

Ex post evaluation – Vietnam

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Sector: Rail transport system (CRS code 2103000)
Project: A) Mainline Locomotives* (BMZ 2000 65 128) and accompanying measure (BMZ 2000 70 185); B) Da Nang Workshop Programme** (BMZ 1996 65 498)
Project Executing Agency: Vietnam Railways (VNR)



Ex post evaluation report: 2014

		Project A (Planned)	Project A (Actual)	Project B (Planned)	Project B (Actual)
Investment costs (total)	EUR million	49.59	49.59	5.37	4.83
Counterpart contribution	EUR million	0.00	0.00	1.02	0.48
Funding	EUR million	49.59	49.52	4.35	4.35
of which BMZ budget funds	EUR million	36.30	36.30	4.35	4.35

*) Random sample 2014

**) Added from 2013 basic population

Description: for A): Purchase of 15-20 (= plan at project appraisal, ex-post evaluation status: 16) locomotives that will chiefly be utilised for passenger transport on the main route between Hanoi and Ho Chi Minh City (HCMC), together with consulting services to support the project-executing agency. A maintenance contract was originally planned but ultimately not realised. The accompanying measure was used for training the locomotive drivers and optimising the use of the locomotives. For B): Purchase and operational installation of additional machine tools, workshop equipment, electrical installations, components and spare parts for locomotives in order to eliminate general bottlenecks, as well as improve capacities for wheel set machining. Furthermore, improvement of wastewater treatment (oil separation) and consulting services to support the project-executing agency.

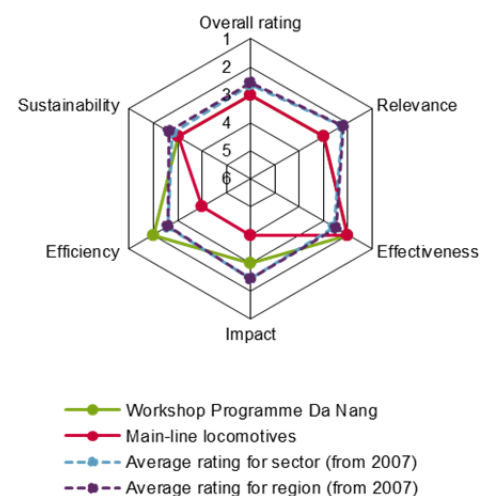
Objectives: for A): The aim of the project was to secure the traction capacity of the railway via replacement purchases and the efficient running of the project locomotives in order to safeguard the services of Vietnam Railways (VNR). The overall objective was to contribute towards a sustainable improvement in VNR's performance and hence greater competitiveness in comparison to other modes of transport. For B): The aim of the project was to increase the average availability of the locomotives stationed in the Da Nang depot by providing better maintenance and servicing. This was designed to help safeguard the transport performance of the railway for both passenger and freight transport (overall objective).

Target group: for A): Users of the railway. For B): Indirect beneficiaries, such as passengers and freight transport service customers.

**Overall rating: 4 (mainline locomotives)
 3 (Da Nang workshop programme)**

Rationale: for A): Even though the indicators defined for the project objective were partly fulfilled, the project exerts a not insignificant burden on the executing agency, thereby limiting financial and operating margins and weakening the competitiveness of the project-executing agency. For B): While the performance of Da Nang workshop was increased substantially, at the same time the relative transport performance of the railway decreased compared to other modes of transport. Hence from today's perspective it only has limited developmental relevance.

Highlights: The effectiveness of the projects was good. Nevertheless this was not enough to secure project success due to the low economic efficiency. The start-up financing for the delivery of modern German locomotives did not result in follow-up deliveries under current market conditions.



Rating according to DAC criteria

Overall rating: 4 (Mainline Locomotives)

A modernisation of the locomotive fleet was indispensable to maintain the performance of the railway. Together with the purchase of additional locomotives, especially from China, the "Mainline Locomotives" project was able to contribute to securing VNR's traction capacity. All the purchased locomotives are in use and meeting the set expectations, that said, ailing infrastructure means that the locomotives are not able to reach their full potential in terms of performance. Nonetheless we consider the project's effectiveness to be good overall. For a sustainable boost to the competitiveness of the railway (overall objective), a comprehensive modernisation of executing agency VNR and massive investments into the outdated infrastructure would have been necessary. The project produced no notable developmental effects (growth, poverty alleviation, environmental and climate protection).

Due to the tender restricting deliveries to locomotives from Germany, the costs of these locomotives, despite favourable terms, were clearly higher than for other locomotives currently used on the Vietnamese railway which are comparable with the German locomotives in terms of availability, mileage and operating costs. The high costs of procurement, the debt service resulting from near-market on-lending conditions and the additional maintenance costs, caused by the higher number of locomotive types, are a serious financial burden for the project-executing agency.

Overall rating: 3 (Da Nang workshop programme)

The improvement of the maintenance and servicing provided by the Da Nang railway workshop is an important precondition for securing the sustainability of the above-mentioned "Mainline Locomotives" project as well as for the "Rehabilitation of 15 Mainline Locomotives (1993 65 578)" project. The "Da Nang Workshop" project is therefore part of the modernisation of the locomotive fleet and an important component in maintaining VNR's transport performance. All purchases are in use and have boosted the performance of the workshop.

Overarching developmental aims, such as safeguarding environmentally sound transport, were not defined during the project appraisal in 1996. The overall objective ("safeguard current transport performance"), though more a project goal, was achieved. At the same time, however, the importance of the railway as a means of transport for people and goods and as competition for alternative modes of transport has steadily fallen. The railway's contribution to areas such as reducing poverty as well as environmental and climate protection, which are relevant from a developmental perspective, is rather marginal.

Relevance

With annual growth rates of 9 % (1995-2005) and 16 % (2005-2010), the transport sector accounts for a substantial part of the country's positive economic development. That said, passenger transport in Vietnam is dominated by roads, and goods transport by coastal shipping; the railway share of transport not only fell in relative terms during the project, but also in absolute terms in recent years following the marked increases early on (minus 1.5 % p.a. since 2005).

Investments in land-based transport have been a high priority for the Vietnamese government for many years with a view to promoting further economic development. Accordingly, the transport sector is firmly embedded in the government's main strategy documents as a key element (including the Socio-Economic Development Strategy (SEDS) 2011-20 and the Socio-Economic Development Plan SEDP 2011-15). The vast majority (92.4 %) of the budget, however, is channelled into developing and maintaining road infrastructure, with only 2.26 % dedicated to the railway.

At the time of the project appraisal there were three main problem areas: a) the ailing infrastructure; b) the outdated fleet c) organisational structures in need of reform.

Both of the projects, "Mainline Locomotives" and "Da Nang Workshop Programme" in conjunction with previous projects and follow-up projects ("Rehabilitation of 15 Mainline Locomotives", "Modern Railway

Cranes" and "Modernisation of VNR Control Centre") and further locomotive purchases focus particularly on the fleet of vehicles (Problem area b).

However, the modernisation impacts have only had a limited effect on the competitiveness of the railway in Vietnam because too little attention was paid to the bottleneck factor of railway infrastructure.

The projects were carried out in close cooperation with other donor agencies active in the transport sector (ADB, JICA, World Bank, AFD, Switzerland) and the German organisation formerly known as GTZ, providing a meaningful addition to the FC commitments in the railway sector thus far. The promotion met the objectives of German-Vietnamese development cooperation and focused on the priority area of transport, which, however, has since been discontinued.

Relevance rating: 3 (both projects)

Effectiveness

The objective of the "Mainline Locomotives" project was to secure the traction capacity of the railway via replacement purchases and the efficient running of the project locomotives. The objective of the "Da Nang Workshop Programme" was to increase the average availability of the locomotives in the Da Nang depot by means of improved servicing and maintenance. The following quantitative indicators were defined for the project objectives:

Mainline locomotives:

Indicator	Status of ex post evaluation
Average mileage of at least 150,000 km/p.a five years after delivery of the last project locomotive, of which 90 % in productive use.	The average mileage of the project locomotives was 153,000 km/p.a in 2012, of which 92 % (140,000km) was in productive use (last delivery in 2007).
Availability of project locomotives to be at least 85 % five years after delivery of the last project locomotive.	The availability of the project locomotives was 85.8 % in 2012, the last delivery was in 2007.
Average mileage of the entire locomotive fleet at least 80,000 km/p.a five years after delivery of the last project locomotive.	Since some of the very old locomotives were not put out of service, only the average mileage of the most important locomotives is more than 80,000 km/p.a., yet these handle 90% of the transport volume (freight and passengers in tkm and pkm).
The availability of the entire locomotive fleet is at least 80 % five years after delivery of the last project locomotive.	Since some of the very old locomotives were not put out of service, the availability of the most important locomotives is 82 %, which handle 90 % of the transport volume (freight and passengers in tkm and pkm).

Accompanying measure:

Indicator	Status of ex post evaluation
Rapid project implementation (according to PP: start 6/2000, end 12/2005).	Project implementation was delayed by two years, – start of implementation 2002, delivery of last locomotive 10/2007.
Training locomotive drivers to operate project locomotives.	The locomotive drivers were successfully trained, all project locomotives are in use and being duly operated (indicator met).

The average mileage and availability of the entire locomotive fleet are below the anticipated target indicators of 80,000 km/p.a. and 80 %, since some very old locomotives are still in use and the infrastructure was only rehabilitated at a few very precarious points. As a result, the top permissible speeds are still low and the single-track main line does not facilitate the optimal use of existing capacities. At the same time, the intention to modernise the locomotive fleet was fulfilled, the average age was lowered and the average availability improved. The traction capacity available is able to cover current needs, even though demand has risen by 160 % (freight in tkm) and 80 % (passengers in pkm) since the project appraisal.

Da Nang Workshop Programme:

Indicator	Status of ex post evaluation
Total availability of Romanian locomotives stationed in Da Nang in 2010 and 2012: at least 80 %.	The availability of the Romanian locomotives in 2010 was 82.5 % and in 2012 was 83.1 %.

The Romanian locomotives mentioned here are part of the old Vietnamese railway stock, which were repaired as part of the FC project "Rehabilitation of 15 Mainline Locomotives". The project was implemented only after lengthy delays and was completed in 4/2006. It is also assumed that the expected availability of the Romanian locomotives will decline over time. The actual availabilities measured of 82.5 % (2010) and 83.1 % (2012) can be considered high in this respect, and reflect the good quality of maintenance, as well as the successful procurements of spare parts. Furthermore, all procurements are in regular use and are professionally maintained.

Since the project objectives and the direct project indicators were met for both projects and only the indirect indicators were not fulfilled, the project effectiveness can still be considered good.

Effectiveness rating: 2 (both projects)

Efficiency

While the restricted tender for the Da Nang Workshop Programme did not result in any measurable distortions, the mainline locomotive tender comprising three potential bidders eventually turned into one joint offer from two bidders, which also subsequently had to be renegotiated in order to reach an acceptable solution for the partners. A few years earlier (2001) VNR purchased locomotives from China, which are roughly comparable in technical and operating terms, but could be delivered at a far lower price. There are now 80 such locomotives of this type in use.

In comparison to the assumptions made during the project appraisal, the financial impacts of the procurement costs are much stronger than anticipated. This is due not least to the fact that the unit procurement costs for the "Mainline Locomotives" project were 33% higher than the estimated costs during the project appraisal. Amongst other things this resulted in dispensing with the maintenance contract compo-

ment, and in a lower volume of spare parts. It is also assumed that the old locomotives could not be decommissioned as planned.

Even if the individual circumstances of the Chinese bid are unknown, VNR was able to procure comparable locomotives at much lower cost. There is no reliable data available on the operating costs of both types of locomotive. Statements from various departments at VNR suggest that the operating costs are roughly similar.

Positive partial results: the German locomotives are functioning as originally planned. The locomotives are only used on the most demanding route over the Hải Vân Pass, where their structural strengths come into play. That said, other locomotive types are also used on the same route. Negative results dominate overall, however, not least because of the resultant financial burden of the project-executing agency (50% of budget funds and all of the market funds were transferred to the project-executing agency as a loan).

Furthermore, the bottlenecks in railway infrastructure were not eliminated and prevent the delivered locomotives from utilising their full potential. Since substantial investment funds are required for modernisation, no improvement in the current situation is expected for the foreseeable future. The project's efficiency is therefore rated as inadequate.

Efficiency rating: 4 (mainline locomotives)

Delays emerged in all phases during the implementation of both projects – triggered by complex and centralised execution structures and the provision of local funding – causing severe deviations from the original implementation plans (Mainline Locomotives, end of implementation PP: 12/2005; actual end of implementation: 10/2007; Da Nang Workshop Programme, end of implementation PP: 10/1998; actual end of implementation: 4/2006). With one exception (maintenance contract for mainline locomotives) the physical results expected were met, and even exceeded in the case of the Da Nang Workshop Programme, thanks to the good tender results and the favourable exchange rate developments. Consequently, the costs for rehabilitating the electricity supply were also covered and funds were used to purchase an underfloor wheelset turntable, which reduces the time needed to overhaul wheelsets from 10-14 days to one day. Thus the costs for the Da Nang Workshop Programme fell below initial estimations.

The use of funds to modernise the Da Nang Workshop is efficient and appropriate given its key importance for the performance of VNR and in view of safeguarding the sustainability of the FC projects "Mainline Locomotives" and "Rehabilitation of 15 Mainline Locomotives".

Efficiency rating: 2 (Da Nang workshop programme)

Impact

The overall objective for the "Mainline Locomotives" project was to "contribute to the sustainable improvement in the performance of the railway and therefore its competitiveness compared to alternative modes of transport". The only indicator defined was "Improvement in the earnings of VNR before interest, taxes and depreciation (EBITD)". Since VNR has undergone several structural reforms, comparing the two figures does not provide any relevant information.

"Competitiveness" is not precisely defined among the objectives. If we take the share of the railway in total traffic volume as the point of departure (measured in t, p, tkm and pkm), the railway has lost appeal compared to alternative means of transport and has ceded ground to competitors with both passenger and goods transport. The absolute numbers (in tonnes and passengers) for the railway have also been declining since 2005, while the tkm performance (tonne kilometres) is still climbing slightly for freight and has roughly stayed the same for passengers (pkm). However, the total transport volume in Vietnam easily more than doubled over the same period (between 2005 and 2012). The project contributed to maintaining operations, but not efficiently, given the financial burden for the project-executing agency. Railway users saved neither time nor money. The lack of efficiency in the project has a negative impact on potential growth impetus by means of alternative investments in the transport sector.

Further relevant impacts in terms of development policy, such as contributing to environmentally and climate-friendly growth that focuses on reducing poverty, were not reflected under the objectives of either project. These aspects must be considered from today's perspective.

The railway can be considered a comparatively safe means of transport, with "only" 454 reported accidents, 221 deaths and 312 injuries in 2012 (at unprotected or unofficial railway crossings). By comparison, road transport cost the lives of more than 9,500 people in 2012 with roughly 37,700 injuries in around 35,800 accidents. Based on passenger transportation performance (pkm) people are four times more likely to be involved in an accident on the road than if travelling by rail.

The environmental impact of the railway vis-a-vis alternative modes of transport is less clear. The railway produces fewer fine dust and CO₂ emissions, which is relevant particularly when compared to the road transport of goods and private transportation. In Vietnam, however, roughly 76 % of goods are transported on coastal ships, while a large part of passenger transport uses long-distance coaches. Both coastal shipping and passenger transport by bus are easier on the environment than railways in terms of fine dust emissions, carbon dioxide and CO₂ per p/tkm, and are therefore the more acceptable alternative from an economic and ecological perspective¹.

The poverty impacts of the projects are considered low. Poor people predominantly choose bus transport at prices that on certain routes are 30 % below the price of a comparable train ticket. There is also a better customer service on the buses, a well-developed network of connections and shorter times between individual locations.

This is why the overall objective indicator for the "Mainline Locomotives" project is deemed not to have been met.

The overall objective for the "Da Nang Workshop Programme" was defined as "contributing to safeguarding the current performance of the railway in passenger and freight transport". The indicator was taken to be the transport performance of the railway in 1999 on the Hanoi-HCMC route (which the workshop is responsible for) at 1.7 billion pkm and 1.0 billion tkm, which was construed as the minimum performance. In the meantime (2012) the transport performance on the route between Hanoi and HCMC for passenger traffic rose by roughly 130 % to 3.9 billion pkm and for freight traffic by roughly 180 % to 2.8 tkm, which could not have been achieved without the afore-mentioned investments. In total, roughly 70 % of the railway's transport performance pertains to the section between Hanoi and HCMC, which underlines the importance of the Da Nang Workshop for VNR – the overall objective was therefore achieved.

**Impact rating: 4 (mainline locomotives) and
3 (Da Nang workshop programme)**

Sustainability

No notable risks were identified and named during the project appraisal with regard to the sustainability of the projects. However, the concept also comprised a four-year maintenance contract that ultimately could not be implemented. Given that the locomotives are currently running high mileages, with high availability and are subject to regular maintenance, a service largely carried out properly and competently, we see no direct risks stemming from the absence of the maintenance contract. The German locomotives are expected to result in lower maintenance costs due to the way they are built. How the actual life-cycle costs develop – compared to other types of locomotives owned by VNR – cannot be definitively assessed as yet.

In the short and medium term, the risks regarding the sustainable operation of the mainline locomotives and the Da Nang Workshop are low, especially since the necessary spare parts were procured from residual funds in the Mainline Locomotives project. In the mid to long term, however, it is questionable whether VNR will be in a position to secure spare parts from abroad to run the mainline locomotives; this is less relevant for the Da Nang Workshop. At present, there is no way of knowing whether the funds and currency required for this will be available in a timely manner. However, given the financial situation at VNR, the falling demand for railway services and the political preference for road transportation at the responsible Ministry, significant risks can be expected in the medium term (> five years) in relation to sourcing spare parts and maintaining the locomotives.

¹ Source: Institute for Energy and Environmental Research, Heidelberg; <http://www.ifeu.de/>.

The bottleneck in railway infrastructure is still not being tackled systematically; the basic modernisation required cannot currently be financed.

Sustainability rating: 3 (both projects)

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).