declaration, the *Bangkok 2020 Declaration*, in order to demonstrate our renewed interest in, and commitment to, realizing a promising decade (2010-2020) of sustainable actions and measures for achieving safe, secure, quick, reliable, affordable, efficient and people-centric and environment friendly transport in rapidly urbanizing Asia,

Noting the identification of transport as a theme under Agenda 21 on sustainable development and the outcome of the high-level meeting of the 9th session of the Commission on Sustainable Development (CSD-9) in 2001 which reached important decisions on transport sector issues concluding that improving transport systems to promote sustainable development, including improving accessibility, can foster economic and social development, help integrate developing countries into the world economy, and contribute to the eradication of poverty,

Reaffirming and building upon the *Aichi Statement* agreed upon by the participants at the First Regional EST Forum, held in Nagoya, Aichi Prefecture, Japan, on 1-2 August 2005, and its integrated approach to promoting environmentally sustainable transport will result not only in the improvement of human health through the reduction of urban air pollution, but also the reduction of greenhouse gas (GHG) emissions, deaths and injuries from road accidents, harmful noise levels, and traffic congestion,

Reaffirming and building upon the *Seoul Statement*, agreed upon by the participants at the Fourth Regional EST Forum, held in Seoul, Republic of Korea, from 24 to 26 February 2009, that urged the need to address transport issues within the context of the broader environmental aims of Green Growth to encompass the transport-energy-carbon emission nexus, to develop strategies for low-carbon transport that include a shift to energy-efficient and low carbon modes to enhance energy security, and mitigate the effects of transport on climate as well as of climate change on transport services and other socioeconomic sectors,

Noting the findings of the in May 2010, that basic transport infrastructure and services are still lacking or inadequate in many developing countries (both in urban and rural areas), making it difficult for the poor, including women, youth, and children, to access basic services, including those related to health and education, and for workers to have access to jobs, and that in the case of rural areas lack of

adequate rural transport infrastructure perpetuates poverty, poses constraints on the marketing of agricultural produce and other income-generating opportunities, and thus hampers efforts to achieve the internationally agreed Millennium Development Goals (MDGs),

Noting that transport-related carbon dioxide emissions are projected by international bodies to increase approximately 57 per cent worldwide in the period 2005-2030, whereby the largest part of this increase would come from the increase in private motorized vehicles in Asia,

Noting the UN General Assembly Resolution (64/255) of 2 March 2010 on improving global road safety, proclaimed 2011-2020 as a decade of action for road safety, and **deeply concerned** that about half of all road traffic fatalities and injuries occur in the Asian and Pacific region, most of which are related to vulnerable road users such as pedestrians, children, and cyclists, due to streets that lack the necessary safety infrastructure such as exclusive pedestrian and bicycle lanes, safe street crossings, kerb ramps for the disabled, and lack of post-accident care,

Recognizing the specific mobility needs of low-income groups, as well as women, children, the elderly, and persons with disabilities which must be addressed to achieve socially-equitable communities and a better quality of life for all,

Acknowledging the importance of an EST strategy based upon the concept of Avoiding unnecessary motorised transport - Shifting to more sustainable transport modes and – Improving transport practices and technologies,

We, the participants of the Fifth Regional Environmentally Sustainable Transport (EST) Forum in Asia express our intent to voluntarily develop and realize integrated and sustainable transport policy options, programmes, and projects that will help realize the following EST goals and objectives by the year 2020 in the Asian region (EST 20):

I. Strategies to Avoid unnecessary travel and reduce trip distances

Goal 1: Formally integrate **land-use and transport planning** processes and related institutional arrangements at the local, regional, and national levels

Goal 2: Achieve **mixed-use development** and medium-to-high densities along key corridors within cities through appropriate land-use policies and provide people-oriented local access, and actively promote transit-oriented development (TOD) when introducing new public transport infrastructure

Goal 3: Institute policies, programmes, and projects supporting **Information and Communications Technologies** (ICT), such as internet access, teleconferencing, and telecommuting, as a means to reduce unneeded travel

II. Strategies to Shift towards more sustainable modes

Goal 4: Require **Non-Motorized Transport** (NMT) components in transport master plans in all major cities and prioritize transport infrastructure investments to NMT, including wide-scale improvements to

pedestrian and bicycle facilities, development of facilities for intermodal connectivity, and adoption of complete street design standards, wherever feasible

Goal 5: Improve **public transport** services including high quality and affordable services on dedicated infrastructure along major arterial corridors in the city and connect with feeder services into residential communities

Goal 6: Reduce the urban transport mode share of private motorized vehicles through **Transportation Demand Management (TDM)** measures, including pricing measures that integrate congestion, safety, and pollution costs, aimed at gradually reducing price distortions that directly or indirectly encourage driving, motorization, and sprawl

Goal 7: Achieve significant shifts to more sustainable modes of **inter-city passenger and goods transport**, including priority for high-quality long distance bus, inland water transport, high-speed rail over car and air passenger travel, and priority for train and barge freight over truck and air freight by building supporting infrastructure such as dry inland ports

III. Strategies to Improve transport practices and technologies

Goal 8: Diversify towards more sustainable **transport fuels and technologies**, including greater market penetration of options such as vehicles operating on electricity generated from renewable sources, hybrid technology, and natural gas

Goal 9: Set progressive, appropriate, and affordable **standards** for fuel quality, fuel efficiency, and tailpipe emissions for all vehicle types, including new and in-use vehicles

Goal 10: Establish effective vehicle testing and compliance regimes, including formal vehicle registration systems and appropriate periodic vehicle **inspection and maintenance (I/M)** requirements, with particular emphasis on commercial vehicles, to enforce progressive emission and safety standards, resulting in older polluting commercial vehicles being gradually phased-out from the vehicle fleet, as well as testing and compliance regimes for vessels

Goal 11: Adopt **Intelligent Transportation Systems (ITS)**, such as electronic fare and road user charging systems, transport control centres, and real-time user information, when applicable

Goal 12: Achieve improved **freight transport** efficiency, including road, rail, air, and water, through policies, programmes, and projects that modernize the freight vehicle technology, implement fleet control and management systems, and support better logistics and supply chain management

IV. Cross-cutting strategies

Goal 13: Adopt a zero-fatality policy with respect to road, rail, and waterway **safety** and implement appropriate speed control, traffic calming strategies, strict driver licensing, motor vehicle registration, insurance requirements, and better post-accident care oriented to significant reductions in accidents and injuries

Goal 14: Promote monitoring of the **health** impacts from transport emissions and noise, especially with regard to incidences of asthma, other pulmonary diseases, and heart disease in major cities, assess the economic impacts of air pollution and noise, and devise mitigation strategies, especially aiding sensitive populations near high traffic concentrations

Goal 15: Establish country-specific, progressive, health-based, cost-effective, and enforceable **air quality and noise** standards, also taking into account the WHO guidelines, and mandate monitoring and reporting in order to reduce the occurrence of days in which pollutant levels of particulate matter, nitrogen oxides, sulphur oxides, carbon monoxide, and ground-level ozone exceed the national standards or zones where noise levels exceed the national standards, especially with regard to environments near high traffic concentrations

Goal 16: Implement sustainable low-carbon transport initiatives to mitigate the causes of **global climate change** and to fortify national **energy security**, and to report the inventory of all greenhouse gases emitted from the transport sector in the National Communication to the UNFCCC

Goal 17: Adopt **social equity** as a planning and design criteria in the development and implementation of transport initiatives, leading to improved quality, safety and security for all and especially for women, universal accessibility of streets and public transport systems for persons with disabilities and elderly, affordability of transport systems for low-income groups, and up-gradation, modernization and integration of intermediate public transport

Goal 18: Encourage innovative **financing** mechanisms for sustainable transport infrastructure and operations through measures, such as parking levies, fuel pricing, time-of-day automated road user charging, and public-private partnerships such as land value capture, including consideration of carbon markets, wherever feasible

Goal 19: Encourage widespread distribution of **information and awareness** on sustainable transport to all levels of government and to the public through outreach, promotional campaigns, timely reporting of monitored indicators, and participatory processes

Goal 20: Develop dedicated and funded **institutions** that address sustainable transport-land use policies and implementation, including research and development on environmentally- sustainable transport, and promote good **governance** through implementation of environmental impact assessments for major transport projects

Inviting countries to voluntarily report progress by utilizing the EST Forum.

This annex outlines the type of performance indicators that countries may consider in achieving a successful EST strategy. The Bangkok Declaration for 2020 is a voluntary document, and thus countries may opt for developing a number of additional / alternative indicators and measures to monitor progress domestically.

The objective of such comprehensive list of indicators is to provide guidelines for objective measurement of the efficiency and effectiveness of the transport system to achieve the desired goals.

Strategy	Indicator
“Avoid” Strategies	Meta Indicator: Change in vehicle kilometres travel per person over time at the metropolitan and national levels
Integrated Land Use-Transport Planning	Number of cities in the country having formally developed integrated land use-transport plans
	Requirements for local compliance with regional integrated land use-transport plans
Mixed-Use Development	Reduction in average passenger trip length in the city
	Reduction in average freight trip distance regionally and nationally
	Number of units developed in purpose-built mixed-use projects
	Number of public transport projects achieving transit-oriented development (TOD) around stations
	Population and employment per square kilometre along major public transport corridors
	Number of public transport corridors achieving an increase in development and population density
	Amount of increase in property value along corridors of quality public transport projects
Information and Communications Technologies (ICT)	Number of policies developed encouraging ICT as a substitute for travel
	Average broadband speed of internet services
	Penetration of broadband among different income groups
	Penetration rate of mobile telephones in the country
	Increase in the amount of teleconferencing over business travel

	Number of policies and/or programs that promote telecommuting
	Estimated number of trips avoided through telecommuting
"Shift" Strategies	Meta Measure: Mode share of all major transport modes at the metropolitan and national levels, including passenger transport (walking, bicycles, car driver, car passenger, motorcycle driver, motorcycle passenger, motorized three-wheelers, non-motorized three-wheelers, buses, minibuses, and urban rail), inter-city transport (private motorized vehicles, bus, rail, and boat), and freight transport (truck, rail, barge, minivan, and non-motorized)
Non-Motorized Transport	Number of cities with NMT specifically highlighted in the city's integrated transport master plans
	Note the existence of national and local policies requiring drop curbs at interface between footpaths and intersections
	Note the existence of national and local policies mandating minimum footpath widths, and note the minimum width
	Note the existence of national and local policies mandating dedicated pedestrian signals at major intersections
	Promote the monitoring and measurement of the quality of pedestrian facilities and the number of cities surveyed or audited for a "walkability" score
	Number of cities with dedicated cycleways
	Number of kilometres of cycleways
	Number of secure bicycle parking spaces
	Number of cities with shared bicycle programmes and number of shared bikes per programme
	Number of cities with pedicabs (cycle rickshaw) improvement programmes
	Number of public transport systems with formal integration of pedicabs (cycle rickshaws)
	Number of cities participating in a Car-Free Day programme
	Public Transport
Number of kilometres of dedicated, median busways (Bus Rapid Transit)	
Number of cities with bus systems using pre-board fare verification and stations designed for at-level fast boarding	
Number of cities utilizing electronic fare cards on their public transport system	
Number of cities with a fully integrated fare structure across public transport modes	

	Number of cities with elevated or underground metro systems (MRT)
	Number of kilometres of MRT
Transportation Demand Management	Number of cities or areas utilising congestion charging
	Number of cities or areas utilizing road tolls
	Number of cities employing a formal parking levy system, in which a parking levy is defined as a set land tax charged to each non-residential parking space, and is assessed regardless of whether or not the parking space is utilized
	Number of cities with active parking management programmes
	Amount of any increase in fuel levies
	Number of cities or regions which have adopted measures to discourage ownership and/or operations of private vehicles
	Amount of vehicle duties or taxes
Inter-City Passenger and Goods Transport	Increase of mode share of high-quality inter-city bus services
	Increase of mode share of inter-city conventional rail services
	Increase of mode share of high-speed inter-city rail services
	Number of kilometres of high-speed inter-city rail
	Number of kilometres of freight rail lines
	Number of inland dry ports
“Improve” Strategies	Meta Measure: Fuel efficiency levels of passenger and freight fleets
Cleaner Fuels and Technologies	Market share of alternative fuels for road transport, including renewably-generated electricity, natural gas, and sustainably managed and cultivated biofuels that do not compete with food crops
	Market share of electric vehicles, hybrid vehicles, and fuel cell vehicles
Standards	Note current fuel quality standards and the time line for attainment of EURO IV (or equivalent) fuel quality standard
	Note current vehicle emission standards for each vehicle class
	Note current fuel economy standards for each vehicle class

Inspection and Maintenance	Note the nature of commercial vehicle testing requirements, including frequency of tests, emission levels required, safety features examined, and number of vehicles retired
	Number of cities that conduct roadway spot checks on vehicle emissions
	Note the type of vehicle insurance mandated by national and local laws
	Number of persons taking driver licensing testing and provision of the pass/fail rate
Intelligent Transportation Systems	Number of public transport vehicles per city with Automatic Vehicle Location tracking technology
	Number of public transport stations and vehicles using real-time information displays
	Number of cities with a control centre to manage traffic incidents and manage public transport fleets
Freight Transport	Quantify improvements in freight vehicle fuel efficiency
	Quantify changes in freight vehicle types
	Quantify network efficiency gains
“Cross-Cutting” Strategies	
Safety	Reductions in number of traffic accidents
	Reductions in number of transport-related injuries and deaths
	Adoption of a zero-accident policy framework
Health	Incidence levels of disease and illnesses related to transport emissions including asthma, other pulmonary diseases, heart disease, stroke, and flu
	Reduction in number of days with restricted outdoor activity due to health concerns of air quality
	Number of cities with policies in place to prohibit smoking in public places, including public transport systems
Air Pollution and Noise	Number of cities with ambient air quality monitoring, including monitors for particulate matter (PM10 and PM2.5, nitrogen oxides (NOx), sulphur oxides (SOx), carbon monoxide (CO), and ground-level ozone, especially with monitors in high traffic areas and ports
	Air quality levels for particulate matter (PM10 and PM2.5), nitrogen oxides (NOx), sulphur oxides (SOx), carbon monoxide (CO), and ground-level ozone for each major city
	Number of days air quality is within local standards and WHO guidelines for all major pollutants in each major city
	Number of cities with formal noise monitoring programme

	Number of cities that spot check noise levels on vehicles
	Number of cities with time-of-day noise restrictions and noise reduction programmes
Climate Change and Energy Security	Note whether the transport sector is included as part of the Nationally Appropriate Mitigation Actions (NAMA), and note the specific transport sub-sectors in the NAMA
	Note the number of transport GEF projects approved for the country
	Amount of oil imported by the country
Social Equity	Amount and type of security measures provided on public transport systems
	Off-peak frequency of public transport systems
	Number of public transport vehicles and stations permitting full universal access for users in wheelchairs and parents with prams
	Number of public transport stations and kilometres of footpaths with tactile paving tiles for the sight impaired
	Number of kilometres of footpaths that have been upgraded to be fully accessible to persons in wheelchairs
	Relative affordability levels of public transport services for low-income groups
	Employment generated from EST projects and availability of related job training opportunities
Finance and Economics	Number of applications for greenhouse gas emission reduction credits
	Total amount of revenues generated from greenhouse gas emission reduction credits
	Total amount of revenues generated from congestion charging schemes
	Total amount of revenues generated from roadway tolls
	Total amount of revenues generated from parking levies
	Number of Public-Private Partnerships (PPPs) implemented
	Total amount of revenues generated from land value capture initiatives
	Number of Benefit-Cost analyses conducted on transport projects, considering, direct, indirect, and cumulative impacts
	Note the results of Benefit-Cost analyses conducted on transport projects
	Information and Awareness
Number of outreach and promotional efforts on EST	

Institutions and Governance	Number of staff at Transport, Environment, and Health Ministries dedicated to EST
	Amount of financial resources of the national government dedicated to EST
	Human and financial resources devoted to EST at the regional and local levels
	Existence of unit at National Government level dedicated to non-motorized transport and number of cities with local government units dedicated to non-motorized transport to promote walking
	Structure and relationship of national, regional, and local actors involved in EST, including engagement with civic and business sectors
	Note environmental impact assessments (EIAs) for evaluating the impact of transport infrastructure initiatives prior to environmental clearance