WBG SCORECARD FY24-FY30 METHODOLOGY NOTE

WBG Results Indicator

The purpose of this note is to ensure the rigor, transparency, and reproducibility of the WBG results indicators included in the new WBG Scorecard FY24-FY30, as well as their alignment with the WBG's vision. Technical teams were asked to provide a sufficiently detailed methodology so that anyone who reads this note can understand its rationale, theory of change, data sources, and method of calculation.

Definitions included in this template are aligned to the WBG Scorecard paper endorsed by the Board on Dec 19, 2023. The methods notes are living documents and will be subject to updating and revision pending operational inputs and implementation lessons over time.

OVERVIEW	
INDICATOR NAME	**Millions of people that benefit from improved access to sustainable transport infrastructure and services.**
SUB-INDICATORS	• Direct users that benefit from improved access to sustainable transport infrastructure and services. • Inferred beneficiaries that benefit from improved access to sustainable transport infra-structure and services. • Inferred beneficiaries of improvements to dedicated freight transport infrastructure and services.
OUTCOME AREA	☐Protection for the Poorest ☐Healthier Lives ☐Green and blue planet and resilient populations ☐Sustainable food systems ☐Affordable, reliable, and sustainable energy for all ☐Digital services ☐More and Better Jobs ☐No Learning Poverty ☐Effective Macroeconomics and Fiscal Management ☐Inclusive and equitable water and sanitation services ☒Connected Communities ☐Digital connectivity ☐Gender equality and youth inclusion ☐Better Lives for People in Fragility, Conflict, and Violence ☐More private investments
SDG ALIGNMENT	**See https://sdgs.un.org/ for further details on SDGs:** ☐ 1. No Poverty ☐ 2. Zero Hunger ☒ 3. Good Health and Well-being ☐ 4. Quality Education ☐ 5. Gender Equality ☐ 6. Clean Water and Sanitation ☐ 7. Affordable and Clean Energy ☐ 8. Decent Work and Economic Growth ☒ 9. Industry Innovation and Infrastructure ☐ 10. Reduced Inequalities ☒ 11. Sustainable Cities and Communities ☐ 12. Responsible Consumption and Production ☐ 13. Climate Action ☐ 14. Life Below Water ☐ 15. Life on Land ☐ 16. Peace, Justice and Strong Institutions ☐ 17. Partnerships for the Goals List of specific UN targets (if applicable):
DISAGGREGATION	☒Youth ☒Sex ☒Disability-inclusive ☒FCS ☒SS, SIDS and LDCs ☒IDA, IBRD, IFC and MIGA ☒Country income groups ☒Regions ☒WBG Joint Programming
ENGAGEMENT TYPE	**WORLD BANK** ☒IBRD ☒IDA ☒Trust Fund (TF) ☐Advisory Services and Analytics (ASA) ☐Treasury Products (including technical assistance) **IFC** ☒IFC Investment ☐ IFC Upstream and Advisory Services **MIGA** ☒MIGA Guarantee

ENGAGEMENT INSTRUMENT	**WORLD BANK** ☒IPFs ☒DPFs ☒PforR ☒Guarantees ☒TF: IDA ☒TF: IBRD ☒TF: RETF[1] ☒TF: GEF[2] ☒TF: MONT[3] ☒TF: SPF[4] ☐ASA: BB[5] ☐ASA: BETFs/EFOs[6] ☐ASA: RAS[7] **IFC** ☒Loans ☒Equity ☒Blended Finance ☒Syndications ☒Asset Management ☐Advisory Services ☐Trade and Commodity Finance ☐Treasury Client Solutions **MIGA** ☒Political Risk Insurance ☒Credit Enhancement ☒Trade Finance Guarantees
LEGACY INDICATOR NAME	☐WB Old Scorecard indicator: ☒WBG Old Scorecard indicator: [People with enhanced access to transportation services (millions)] ☐N/A
RATIONALE	
DEFINITION	Beneficiaries of improved transport conditions in urban and rural contexts enabled by IBRD, IDA, IFC, and MIGA operations. It assesses the number of people that experience improved access to sustainable transport infrastructure or services that have been built or rehabilitated through financed or guaranteed interventions (e.g., climate-resilient highways, rural roads, urban and inter-urban roads, non-motorized transport facilities, public transport, railways, ports, and airports). It will build on SDG 11.2 to systematically measure improvements in sustainable transport in countries that are financed or guaranteed through IBRD, IDA, IFC, and MIGA interventions.
REPORTING TIMELINE	☒Results achieved[8] ☒Results expected[9]
DIRECT/INDIRECT	☒Direct[10] ☒Indirect[11]
ACTUALS/ MODEL-BASED	☒Actuals ☒Model-based
UNIT OF MEASURE	☒Number of people ☐Number of countries ☐USD ☐GW ☐Hectares ☐tCO2eq/year ☐Other: _____ [Please specify]
THEORY OF CHANGE	**Please see Annex 1 for a visualization of the theory of change.** **Sustainable transport** is defined as the provision of improved transport services and infrastructure for mobility in a manner that is safer, more accessible, more efficient, and more resilient, while minimizing carbon and other emissions and environmental impacts. It covers interventions in all major transportation sub-sectors (Roads—rural, inter-urban, and highways; urban transport; railways; ports and waterways; and aviation), and focuses on three major outputs:

[1] RETF: Recipient Executed Trust Fund
[2] GEF: Global Environment Facility
[3] MONT: Montreal Protocol
[4] SPF: Special financing
[5] Bank's own administrative budget (BB).
[6] Donors (via Bank-executed Trust Funds (BETFs) or Externally Financed Outputs (EFOs).
[7] Clients (via Reimbursable Advisory Services (RAS).
[8] New WBG Scorecard paper (Section G): it refers to *results that have occurred* at a given moment of the projects' results horizon. *Results achieved* can be based on actuals at the project level or can use model-based estimations at the portfolio level relying always on available project level data inputs.
[9] New WBG Scorecard paper (Section G): it refers to the *anticipated results* over the projects' results horizon. *Expected results* is based on the latest available estimations of future results, including model-based or other informed estimations.
[10] New WBG Scorecard paper (Annex I, Technical Criteria): it refers to outcomes with sufficient causal proximity to WBG interventions to allow for attribution of results.
[11] New WBG Scorecard paper (Annex I, Technical Criteria): it refers to outcomes where attribution is located further down the causal chain, relative to WBG interventions, and may be contingent on other exogenous factors.

	• **Infrastructure** that is constructed, rehabilitated, upgraded, or improved. • **Provision of transport rolling stock and equipment** to support enhanced transport service delivery.[12] • **Policies, financing, and regulations** introduced to enhance transport services. At the World Bank project level, Transport interventions typically yield **intermediate outcomes** such as increased capacity and quality of the transport infrastructure or service, reduced travel times, travel cost-savings, safer and more resilient infrastructure and services, and enhanced reliability and quality of services. These intermediate outcomes support and lead to the main development objective indicator proposed: **millions of people that benefit from improved access to sustainable transport infrastructure and services,** including direct users as well as inferred beneficiaries. • **Direct users:** People directly benefiting from new transport services and infrastructure and/or improvements in transport services and infrastructure. These are not unique users. • **Inferred beneficiaries:** People benefiting from improved access to new transport services and/or improvements in transport services and infrastructure based on physical proximity. • **Inferred beneficiaries for dedicated freight projects.** People benefiting from operations that improve freight transport infrastructure, and logistics and handling services. Dedicated freight projects are defined as those that service exclusively the freight segment, such as freight ports or cargo terminals, dedicated freight rail lines, and aviation freight terminals and associated infrastructure. Freight projects that are considered reduce costs and time or improve the reliability and capacity of infrastructure and services, which in turn reduces generalized costs and increases utility for society.
OUTCOME TYPE/ SUBTYPE	**Outcome type/subtypes from the IEG taxonomies developed in Results and Performance of the World Bank Group Annual Review (RAP) 2021 mapped to the outcome(s) measured by the indicator.[13]** **WORLD BANK** A. Access to services expanded D. Quality of services improved I. Public assets improved G.Use of services or assets increased **IFC** **Project-level outcomes:** 1.1. Access to goods and services 1.2. Quality and affordability of goods and services **MIGA** **Project-level outcomes:** 1. Access to goods services 2. Quality and affordability of goods and services **Foreign Investment Effects** 13. Signaling effects
INCLUSION CRITERIA	Interventions that support sustainable transport services and infrastructure—including interventions that enhance availability, reliability, safety, and reduce travel time or cost—that involve the following across the World Bank, IFC, and MIGA would be counted toward the indicator:[14]

[12] This can include the provision of locomotives, rolling stock, buses, trams, and metro trains that are necessary for new transport services (e.g., a new metro line) or improvements to existing transport services (e.g., new clean, buses on a pre-existing bus route), as well as equipment (e.g. fare systems for a public transport system, road signage, traffic management systems).
[13] Independent Evaluation Group: RAP 2021.
[14] This includes policy and regulatory work, technical assistance, etc., related to the points above.

	• **Roads:** Construction, maintenance, rehabilitation, and upgrading of paved/unpaved rural and inter-urban roads and transport corridors; bridges, road asset management, network resilience improvement, and road safety interventions. • **Urban transport:** Construction, rehabilitation, upgrading of public transport (including network, service, facilities and fleet improvements), mass transit (including all passenger urban and suburban rail systems and Bus Rapid Transit (BRT)), non-motorized transport (including sidewalks and bicycle facilities), urban roads, bridges, and equipment applying "complete streets," safe systems or people-centric traffic management approaches, and other urban infrastructure and services consistent with sustainable transport concept. **Rail:** Construction, rehabilitation, upgrading of railway lines, multimodal connections, stations, rolling stock and systems for passengers and freight; rail safety and asset management improvements that translate into improved services. • **Ports/waterways:** Construction, rehabilitation, and upgrading to improve navigability / capacity augmentation of ports and waterways (e.g., ferry services, cargo ports); improvement of port and terminal infrastructure and fleet safety improvements and modernization for ports. • **Aviation:** Airport services and infrastructure investments (terminals, runways, roads), and modernization of Air Navigation Systems that translate into improved transportation services. • **Pricing and financing:** Introduction or reform of pricing and subsidy schemes for transport users that facilitate affordable, sustainable, and scalable access to public transport services and mechanisms that support financing for fleet renewal.
ADVANTAGES	The indicator is people centric as it measures benefits accrued by individuals from improved and expanded sustainable transport services and infrastructure. It builds on the World Bank Group's published methodology for measuring rural access and combines actual results data with robust model-based estimates. The theory of change maps World Bank Group interventions to access outcomes and development impacts, and links project-level activities to higher-level goals. The indicator also enhances the measurement to include a focus on inferred beneficiaries for relevant transport sub-sectors and standardizes the approach for estimating inferred beneficiaries. It adopts enhanced techniques while maintaining consistency: both the old and new scorecards use a similar methodological approach, while the new definition ensures a consistent approach to the estimation of inferred beneficiaries.
LIMITATIONS	The results indicator may not capture the full scope of transport interventions, as the results indicator focuses on how World Bank Group investments directly impact people. Furthermore, as distance-based catchment areas take an "as the crow flies" approach, they do not account for all considerations that can affect travel decisions and therefore access. For example, in the case of public transport, distance-based catchment areas take into account distance, but not public transport times or cost, which can also impact transport choice. The results indicator may not capture unique direct beneficiaries of sustainable transport services and infrastructure. One individual using a road multiple times a year would be counted each time that person uses the road. This is because beneficiaries of transport projects are usually estimated by using trip data. There may be instances where direct users and inferred beneficiaries could be the same and the summation of the two could introduce double counting. This potential double counting of beneficiaries is offset by users of the integrated transport network that come from outside the catchment area or are not captured by direct users of the improved transport infrastructure or services. Please see the *Data and Calculation* section for more details. The approach distinguishes between purely domestic projects and those aimed at facilitating international trade flows. In many cases, however, these two types of projects are interconnected, with a close interaction between gateway infrastructure and its connectivity to the hinterland. When a project involves both types of interventions, the methodology suggests steps to refine the

	calculation (e.g., restrict relevant cargo, population segment) to minimize overestimation of beneficiaries.[15]
DATA AND CALCULATION	
INTERNAL DATA SOURCE(S)	☒World Bank's Operations Portal (PADs, PDs, ISRs, and ICRs) ☒World Bank's Operations Portal (Lending and Portfolio) ☒IFC Operational Portal (iDesk/iPortal) ☒IFC AIMM System ☒MIGA DEIS ☒MIGA Portfolio Records ☐Other
METHOD OF CALCULATION (CORE)	**A. General Approach to Estimation** The proposed approach uses a consistent methodology that is broadly applicable to World Bank Group operations even in data-scarce environments. The methodology captures beneficiaries from a wide range of interventions aimed at improving sustainable transport services and infrastructure. The methodology considers at least two types of sustainable transport interventions: (i) linear infrastructure and services to move people and (ii) single-location facilities that are part of long-distance transport networks. **Linear intervention**. If the intervention is linear in nature, the indicator is the sum of annual direct users plus the populations living within the project's distance-based beneficiary catchment area. **Facility**. If the intervention is a facility where most beneficiaries come from outside the immediate vicinity, such as a bridge, an airport, or a strategic node in a long-distance network, the indicator will be estimated using the annual number of users—in other words, counting only direct beneficiaries. The **number of people** benefiting from the World Bank Group intervention includes: (a) number of annual direct beneficiaries or users supported by the World Bank Group, including inter-urban, long-distance urban, and international passenger services; and (b) inferred beneficiaries estimated using a catchment area approach. Whether only the number of annual direct beneficiaries should be estimated or only inferred beneficiaries using a catchment area approach depends on the type of project, as detailed below.[16] An accurate service catchment area—a geographical area delineated around a linear infrastructure or facility—is important for robust and reliable estimation of beneficiaries. The principles underlying the catchment area approach are being conservative and using a standardized and predefined distance-based catchment area for different types of projects. The principle of being conservative is translated into use of a narrowly defined catchment area in order to reduce the risk of overcounting beneficiaries. For any given predefined catchment area there may be people who have access to the transport service and infrastructure but will not use it, which is counterbalanced by people who use the transport services and infrastructure but reside outside the catchment area. The principle of using a standardized and predefined catchment area translates into identifying a standardized distance for estimating the catchment area, by type of project.

[15] The theory of change in freight transport operations is based on the impact of interventions on one or more of the variables commonly used in logistics, such as time, cost, and reliability. Changes in these variables, combined in an estimate of generalized costs, affect household and firm behavior. However, estimating generalized cost across a portfolio of projects is not straightforward, as it requires detailed information, especially regarding the types of goods handled and the value of time. Therefore, for the indicator's purposes, the impact of quality improvements is not assessed as part of the methodology.

[16] When estimating the total number of people benefiting from improved access to sustainable transport infrastructure and services, directs users plus inferred beneficiaries in a catchment area should not exceed the population. Thus, for a public transport project, the number of people benefiting from the project cannot exceed the population of the city.

In addition, the indicator includes the number of inferred beneficiaries benefiting from dedicated freight projects that improve transport infrastructure and services. While beneficiaries for such projects can be counted starting from the construction phase and continuing during operation, the indicator infers beneficiaries for only the additional freight traffic that a project would support. The result is, therefore, conservative but well-grounded on established theory and evidence as a simple and tractable estimate of the number of beneficiaries of freight transport and logistics projects.

B. Estimation of Users as Direct Beneficiaries

Direct users measure the number of people directly benefiting from improved transport services and infrastructure. The input data for this indicator are reported by clients and are either estimated (for expected results) or collected (for achieved results). Results data rely on various data sources depending on the project. More specifically:

- **Roads**: Includes current and new users of the road section (normal, induced, generated, and diverted traffic) who will benefit from reductions in costs and time to travel, and/or improvements in safety, quality, and comfort.[17] This is estimated using annual average daily traffic (AADT), multiplied by an appropriate contextual occupancy factor per vehicle type. AADT refers to the average daily traffic volume at a given location over an entire year. Vehicle class refers to the types of vehicles that are normally counted during a traffic survey, including light, heavy, taxi, and buses.[18] Vehicle Occupancy Factors (VOFs), also referred to as average vehicle occupancy, are estimates of the average number of occupants for a single vehicle type or class. Where project data on vehicle composition and occupancy factors are available, task teams should use project-specific data.

  D_u = annual users as direct beneficiaries
  $AADT$ = annual average daily traffic
  V_t = vehicle class
  V_{ocf} = vehicle occupancy factor

$$D_u = AADT \times V_t \times V_{ocf} \times 365$$

Estimation of users as direct beneficiaries should be conducted and updated annually.

- **Aviation**: Annual passengers from scheduled airlines, domestic and/or international, in the airport where the World Bank Group project is enhancing service and/or infrastructure. Where the World Bank Group project is enhancing service and/or infrastructure that only affects a part of an airport (e.g., improvements to one terminal in a multi-terminal airport), the annual passenger data should be pro-rated to reflect passengers using the specific part of the airport where the project is supporting new transport services and infrastructure and/or improvements in services and/or infrastructure.
- **Rail, public transport, and ferry services**: Average annual daily passenger[19] data is dependent on the project and its available data collection infrastructure. Typically, this can be measured through one of the following: (a) ticket sales data; (b)automatic fare collection data; (c) surveys conducted by the relevant transport company.

C. Estimation of Inferred Beneficiaries

[17] Normal traffic is the traffic passing along the road in the absence of any new investment. Generated traffic is traffic due to a decrease in transport costs associated with existing users of the project road driving more frequently or driving further than before. Induced traffic refers to local economic development, in other words traffic attracted to the project road from other roads, changing its origin or destination, due to increased development activity in the road's zone of influence brought about by the project. Lastly, diverted traffic refers to traffic that diverts to the project road from an alternative road with the same origin and destination as the project.
[18] This can include cars, light delivery vehicles, combi-taxis, buses, light-, medium-, heavy-, and articulated trucks, and motorcycles.
[19] When annualizing public transport beneficiaries, average annual daily usage is used as a proxy for unique users, given the high frequency usage of this transport mode.

Best practices for identifying benefit areas for urban transit projects are well established.[20] Extensive research demonstrates that the benefits tend to be concentrated in close proximity to transit stations, and patterns in how the level of benefits decline with distance from a station are well understood. On the other hand, linear transportation infrastructure, such as intercity rail, distributes benefits in a wider variety of patterns. Instead of concentrating activity in a station area, as for urban transit, benefits are based on the population and activity centers they connect, as well as local and regional economic and real estate market characteristics. The approach that follows incorporates a distinction among estimating inferred beneficiaries for (a) urban transport projects; (b) rural roads[21]; (c) expressways/motorways; (d) intercity roads; (e) rail projects; (f) aviation; and (g) ferry services.

Catchment area analysis for estimating inferred beneficiaries. Inferred beneficiaries include the number of people who live in proximity to the improved transport services and infrastructure and thus benefit from improved access. Distance-based catchment areas are defined by the distance around a location. This involves drawing a distance radius/polygon around a transport facility or linear infrastructure. Catchment area is defined as the geographic area served by the infrastructure/service and can be calculated by estimating the number of people living within a predefined set of kilometers (km), which varies by mode and in an urban and non-urban setting (see below). For practical purposes and based on an analysis of projects, this is considered a conservative approach as it balances the number of beneficiaries from outside the catchment area (i.e., long-distance users), who are not being included in the estimate of beneficiaries, with the number of non-user residents within the catchment area.

The practical execution of catchment area analyses uses geographic information systems (GIS) that provide geographical data handling. Overlaying geo-referenced population data to the predefined distance-based catchment area results in an estimate of inferred beneficiaries that have access to improved transport services and infrastructure. This involves the following elements:

- **Population data**: WorldPop population distribution datasets can be used in the absence of more recent, project specific data.[22] For each country, there may be several population values for different years, primarily depending on the availability of census data.[23]
- **Georeferenced data of the transport service and/or infrastructure**: Data related to the infrastructure then needs to be prepared in the vector data GIS format.
- **Generate areas of buffers**: Catchment area around the transport service and/or infrastructure, to pre-specified sub-sector specific distance (e.g., 2km buffer for rural roads).

The WBG Geospatial Tool[24] offers an easy way for simple and streamlined calculation of beneficiaries along transport infrastructure or a determined catchment area using custom lines with 500m, 1km, 2km, 5km, and 10km radius and custom polygons using WorldPop data. The following parameters, consistent with international accessibility practices, should be used:

- **Urban transport**: For infrastructure or service improvements in urban areas, the population living in the catchment area of the multimodal network should be considered. The catchment area should be predefined as follows: (a) a 0.5km radius around non-motorized transport facilities (e.g., safe bikeways and walkways); (b) a 2km radius around mass transit stations or corridors (e.g. BRT, metro, urban rail and other high-capacity or rapid transit services); (c) a 1km radius around all other public transport facilities (e.g. bus stops or routes) and sustainable urban road interventions, including people-centered traffic management, "complete street"[25] or "integrated corridor"

[20] For example, a 0.5-mile distance has become accepted for estimating a transit station's catchment area in the United States. See for example https://journals.sagepub.com/doi/10.3141/2276-12. Research from Japan finds a broadly similar catchment area distance. See for example: https://osf.io/fb9st.
[21] Rural roads, also known as tertiary roads (paved or unpaved), are generally defined as low-volume roads connecting villages and small settlements and are critical for providing all-season access for goods and services to these communities year-round. An all-season road is a road that can be driven on all year round using the typical means of rural transportation, such as a truck without four-wheel drive or a pick-up. See for example https://unstats.un.org/sdgs/metadata/files/Metadata-09-01-01.pdf
[22] WorldPop data are available at http://www.worldpop.org.uk/.
[23] The data closest to the year of interest should be downloaded
[24] More detailed instructions can be found here.
[25] Complete streets are streets that are designed and operated to support safe and comfortable use for all users, regardless of age, ability, or mode of transportation. This includes pedestrians, bicyclists, public transportation users, children, older individuals, individuals with disabilities, motorists, and freight vehicles.

design, and travel demand management;[26] and (d) 5km radius around regional transport terminals or metropolitan passenger stations in urban areas (including bus, rail, or waterway).[27]

- **Rural roads:** The distance-based catchment area is predefined as a 2km radius around an all-season rural road. This is in line with the approach of the Rural Access Index, which measures the proportion of people who have access to an all-season road within an approximate walking distance of 2 km. There is a common understanding that the 2km threshold is reasonable for people's normal economic and social purposes.[28]
- **Expressways/motorways:** The distance-based catchment area is predefined as a 15km radius around entry/exits along a highway corridor. A highway is defined as a road where points of entrance and exit for traffic (e.g., interchanges) are limited and controlled. In the case of highways, the catchment area is estimated as a polygon around the highway section being financed and overlaying geo-referenced population data to estimate inferred beneficiaries.

For motorways with considerable network/transit effects beyond the section financed by the World Bank Group, the catchment area can exceed the WBG-financed section, and the limit beyond the WBG-financed section is defined by the design speed of the motorway. Drawing the catchment area beyond the motorway section financed by the World Bank Group recognizes that the WBG section delivers transit/network effects beyond the immediate catchment area (e.g., a section is part of larger expressway.) For a highway with a speed of 100 km/hour, the catchment area could be extended up to 100 km from each end of the road section financed by the WBG—the design speed defines boundary and addresses transit effects.

- **Intercity Roads:**[29] The distance-based catchment area is predefined as a 2km polygon along an entire corridor of interurban roads (primary or secondary). This catchment area is conservative as catchment area analysis often considers a 30-minute drive to be the limit of a catchment area. Where there is significant transit traffic and the road section(s) financed by the World Bank Group is part of a larger corridor, the catchment area can be extended, with the boundary defined by the design speed of the road.
- **Linear rail infrastructure:** The distance-based catchment area would be defined as follows: (a) a 2km radius around transport terminals or large passenger stations and around urban rail lines; (b) a 15km radius around intercity (non-urban) rail infrastructure; and (c) a 30km radius for high-speed passenger rail projects.[30] Where there is significant transit traffic and the road section(s) financed by the World Bank Group form(s) part of a larger corridor, the catchment area can be extended, with the boundary defined by the design speed of the railways.
- **Aviation:** As the users of an improved airport terminal come from outside the immediate vicinity, aviation projects will only consider direct beneficiaries and will exclude inferred beneficiaries given the conceptual difficulties in establishing a standardized catchment area.
- **Ferry services:** Ferries can serve as a public transport mode in some countries. Where this is the case a catchment approach should be employed, using a 2km radius around ferry stations providing urban services or a 5km radius around ferry stations providing regional or metropolitan services.[31]

The expected results for this indicator will capture the project results that will occur over the entire results horizon of the project, covering the period as defined by the new WBG Scorecard FY24-FY30 paper. The latest available estimation of the expected results at the project level (end targets

[26] The 0.5km and 1km radius follows the UN Habitat for estimating urban access in the context of SDG monitoring. See: https://unstats.un.org/sdgs/metadata/files/Metadata-11-02-01.pdf
[27] "Defining Transit Areas of Influence" American Public Transportation Association, Recommended Practice Paper (2009).
[28] https://documents1.worldbank.org/curated/en/367391472117815229/pdf/107996-REVISED-PUBLIC-MeasuringRuralAccessweb.pdf
[29] This refers to non-rural and non-expressway roads—in other words primary and secondary roads.
[30] Some studies have determined that the catchment area from which a high-speed rail station can be reached by car is 15, 30 or 60 minutes. See: https://www.eca.europa.eu/lists/ecadocuments/sr18_19/sr_high_speed_rail_en.pdf This suggests that a distance-based catchment area of 30 km is conservative.
[31] "Defining Transit Areas of Influence" American Public Transportation Association, Recommended Practice Paper (2009).

of the indicators included in results frameworks) is reported in relevant project documents for IBRD/IDA projects, as well as IFC's Anticipated Impact Measurement and Monitoring results measurement systems and MIGA's portfolio records and results measurement system. The achieved results for this indicator capture the project results that have occurred or plausibly occurred since the start of the project at a given cut-off date for the given reporting cycle. The data on the actual results achieved at the project level is reported via Implementation Status and Results Reports (ISR) and Implementation Completion Results Report (ICR) in the case of IBRD/IDA projects, as well as the IFC's AIMM systems and MIGA's portfolio records and results measurement system.

D. Estimation of Inferred Beneficiaries from Dedicated Freight Projects

Dedicated freight transport infrastructure and services benefit society through different channels. The methodology is based on a rich literature on the link between improvements in freight and logistics infrastructure and services and the impact on the welfare of households.[32] However, the approach that follows for estimating the beneficiaries of freight project interventions is limited to first-order effects.

The procedure starts with an estimate of the commodity-specific volume of cargo that is enabled by the investment. This is then used to calculate the proportion of such traffic to the total volume of traffic in a country. The result is a conservative estimate of the number of beneficiaries that takes into cognizance that all traffic could eventually benefit from an intervention, but only a limited proportion is directly impacted through direct effects. Briefly, the procedure yields the number of beneficiaries based on the incremental portion of cargo that is enabled by an improvement in capacity or efficiency of infrastructure of services.

Step 1: Calculate Volume of Cargo enabled per commodity ($C_{yr,c}$)

This step involves determining the total volume of relevant throughput[33] using a cargo port/airfreight terminal or freight transport facility per year ($_{yr}$) and per commodity ($_{c}$). The estimate is for relevant cargo (in metric tons)[34] only as described under Step 2 below.[35]

$$C_{yr,c} = General\ Cargo + Containerized\ Cargo\ (TEUs\ \times 10\ metric\ tons)$$

Step 2: Calculate the share of the volume in the type of cargo relevant to the project ($R_{yr,c}$)
The categories of cargo that are used to identify the relevant types to a project are listed below.[36] The categories aim to determine volumes of traffic with a significant impact on individuals' consumption. Data for this step can be obtained from project documents, national statistics agencies, or Harmonized System nomenclature for commodities, but based on UN COMTRADE data. Some bulky commodities, such as petroleum or bulk mining commodities, should be excluded from subsequent steps, as they often are used as inputs to other processes or require further processing before they impact households.

Step 3: Calculate Volume of Relevant Cargo enabled per commodity ($RC_{yr,c}$)

[32] For example: Asian Development Bank, Department for International Development, Japan International Cooperation Agency, and the World Bank. 2018. The WEB of Transport Corridors in South Asia. Washington, DC; Ayesu, E.K., Sakyi, D., Arthur, E. and Osei-Fosu, A.K., (2022) The impact of trade on African welfare: Does seaport efficiency channel matter? Research in Globalization, 5, p.100098; Fajgelbaum, P. and Redding, S.J., (2022) Trade, structural transformation, and development: Evidence from Argentina 1869–1914. Journal of political economy, 130(5), pp.1249-1318; Ghani, E. A. Grover Goswami and W. R. Kerr (2014) Highway to Success: The Impact of The Golden Quadrilateral Project for the Location and Performance of Indian Manufacturing, The Economic Journal, 126 (March), 317–357; Hewitt, A. and Gillson, I., (2003) Income Distribution Impact of Trade Facilitation in Developing Countries; and Leinbach, T.R. and Bowen Jr, J.T., (2004) Air cargo services and the electronics industry in Southeast Asia. Journal of Economic Geography, 4(3), pp.299-321.

[33] The standard calculation estimates beneficiaries using "new throughput" (the difference between throughput of relevant traffic using the ports in the Base and in the Target year).

[34] In case of containerized cargo, the estimate of tonnage per TEU can be obtained from project documentation.

[35] Relevant traffic refers to imports and exports for all ports/airports and also transit for infrastructure that serves as gateway for third countries (i.e., landlocked countries). The beneficiaries for transit cargo are estimated in the third country.

[36] The list will be refined for both domestic and international trade-oriented infrastructure.

$$RC_{yr,c} = C_{yr,c} \times R_{yr,c}$$

Step 4: Determine average value of each commodity

Avrg.vt_c represents the average value of commodity *c* per ton in the country.

If traffic data are only in value terms, then the average value per ton of the commodities is calculated based on project data or United Nations (UN) COMTRADE for imports and exports. This is done by dividing the value by the weight for each commodity that was imported and exported summing only over relevant subcategories. If available from project documents or government sources, the average value can be taken from transport studies for the specific project (corridor, port or airport).

The determination of Avrg.vt_c is based on the value of the relevant trade flows weighted by their participation in the trade of the country, so that the value of the tonnage used to convert a volume of relevant cargo ($RC_{yr,c}$) into Value of Trade Enabled (V_{yr}) corresponds only to the cargo categories that are expected to have a greater impact on individuals' consumption. The average value is determined by summing the value for each relevant subcategory in UN Comtrade for each cargo category c transported via sea for port investments (or air for airport investments, respectively), and dividing it by the sum of the respective subcategories' trade measured in tons. This results in an average value per ton measure only taking into account the relevant subcategories.

Step 5: Calculate Value of Trade Enabled (V_{yr})

Determine total value of trade using the facility (e.g., port or airport) per year. For domestic projects, determine the value of the product reaching the highest number of beneficiaries. In the case of domestic projects, the per-capita consumption expenditure is typically obtained through household surveys[37]. Such surveys list the relevant categories for the commodities that can be used for this purpose.

$$V_{yr} = \sum RC_{yr,c} \times Avrg.vt_c$$

Calculate the volume of trade and sum across commodities (for the relevant commodity in case of domestic projects).

Step 6: Determine the country's total value of trade (XM_{yr})

For trade gateway projects, UN COMTRADE or World Integrated Trade Solution data (WITS) can be used to obtain a country's value of merchandise trade (exports plus imports).

For domestic freight transport infrastructure, national statistics or project reports can be used to determine the volume of traffic.

Step 7: Calculate the share of the country's trade that uses the facility per year (S)

Calculate the share of a country's trade that uses the project facility per year.

$$S = \frac{V_{yr}}{XM_{yr}}$$

For domestic linear infrastructure projects, calculate the annual per capita consumption expenditure of the commodity (E_{xpc}).

[37] MOSPI 2023 (https://www.mospi.gov.in/sites/default/files/publication_reports/Factsheet_HCES_2022-23.pdf)

As domestic transport infrastructure handles a mix of domestic and international traffic and given the difficulties of obtaining data on domestic traffic in many emerging and developing economies, a per capita consumption approach is used to determine the number of beneficiaries.

Step 8: Calculate beneficiaries

Determine country's relevant population to calculate number of people that benefit from enabled trade (B). The default option for the relevant population is Total Population, but project teams have the option to estimate low-income population, or women and men separately, as distinct categories when relevant.

$$B = RP \times S$$

Results disaggregation will be calculated based on WDI data on population composition (i.e., women, youth) assuming the same proportion of beneficiaries. Note that for domestic projects, $B = V_{yr}/Exp_c$.

Step 9: Determine project maximum capacity volume

In the final step, an estimate is obtained based on the portion of the "new throughput" that is enabled or supported by the project intervention. In this case, beneficiaries are estimated for only the throughput that is attributable to the intervention. The procedure for this step is the following:

Determine project maximum capacity volume ($MaxCV_{np}$), the volume of the year when throughput forecast reaches 80 percent of cargo facility current capacity.[38]

$$C_{yr} - MaxCV_{np} = EC_{yr}$$

If $EC_{yr} > 0$ then proceed to step 2.

If $EC_{yr} < 0$ then no benefit is attributable to the project.

The data for this step are the project's traffic projection estimates.

METHOD OF CALCULATION (DISAGGREGATION)

- **Youth:** Where available, project data disaggregated by age demographics are used. Otherwise, the standardized approach specified in the Corporate Scorecard Disaggregation Methodology is followed, based on the UN definition of youth (ages 15-24).
- **Sex**: Where available, data included in the Corporate Scorecard CRI under CRI "Beneficiaries of social safety net programs – Female" are reported. If female beneficiary values are reported as a percentage of total, the total number of beneficiaries is multiplied to convert the unit of analysis. For projects that do not enumerate the number of female beneficiaries, the standardized approach specified in the Corporate Scorecard Disaggregation Methodology is followed.
- **Disability inclusion**: The standardized approach specified in the Corporate Scorecard Disaggregation Methodology is followed.
- **FCS**: Results are aggregated according to the most recent FCS list.[39]

[38] Port congestion is contextual and is dictated by the lower capacity component of the infrastructure (berth, yard, cranes, gate, etc.). Highly automated and efficient ports can operate at higher capacities than less efficient facilities. Port capacity literature indicates that berth tends to be the most restrictive component in port infrastructure and thus berth utilization is a common proxy for congestion. References on berth capacity and congestion include Herrera Dappe, Matías, and Ancor Suárez-Alemán. 2016 Competitiveness of South Asia's Container Ports: A Comprehensive Assessment of Performance, Drivers, and Costs. *An analysis of port congestion alleviation strategy based on system dynamics*, Haonan Lin, Weijun Zeng, Jian Luo, and Guofang Nan (2022).

[39] WB: Classification of Fragile and Conflict-Affected Situations

	• **Small States (SS), Small Island Developing States (SIDS), and Least Developed Countries (LDCs):** Results are aggregated according to the most recent list of SS,[40] SIDS,[41] and LDCs.[42] • **IDA/IBRD/IFC/MIGA**: Project data are used to aggregate results by institution. • **Region:** Project data are used to aggregate results by WBG region.[43] • **Country income group**: Results are aggregated according to the income level list.[44] • **WBG joint programming**: The standardized approach specified in the Corporate Scorecard Results Calculation Handbook is followed.
PRINCIPLES TO AVOID DOUBLE COUNTING	**For more information, please refer to the Common Principles to Limit Double Counting.** Project-level results are used as inputs to the model-based calculations for inferred access and improved service. In cases of joint projects across the World Bank Group that involve the delivery of passenger and cargo services to passenger, there is a risk of double counting. To mitigate the risk, the reporting teams adhere to standardized formats of data collection and model-based reporting and establish clear data-sharing protocols among institutions. Furthermore, for new projects where the IBRD, IDA, IFC, or MIGA are involved, the results used as inputs for model-based calculations should be apportioned across institutions at the project approval stage. This could help to minimize the risk of double counting during reporting. The estimation methodology relies on projections of direct users once the infrastructure or service is operational and/or an estimation of people living within a predefined "catchment area" that may benefit from proximity to improved transport infrastructure or services. The catchment area is defined by conservative distance parameters based on the relative speed of transport modes, typical distance traveled by users, and the propensity of inhabitants to utilize the improved infrastructure or service. This simplification approach is consistent with international transport accessibility parameters and best estimates from operational practice and attempts to roughly offset possible errors of overcounting people living within the catchment areas that may not benefit from the improved infrastructure or service and the possible error of undercounting people that live outside these catchment areas but are able to benefit from an integrated network of infrastructure or services. This approach also helps counterbalance the risk of double counting beneficiaries and the risk of undercounting from the network effects of incremental or "missing link" transport infrastructure or service improvements. It is crucial to avoid double counting beneficiaries in dedicated freight operations, as they transport different types of goods. When assessing the number of beneficiaries from a dedicated freight transport project, it is important to first identify which goods directly benefit consumers, and then carefully determine how many people are reached for each of these goods. For projects that facilitate domestic trade, the estimation process involves identifying the commodity that is consumed by the highest number of people, which is then used to estimate the overall number of beneficiaries. Teams are strongly encouraged to collect and provide project specific information regarding the relevant cargo (RC) composition to ensure that only commodities using the infrastructure are considered when calculating beneficiaries. For projects where teams have no information regarding specific composition of RC, the methodology uses a predetermined basket of commodities based in a simplified grouping of commodities derived from COMTRADE cargo classification.[45] Teams are also encouraged to narrow the relevant population (RP) using project specific information in order to ensure that the calculation of beneficiaries is accurately dimensioned. This is particularly important in domestically oriented projects with more localized areas of influence. Collecting and providing project-specific data on RC and RP helps prevent double counting and provides a conservative estimate of the number of beneficiaries.
QUALITY ASSURANCE	Designated units responsible for the corporate reporting on this indicator across WBG institutions engage with the project teams to provide guidance and training on the application of this method

[40] https://www.worldbank.org/en/country/smallstates/overview.
[41] UN List of SIDS: List of SIDS
[42] UN List of LCDs: List of LDCs
[43] WBG regions are Africa West, Africa East, East Asia & Pacific, Europe & Central Asia, Latin America & the Caribbean, Middle East & North Africa, and South Asia.
[44] WB Data: WB Country and Lending Groups
[45] Additional guidance on RC grouping and selection to be provided to teams prior to implementation.

PROCESS	note to their operations. Staff involved in project preparation and implementation are expected to be aware of project-level activities that are counted toward the indicator, methods to estimate the number of people that have received benefited from new or improved transport services and infrastructure though operations supported by these activities, data sources, and data collection mechanisms for this indicator. The reporting teams provide a user-friendly input-output model template to be used by the project teams for estimating inferred access and improved service results at the project level. The reporting teams also facilitate cross-institution and cross-region learning, exchange of good practices, enhancement of the quality of results frameworks for direct access results, and improvement of consistency in estimation of inferred access and improved service results across projects. It is the client's responsibility to estimate, collect, and report data inputs for this indicator throughout the project. As data quality at entry is a key determinant of the project's performance and a critical element for corporate reporting, it is recommended that project teams work closely with the clients to estimate the targeted results and provide any technical support needed. To facilitate data collection and reporting for this indicator, the project team should provide detailed guidance to the clients, covering the unit of measurement, data sources, methodology for data collection, and reporting responsibilities. The guidance could be issued in the Operations Manual or as a separate M&E Manual that is compiled during preparation or the first months of implementation.[46] The focal points responsible for the reporting should validate the completeness and consistency of the project-level data reported for this indicator. This includes checking whether the right measurement units have been used across the projects whether all fields have been completed in the dataset, and whether data are internally consistent and realistic. These can be a combination of manual and automated checks in the calculation and reporting sheet.[47] The focal points should record any inconsistencies in the data identified, manual adjustments and revisions made, and any additional assumptions used for the calculations to complete the reporting sheet. The purpose of keeping these records is to maintain the history of each data point in case it is ever necessary to revise the whole data series back through time, explain revisions to the data, or update the calculation methods.
VERSION	Version 1. Revised May 22, 2024.

[46] Throughout project implementation, the project teams should also assess whether the data for this indicator has been collected and reported by the clients in a methodologically sound manner and whether M&E arrangements are functioning well or need to be adjusted. In case of any issues related to data availability and reliability, the project teams should identify measures and actions needed to address these issues in a timely manner.

[47] Specifically, the focal points are encouraged to check: (i) projects that report a progress value much higher than the one reported in the previous cycle, which seems unrealistic to be achieved over one year, (ii) projects that report a progress value smaller than the baseline or significantly higher than the target value, and (iii) projects that report significantly large results in their first or second reporting year or do not report any progress for more than 5 years. If any errors are identified, the focal points should request accurate data from the project teams (or directly from clients) and make manual adjustments in the calculation and reporting sheet. The focal points should also proactively engage with the project teams (or directly with clients) to rectify the inaccuracies for future reporting periods.

ANNEX 1: Theory of Change