# DOWNLOAD PDF BENCHMARKING HANDBOOK

## Chapter 1 : Nuclear Energy Agency

*Benchmarking Handbook [B. Andersen, P.-G. Pettersen] on calendrierdelascience.com *FREE* shipping on qualifying offers. Benchmarking is a powerful tool for improvement. It is one of the fastest-growing techniques for quality and performance improvement and attracts massive attention.*

It is one of the fastest growing techniques for quality and performance improvement and attracts massive attention. Now, more than ever there is a clear need for straightforward guidelines to help companies make the most of benchmarking. This book addresses that need. This unique text provides an excellent recipe for conducting a benchmarking study. Unlike other books on the subject it takes a systematic approach, giving the reader step-by-step instructions. The five-phase benchmarking wheel forms the framework for the book, with detailed descriptions of each phase being complemented by graphical navigation aids. This will serve as a quick and practical tutorial for benchmarking and as a handbook to be used by the team throughout the benchmarking study. Benchmarking - the concept. Benchmarking process in the company. The benchmarking process in the company - plan. The benchmarking process - search. The benchmarking process in the company - observe. The benchmarking process in the company - analyze. The benchmarking process in the company - adapt. The benchmarking process in the company - recycle. Benchmarking in a larger context. Benchmarking as part of strategy and improvement. Benchmarking code of conduct. Benchmarking the delivery process of casing for oil wells. Benchmarking of purchasing for special products. Benchmarking study documentation package.

## Chapter 2 : benchmarking handbook | Download eBook PDF/EPUB

*Benchmarking is a powerful tool for improvement. It is one of the fastest-growing techniques for quality and performance improvement and attracts massive attention. Now, more than ever, there is a clear need for straightforward guidelines to help companies make the most of benchmarking.*

Page 54 Share Suggested Citation: The National Academies Press. Each of these is described in the following sections. For each section, key issues, benchmarking metrics, and programs and tools for environmental benchmarking are discussed. There are six different classes of freight trucks, categorized by vehicle weight Class 3 to Class 8B , as shown in Exhibit  The Class 8B 5-axle combination truck is most commonly used in long-haul freight movement. The weight of these vehicles alone influences fuel economy, which determines, in part, vehi- cle emissions rates. Fleet-level environmental performance benchmarks would thus typically account for truck classes. Vehicle and cargo type. It is important to recognize differences within vehicle classes. For example, a reefer will produce more emissions than a comparable vehicle in its class because it uses additional fuel to regulate the temperature of the refrigeration unit. Exhibit 14 shows the fleet segments used to benchmark performance in the SmartWay Transport Partnership. The partnership provides data to benchmark different carrier segments. Each of these types has different aerodynamic profiles and typical cargo characteristics and differs in many other ways that affect their average fuel economy and emissions profile. Additionally, the payload of the vehicle will affect the emissions rate. Vehicles used to haul heavy freight will emit more than those that typically haul lighter loads. The model year of the engine used has a large impact on the emissions profile of the vehicle. Vehicle routes will greatly affect the level of emissions produced. For exam- ple, routes with steep terrain or routes within climates with extreme temperatures will produce greater emission levels than routes on flat terrain and routes in regions with moderate tem- peratures. Additionally, a long-haul truck traveling on uncongested highways will produce fewer Environmental Benchmarking Approaches and Metrics by Sector environmental Benchmarking approaches and Metrics by Sector 37 emissions per mile than a similar truck that operates in stop-and-go traffic to deliver freight in an urban area. The very nature of service will affect the emissions rate of the vehicle so it may be desirable to segment the services for benchmarking. The same truck operating in a TL highway environment would tend to emit less per mile than the same LTL vehicle making multiple pick- ups and deliveries. Additionally, comparing idle time across all types of services can be difficult, since an LTL and parcel delivery service is likely to accrue more workday idling, while a TL service will average more overnight idling. LTL services tend to have fewer empty miles because the density of their business operations allows them to design more efficient pick-up and delivery routes. Private fleets can also be segmented by operation type, including long haul, interplant, direct store delivery, or other types. SmartWay Carrier Segmentation 9Workday idling refers to idling at pick-up and delivery stops. Long duration idling refers to idling a vehicle overnight or for a long period of time to operate air conditioning or heating. These might include virtual container yards, chassis pools, or on-dock rail. The user can also assess technological options targeted to drayage trucks such as diesel particulate filters or oxida- tion catalysts, idle control technologies, etc. Participat- ing carriers are segmented into groups of 12 to 20 companies according to carrier specialties e. Every month, participating carriers submit their finan- cial statements to Decisiv, which in turn produces a financial composite that ranks the carriers according to key factors. The groups meet three times per year for a period of 1 to 2 days each to share their best practices and processes that aid them in reduc- ing costs and improving efficiencies. Esti- mates are made using specific information about a fleet. EPA has built the Quantifier based on existing EPA tools and guidance and it can be used by potential grantees, state and local governments, metropolitan planning organizations, and fleet owners and operators, among others. Freight railroads may be divided into three classes based on operating revenue, which is influenced by the size and function of the railroad. The size of a rail carrier may determine the scale of resources that may be available to invest in equipment, operational improvements, and infrastructure to improve environmental performance. In addition, some operational and equipment strategies that are appropriate for a large Class I carrier may be unavailable to smaller regional or short-line carriers. Different

types of equipment are used in railroad locomotive and car fleets and this equipment produces varying levels of pollution. Some larger road switchers can be rated as high as 2, hp. EPA emissions standards for line-haul and switch locomotives. Because EPA has phased in emissions standards over time, the age of the equipment has a large impact on the air emissions generated. Railcar characteristics may also affect fuel efficiency and environmental performance. For instance, covered hopper cars and tank cars achieve higher levels of gross ton-miles per gallon than auto rack cars. Based on these equipment differ- ences, it may be desirable to segment equipment by locomo- tive type, age, and railcar characteristics. Various facility types are employed in rail freight movement, including intermodal facilities and classification yards. Intermodal terminals, located at the ori- gin and destination of an intermodal rail corridor, are used to store and transfer container shipments between truck and rail. Containers are handled by various equipment, including gantry cranes and yard tractors. Additionally, drayage trucks are required at most origins and destinations to transport intermodal containers between the intermodal terminal and the ultimate origin or destination. Since most shippers are not located at the rail yard, the drays complete the first or last legs of the container shipment. Drayage trucks are typi- cally older, having been retired from short-haul or long-haul service, and have a lower fuel economy in many regions. The emissions generated from yard equipment and the operation of drayage trucks at the facility are included in the total emis- sions generated from the facility. The overall effect of yard equipment tends to be small since the fuel consumed in the rail yard is dwarfed by other sources of consumption. Dray- age trucks may not be used if a rail yard receives cargo from a port with on-dock rail facilities. Classification yards are used to sort cars onto differ- ent tracks so the cars can be assembled into trains. In addition, CN has worked with the provinces of Alberta and British Columbia to enable companies to generate carbon offsets by shifting freight from truck to rail. CN has also conducted several corridor-based analyses of the energy and environmental impacts of shipping freight via alternative rail routes. These studies have modeled the fuel economy and fuel consumption of double-stack intermodal trains using four different but complementary metrics. Each route was analyzed both for locomotive efficiency, which measures the fuel economy of a train from origin to destination, and corridor efficiency, a broader metric that captures efficiency of the overall freight movement including drayage trips, intermodal equipment operation, and empty railcar movements. In flat switching, cars are coupled and decoupled by moving the train forward and backward to switch the cuts. In kicking, trains are uncoupled by rapid engine acceleration, which kicks cars forward. In hump yards, trains are pushed up hills to store energy, which is used to sort the cars. Intermodal terminals and classification yards will differ in the level of emissions produced. For example, intermodal terminals have idling emissions from trains and trucks, whereas classifica- tion yards will also have emissions from switch locomotives. Regional differences in congestion and the drayage truck population serving intermodal facilities will likely affect the overall envi- ronmental impact of operating the terminal. Railroads provide three distinct types of services: These haul types will differ in the level of emissions produced. For example, unit train service is likely to produce fewer idling emissions than carload service because unit train service can provide point-to-point service. Trains that provide carload service transport commodities for shippers who load one or a few cars at a time, resulting in more stops and the need to move cars to different trains. Because intermodal service involves loading trailers and containers onto railcars, it may involve idling emissions from trucks. Variation in rail lines. The variation in rail lines can affect fuel efficiency. Typically, railway corridors are laid out to minimize grades, which are typically less than 1 percent and rarely in excess of 2 percent. Depending on the rail alignment and altitude profile, the effort to overcome grades can account for a significant portion of fuel consumed along a route. In addition to grade differences, track curvature, route circuitry, and other rail line characteristics also affect fuel use and air emissions. Metrics Rail carrier metrics are provided in Exhibit Programs and Tools The SmartWay Transport Partnership helps rail carriers assess, calculate, and track their fuel consumption and find ways to improve efficiency. SmartWay Rail Carriers Class 1, 2, or 3 improve fuel efficiency by implementing strategies such as double stacking railcars, reducing idling at switch yards, and reducing empty hauls. This model is a train performance simulator used to predict fuel consumption and emissions for any train on any route. CSX and BNSF have carbon calculators that allow a shipper to compare its carbon footprint by shipper commodity type for rail versus other transport modes. Companies disclose this

information to set reduction targets, make performance improvements, and benchmark against their peers. CDP groups companies into different categories. CN and CSX both participate in this program. The environmental perfor- mance of carriers is affected by the market segment in which they predominantly operate. DOT certificates define the type of service that a carrier may conduct passenger and cargo or cargo only, scheduled or charter, foreign or domestic. The types of cargo services the air carriers provide overlap. Scheduled passenger carrying air- lines generally carry freight as extra cargo on passenger flights. Many passenger airlines provide express service for cargo. The express carriers provide both express and standard freight carriage and conduct some charters. Express companies also use other air carriers for some shipments. Many scheduled carriers also provide charters. These overlaps in types of services can complicate efforts to compare environmental perfor- mance. For instance, to include the environmental impacts from the transport of belly cargo in a benchmarking study, one would need to allocate the environmental impacts of passenger aircraft activity between passengers and cargo. For a particular segment of travel for a passenger aircraft, this division is typically done on the basis of the weight of the air freight carried versus the weight of passengers and luggage. Metrics Exhibit 18 shows metrics that can be used by air carriers to benchmark environmental performance. All airlines with operations to, from, or within the EU will be required to participate in the trading scheme. As part of this process, airlines began reporting to the EU annual data on CO2 emissions and tonne-kilometers traveled. This data can inform benchmarking studies of air freight operations. The air emissions associated with freight transport differs across ship types. Key vessel types are shown in Exhibit

## Chapter 3 : Benchmarking Handbook : Per-Gaute Pettersen :

*Permission may be conditional on an appropriate royalty payment. with or without calendrierdelascience.com HB 2 F O R E W O R D This Handbook was prepared by Standards Australia to provide guidance to those seeking a basic understanding of benchmarking.*

Page 29 Share Suggested Citation: The National Academies Press. These phases are as follows: Exhibit 5 illustrates each phase of the benchmarking process. These specific phases and the 12 adapted steps that constitute the phases are described in more detail in the following sections. Each of these steps is described in more detail below. Identify Function to Benchmark A key first step in planning a benchmarking study is to identify the function to benchmark. This begins by establishing one or more measures of output to be benchmarked, which could be a product or commodity, an amount of economic output, quantities of commodities shipped, or activity units such as vehicle miles traveled. By identifying a specific output of interest, the benchmarking sponsor i. Furthermore, targeting the functions responsible for a given output allows the sponsor to col- lect the appropriate data regarding specific processes and supporting practices that contribute to the desired output. Given that processes are driven by day-to-day practices, benchmarking studies typi- cally focus on identifying the components and operational steps involved in an individual work process. Through a series of deductive steps, the work process studied is the process deemed responsible, at least in part, for the exemplary performance i. A work process involves repeated steps that are performed within a par- ticular sequence translating input into output to generate value for the consumer. The process owner is the employee or group of employees who implement the steps involved in a particular work process. To understand the systematic steps involved in a process, benchmarking sponsors should plan to conduct process mapping. The result of process mapping is typically a workflow diagram that helps to clarify the prac- tices or steps involved in a process or series of parallel processes. The following are the steps that constitute the development of a process mapping flowchart: Identify function to benchmark. Identify best-in-class organizations in that function. Identify data collection 5. Identify best practices to close gap. Communicate findings and obtain buy-in. Implement actions and monitor progress. Close performance gap  Integrate practices into processes. If a benchmarking sponsor is seeking to mimic the process to achieve a specific outcome, typically, the process mapping will detail every decision point and finite action. Each process mapping step or task should begin with a verb to illustrate an action to be taken. For example, ovals are often used to represent the start or end of a process but boxes and rectangles are used for tasks or activities performed as part of the process. Arrows are used to show the direction of the process flow. Exhibit 7 shows an example of how a process mapping flowchart should be constructed. A complete flowchart would illustrate how a series of processes or parallel pro- cesses work together to achieve an outcome. Contextual factors that should be included in the flowchart are the input people, machines, technology, and other materials , output desired outcome or results , control rules followed by the best-in-class partners , and feedback information obtained via data collection. Often, follow-up interviews with key stakeholders or the process owners can help verify the contents of the process mapping flowchart. Process Step 1 Practice 1. Relationships among practices, processes, and outcomes. The flowchart developer should docu- ment any recommended deviations so process improvements can be noted. This information is needed to guide the type of data collected, help define the questions that need to be asked of the benchmarking partner, and determine how the processes might be transferable to the sponsor organization. Process mapping can be an important tool to examine business operations that affect the environmental performance of a company. For example, a business might want to map its process for vehicle maintenance to improve the operation and emissions performance of in-use vehicles. A railroad might want to map the process by which trains and railcars are handled in a classification yard to reduce locomotive idling. A shipper might want to map the process for how freight transportation is procured and routed to assess whether its environmental footprint can be reduced by using transportation options that are less energy intensive. A receiver could map out how freight is scheduled and handled at its loading dock to determine if there are opportunities to reduce truck idling. A trucking company might want to

map procedures for Source: Although a benchmarking sponsor may be interested in studying the processes that drive a number of successful outcomes, it is important that the sponsor prioritize which ones are most important. The sponsor needs to focus its interests in order to conduct a thorough study of a particular outcome. This focus allows the organization to effectively prepare itself in terms of structure, culture, and employee engagement for transformation that will likely occur as a result of adopting new practices and processes that will help achieve a similar desired outcome. Focus- ing on multiple areas of interest can distract the organization in its study by straining resources, confusing data collection, and segregating the organization in terms of the changes its employees will be willing to accept and implement. The following factors should be considered and weighted in defin- ing priorities relative to environmental benchmarking: Which outcomes will have the greatest positive environ- mental impact? Which outcomes and processes will be the most cost-effective to replicate? Which processes will be most efficient to implement i. Which outcomes and processes will require the greatest transformation when adopted by the sponsor organization? In answering these questions, benchmarking sponsors typically find it most advantageous to begin by studying the outcomes and processes that will attain the greatest impact with the least amount of resource allocation and transforma- tion by the organization. In other words, it is recommended that sponsors initially select priorities that will be easily pal- atable to the organization and demonstrate a clear payoff in the conduct of the benchmarking study. Identify Best-in-Class Organizations in that Function An important component of designing a benchmarking study is the selection of organizations to be used for pur- poses of comparison. Peer firms selected for comparison included Dell Inc. In this context, peer firms were leading manufacturers of industrial and other types of equipment that faced similar logistics challenges. The elements considered in this benchmarking exercise included the commitments of these firms to fuel efficiency and emissions reductions, key performance indicators KPIs , current environmental performance, and future targets for logistics activities. Among the peer organizations, both Dell and Toyota had made substantial improvements to their logistics operations. Strategies employed included reducing the use of packaging, increasing the loading of containers, and reducing emissions per ton- kilometer by changing the port of entry to reduce truck miles traveled. The logistics center of excellence used the information obtained from the benchmarking study to implement a carbon measurement program. Mitigation programs were put into place to shift freight to less polluting modes, including a wind turbine supply chain optimization program that shifted the port of entry for parts. Steps in Benchmarking process 15 geography over which it is moved, the type of service provided, and the level of congestion of the transportation facility. The choice of entities to benchmark against can be driven by a variety of cri- teria, including a desire to compare against a similar type of operation, the location of innovation, or the availability of willing partners. The benchmarking literature suggests a number of different types of benchmarking and targets for comparison. In general, benchmarking studies can be classified according to the type of partner that one wishes to benchmark against, the nature and objective of the study, and the purpose of the partnership. A benchmarking study can combine several of these different categories. Exhibit 8 describes these different types of benchmarking studies in detail. Although benchmarking is often defined as an outward-looking exercise, some firms may have business units that operate independently from each other. In those instances, internal benchmark- ing can be done. Comparing oneself against direct competitors competitive benchmarking is per- haps the most common conception of benchmarking; however, the desire of firms to protect trade secrets may limit exchange of information among competitors in some cases. Many proponents of benchmarking argue that firms need to go beyond the group of direct competitors to have access to a larger universe of leading companies and innovative practices. Industry benchmarking draws comparisons to competitors in the same industry who may not be direct competitors, like truck- load and less-than-truckload LTL carriers. Functional benchmarking examines business func- tions between dissimilar industries. For instance, the logistics function between a manufacturer and a retailer could be compared. Generic benchmarking compares similar processes in significantly different types of firms or organizations. For instance, a vehicle maintenance process in a trucking company could be benchmarked against similar maintenance procedures used by the military. The nature of the object of study may also vary. Firms may engage in both process bench- marking and product benchmarking. Strategic benchmarking may look at

higher level orga- nizational and management practices. Future benchmarking is forward looking and seeks to ascertain new technologies and breakthroughs that may eventually become benchmarks. Lastly, the purpose of a benchmarking partnership may be collaborative or competitive. Typology of benchmarking studies. In a bench- marking study, metrics and measures identified in reports such as corporate sustainability reports CSRs may be used; however, as part of planning for a benchmarking study, performance mea- sures may have to be developed. In fact, the current performance measures used by other orga- nizations may indicate what should be benchmarked. In other words, if a partner organization presents specific metrics that speak of best-in-class performance in a particular environmen- tal area, it may be the processes performed within that function that the sponsor organization chooses to benchmark. However, caution should be taken when using the measures presented by another organization. Without knowing all the variables that were incorporated into their com- putation and the way in which the partner organization operationalizes a concept, there can easily be confusion over what the numbers mean. Typically, in environmen- tal benchmarking, metrics are quantitative and include absolute, relative, and indexed metrics. Indexed metrics would measure the per- centage of improvement from a baseline e. Clean Cargo Working Group: Choice of Performance Metrics The Clean Cargo Working Group CCWG is a business-to-business initiative of more than 30 shippers, carriers, and logistics providers that was formed to measure and reduce the environmental impacts of global goods transportation. In developing its metrics, CCWG has tried to balance feasibility i. At the same time, CCWG strives to align its metrics and methodologies with leading external standards. For example, CCWG recently revised its metrics for waste, water, and chemicals to align more closely with those of the Clean Shipping Index, an environmental performance measurement system that originated in Sweden and is now widely used throughout Europe. To enable this calculation, carriers must provide CCWG with vessel-specific data on fuel consumption by fuel type, distance sailed, and cargo capacity. This information is important because a container ship uses fuel to provide electricity to the cooling units of refrigerated containers. CCWG also asks carriers to identify the trade lane in which a vessel operates. Comparisons can then be made among the carriers servicing a given trade lane, and an average can be calculated for all carriers servicing a trade lane.

## Chapter 4 : Benchmarking Handbook - B. Andersen, P.-G. Pettersen - Google Books

*Jim Gray (Ed.): The Benchmark Handbook for Database and Transaction Systems (2nd Edition). Morgan Kaufmann , ISBN Jim Gray: Database and Transaction Processing Performance Handbook.*

## Chapter 5 : Benchmarking and Handbook - Human Resources Today

*Please note, this language is only an extract from our employee handbook and has been tailored to our workplace and employees. At Zenefits, we believe in research, benchmarks, and adopting best practices.*

## Chapter 6 : The Benchmark Handbook, Second Edition

*TRB's National Freight Cooperative Research Program (NFCRP) Report Handbook on Applying Environmental Benchmarking in Freight Transportation explores how benchmarking can be used as a management tool in the freight and logistics industry to promote environmental performance.*