

# Ex post evaluation – People's Republic of China

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**Sector:** Forestry development (CRS Code 31220)

**Programme/Project:**

A) Reforestation Inner Mongolia (BMZ No. 1998 65 882) \*

B) Reforestation Liaoning (BMZ No. 2000 65 052) \*

C) Reforestation Hebei II (BMZ No. 2000 65 458) \*

**Implementing agency:** State Forest Administration/ SFA: A) Forestry Bureau Chifeng/ Inner Mongolia, B) Forestry Bureau Chaoyang/ Liaoning, C) Forestry Bureau Chengde/ Hebei



## Ex post evaluation report: 2015

		A (Planned)	A (Actual)	B (Planned)	B (Actual)	C (Planned)	C (Actual)
Investment costs (total)	EUR	12.92	12.65	10.62	10.65	8.55	9.01
Counterpart contribution	EUR	4.74	4.47	4.48	4.51	3.44	3.90
Funding	EUR	8.18	8.18	6.14	6.14	5.11	5.11
of which BMZ budget funds	EUR	8.18	8.18	6.14	6.14	5.11	5.11

\*) Random sample 2015

**Summary:** Reforestation project in Northern China as part of the "Three-North Shelterbelt Programme" to protect land resources

**A)** Establishment of protection forests, conservation of erosion-prone areas with remaining vegetation, and stabilisation of sand dunes in 4 districts of the **Chifeng** Prefecture (Autonomous Region of **Inner Mongolia**) over roughly 56,000 ha

**B)** Reforestation and rehabilitation / conservation of more than 36,500 ha (forest and natural vegetation as well as fruit trees) in 5 districts of **Chaoyang** Prefecture (province of **Liaoning**) – with the active involvement of the local population

**C)** Reforestation and rehabilitation / conservation of more than 27,700 ha (forest and natural vegetation as well as fruit trees) in 4 districts of **Chengde** Prefecture (province of **Hebei**) bordering on to the Beijing agglomeration.

**Objectives:** By means of stabilising agricultural production potential in the respective catchment areas, the sustainable protection of reforested or protected vegetation areas was to help safeguard the livelihoods of the local population ("impact") – and especially in the case of Chengde (Project C) - to facilitate better protection for the metropolitan region of Beijing against dust storms and other things.

**Target group:** Population in the programme regions – landowners directly involved or cooperating in Chifeng (Project A) 19,928 households, in Chaoyang (Project B) 15,134 households, and in Chengde (Project C) 21,665 households; the indirect beneficiaries of the soil and groundwater protection (mainly farmers and those in lower lying areas) cannot be quantified exactly.

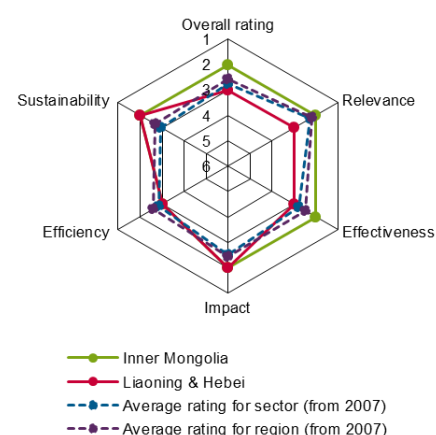
**Overall rating: Project A rating (Inner Mongolia) 2**

**Project B rating (Liaoning) 3**

**Project C rating (Hebei) 3**

**Rationale:** Vegetation cover was secured on a sustained basis over largely marginal areas, using methods suited to local conditions in Chifeng (Project A), where stabilising the dunes contributed towards solving a pressing problem for the population. In Chifeng and Chaoyang (Projects A + B) the harsh growth conditions offer only limited options for economic use – apart from fruit orchards funded in Chaoyang. The more favourable climate in Chengde (Project C) is likely to allow for limited use at least in some areas in the longer term.

**Highlights:** The participatory approach and the focus on native trees and bushes were exemplary and have been absorbed into national programme concepts to some extent at least. Soil and water degradation in Northern China is mainly caused by intensive agriculture and massive hydrological manipulations. In this context, forestry measures are a necessary part of the problem solution, but insufficient on their own overall.



## Rating according to DAC criteria

<b>Overall rating:</b>	
<b>Project A rating (Inner Mongolia)</b>	<b>2</b>
<b>Project B rating (Liaoning)</b>	<b>3</b>
<b>Project C rating (Hebei)</b>	<b>3</b>

### General conditions and classification of the projects

The projects were part of an extensive reforestation programme in Northern China: according to reports, more than 1.8 million ha were reforested in Chifeng prefecture alone between 2000 and 2015, while in the Chengde and Chaoyang prefectures around 580,000 and 300,000 ha, respectively, were reforested in the same period. The projects' conceptual orientation emphasised participatory planning and implementation as well as the emphasis on site-appropriate native tree and shrub species and the protection of remaining areas of natural vegetation. This subsequently also influenced the design of national programme approaches.

In terms of climatic and growth conditions, the relatively remote programme regions of Chifeng and Chaoyang must be considered marginal sites, whereby Chaoyang / Liaoning, with approximately 350-450 mm of annual precipitation and around 170 frost-free days per year, displays slightly more favourable conditions than Chifeng / Inner Mongolia, which has 250-400 mm of annual precipitation and 150 frost-free days per year. The Chengde / Hebei prefecture is bordered to the south by the Greater Beijing region and, at least at lower altitudes, has a significantly milder climate, with more than 500 mm of rainfall and more than 170 frost-free days in some parts.

### Relevance

The need to address the degradation of soil and water resources by means of improved forest or vegetation cover is indisputable from today's perspective. In many parts of Chifeng prefecture (project A), the dunes and sandy areas with their drifts presented an immediate livelihood risk to the local farmers. Considering the overall picture, however, it is undisputable that silvicultural measures alone can make only a limited contribution towards reversing land degradation – in the face of massive hydrological interventions and considerably intensified agriculture up to Inner Mongolia and beyond (largely with lack of soil cover, at least in the winter months) –.

Given the extent of national reforestation efforts (see above), the project – purely in terms of size – makes a rather modest contribution in terms of numbers. Beyond that, specific conceptual contributions by the FC projects deserve merit: this holds true for both the participatory approach (which was subsequently also systematically applied in other programmes) - as well as for the use of site-appropriate tree and shrub species, with an increasing focus on space-efficient protection concepts. Initially, the FC projects relied primarily on conventional reforestation practices, but the emphasis shifted increasingly – particularly in Chifeng – towards the cost-effective designation and fencing off of natural vegetation areas (“closures”) in order to allow for the regrowth of natural shrub and tree vegetation undisturbed by grazing livestock. This was at times supplemented by stand improvement or the sowing of native tree and shrub seeds.

Apart from soil and water protection, the initial - relatively standardised - approach also aimed at the economic use of afforestation sites by the respective land owners. Due to the marginal locations and poor growth conditions, however, the intervention logic of projects A and B appropriately focuses on environmental effects as a priority, while the expectations in terms of socio-economic results at beneficiaries' level were at best limited in the longer term - or were formulated indirectly. In Chifeng, in particular (project A), the greening and fixing especially of the region's widespread dunes and sandy areas by manual and aerial seeding was an important component. The latter method is suitable for non “rolling” dunes and does not require the - otherwise costly - stabilisation using straw mats. Some shrub varieties used for dune fixation can also be used as fodder and are therefore also of economic interest.

The growing conditions in Chengde (project C) are more favourable in comparison to the other two programme regions - both in terms of rainfall and temperature. They should allow for limited forestry usage in

several areas at least in the longer term (i.e. after about 40 years). At the same time, however, the project area in Hebei includes areas of high altitude with very slow tree growth. The erosion of mountainous areas, in particular, was one of the central environmental problems – with an impact both locally on the living conditions of the population, as well as in the form of dust storms and degradation of water resources – especially for the adjacent Greater Beijing region to the south. The project – as well as other reforestation efforts in the Hebei province – enjoyed special attention as a result of these spatial conditions. The efforts to create additional income are understandable in view of the situation at the time. However, they have lost much of their significance as a result of the economic development that has occurred in the meantime in many parts of the programme region (and which was unforeseeable at the time of the appraisal).

In the cases of Chaoyang (project B) and Hebei (project C) in particular, it can be questioned in retrospect whether the less costly “closures” would not have deserved greater emphasis – if necessary, at the expense of other silvicultural categories. This was offset by the intention – at least initially (as the economic momentum that has occurred in the meantime was not yet apparent as it is today) – to supplement rural incomes in the implementation phase with the help of remunerating reforestation work. In the case of closures, such benefits could only have materialised to a very limited extent.

The projects corresponded to national priorities and were part of an extensive reforestation programme (see above), whose thematic orientation was shaped with their experience. In comparison, the design of project A receives somewhat more credit, as (1) it provided for a higher proportion of “closures”, (2) the drifts from the widespread sand dunes in the area represented an immediate problem for the local population, and (3) customised economic options were conceptualised - despite particularly adverse site conditions (in particular fodder shrubs).

**Relevance rating:**

<b>Project A (Inner Mongolia)</b>	<b>2</b>
<b>Projects B + C (Liaoning + Hebei)</b>	<b>3</b>

**Effectiveness**

It was possible to exceed the initial surface area targets, with over 53,000 ha in Chifeng / Inner Mongolia, a good 36,500 ha in the case of Chaoyang / Liaoning and 27,700 ha in Chengde / Hebei. The visited areas for projects A and B showed average survival rates of 70 %, while for project C this was around 80 % – although pronounced fluctuations were observed. The outcome indicator chosen initially, the plantations’ “survival rate”, is particularly important for stocks which are to be used economically; however, this applies only to a limited extent to projects A and B. Consequently - with this evaluation, “vegetation coverage” is to be considered an equally significant feature for all projects. Judging from visual impressions, this surpasses the requirements in virtually all locations.

In Chifeng, the use of fodder shrubs (mainly for silage) was met with an unexpectedly positive response; it is estimated that this is practised on more than 25 % of the approximately 20,000 ha of appropriately stocked areas. According to selective, non-representative surveys, shrub silage is able to cover up to 30 % of a farm's fodder requirements. According to reports, a significant, though unquantified number of silage pits were also installed by the farmers on their own initiative – over and above the 75 facilities funded by the project.

Other forms of use (projects A + B) include collecting fodder shrub seeds on the reforestation and conservation areas in Chifeng and Chaoyang (in Chifeng in particular) as well as the collection of wild apricots or forage grass. Wild apricots and forage grass are collected only to a limited extent, however, given other, much more lucrative income options available now (mainly contract and migrant labour). The fruit orchards supported as “subcomponents” in Chaoyang / Liaoning (project B) are economically profitable: areas smaller than 1 ha can generate an income which is reported to be equivalent to revenues from migrant labour. This is also confirmed by the fact that the cultivation of the so-called “Chinese date”, which was funded predominantly by the project, has increased significantly in the Chaoyang prefecture. It is not clear whether the project has contributed significantly to this expansion in growth, or whether this form of land-use would have spread further in any case as a result of its profitability.

In Chengde (project C) , the manual planting of afforestation areas has been heavily promoted - in accordance with demand from the target group. This forestry category also offers short-term income oppor-

tunities in the form of collecting mushrooms, plant seeds, etc.; forestry usage proper (esp. timber) is, however, can only realistically expected after more than 30 years. On the other hand, a “backyard-forestry” component was also planned to a limited extent, aimed at supporting poor households in the establishment of small (“backyard”) fruit orchards. However, it was heavily curtailed due to low demand. In addition to the above-mentioned areas, more than 5,000 hectares of forestry were thinned in Chengde in accordance with the principles of sustainable forest management; besides, land owners and employees of the Forest Administration received training in sustainable forestry.

The fences erected to protect forest land against grazing livestock in Chaoyang and Chifeng (projects A + B) showed gaps in some places, and traces of grazing have been found in some places, without any serious adverse effects on the vegetation cover being perceptible. In Inner Mongolia, in particular, livestock numbers have increased considerably; at the same time, intensified livestock farming based primarily on stabling is becoming increasingly common, which tends to reduce the grazing pressure on open spaces. In the special case of Hebei province (project C), it is worth noting that the use of all mountain regions for grazing purposes is now prohibited, and this has been implemented very effectively (“Hebei Mountain Closure Regulation” of 2014, based on the “Grazing Ban” of 2003). This policy has contributed significantly to the stabilisation and improvement of the vegetation in these areas; according to representatives from the Forest Administration, it was also influenced by the FC project’s work and its preparation.

**Effectiveness rating:**

<b>Project A (Inner Mongolia)</b>	<b>2</b>
<b>Projects B + C (Liaoning + Hebei)</b>	<b>3</b>

**Efficiency**

The average unit costs for Chifeng (project A) are around 236 EUR/ha, while for Chaoyang (project B) these are equivalent to 286 EUR/ha and for Chengde (project C) to around 328 EUR/ha. This indicates the higher specific effort devoted to areas in Chaoyang and Chengde, where manual afforestation was the dominant concept (as opposed to “closures”). After repeated periods of drought, multiple follow-up plantings on afforestation sites were necessary in some cases. Overall, production efficiency is in line with expectations in financial terms; implementation delays with projects A + B were mainly the result of conceptual adjustments towards site-appropriate and cost-effective protection methods and were justified in this respect.

The programmes’ initial intention to bolster rural incomes during implementation by means of manual reforestation favoured more costly silviculture categories; it can be debated ex post that the “closure” approach would have offered a more cost-effective alternative to this. Particularly in the cases of Chaoyang (project B) and Chengde (project C), it remains unclear with hindsight to what extent a greater focus on closures could have facilitated more efficient conservation at a larger scale. However, high priority was placed - at least initially - on motivating the local population for reforestation work by means of wage payments (see above - Relevance).

In terms of allocation efficiency, it can be noted that the vegetation cover achieved on the land in question provides adequate protection. Significant opportunity costs for the largely marginal land – e.g. in the form of alternative use options – arise, at best in the form of extensive grazing, which is on the decline. Existing incentives - like subsidy payments, the use of forage shrubs or the use of wild fruits or similar (see above) - can be deemed sufficient. Government subsidies for forestry protection amounting to around 25 EUR/ha (“Public Benefit Forests”) may exceed the actual opportunity costs for landowners in many places, and are, at least in part, to be considered as socially motivated. The recommendation made at final inspection to include as many programme areas in the subsidy programme as possible was largely complied with in projects A + B: subsidies are now paid for almost half of the programme areas in Chifeng and for more than 30,000 ha in Chaoyang. In Chengde, this initiative has thus far been only of limited relevance.

**Efficiency rating: 3 (all projects)**

**Impact**

No reliable quantitative data exist on the impact of the improved vegetation cover with respect to soil conservation and hydrology. Discussions on site revealed clear indications of local protective effects in the

case of Chifeng (project A), in particular with regard to sand drifts and shifting dunes, whereas for Chaoyang (project B) and Chengde (project C), improved water flows in certain places (e.g. in sources or streams) were mentioned on various occasions. Overall, the established land cover appeared to be suitable for adequately preventing soil erosion - which was identified as a key challenge at appraisal, but not quantified. In this respect, and all other things being equal, a contribution to stabilising the agricultural production potential of adjacent land in the affected watersheds (mainly downstream) can be plausibly inferred. However, this does not rule out the possibility that countervailing trends outside the projects' immediate area of influence (e.g. overexploitation of water resources or improper agricultural practices) might offset such effects.

With the exception of fodder shrub use, the silvicultural measures in Chifeng and Chaoyang (projects A + B) will in the best case – in light of unfavourable growth and site conditions – bring about limited economic effects at the level of farming households. By contrast, in Chengde (project C), limited forestry use can be expected in favourable locations, at least in the longer term (i.e. after around 40 years).

Temporary income effects occurred during implementation for the direct target group which was the explicit intention (see section “Relevance”); beneficiaries could largely be categorised as poor at appraisal.

In structural terms the exemplary impact of all projects, in particular with regard to the participatory planning and implementation approaches and location-specific silvicultural methods is especially noteworthy. Many of those elements have been taken from the projects and used in national programme approaches (see above - Relevance).

**Impact rating: 2 (all projects)**

### **Sustainability**

There are no significant risks noticeable for preserving the vegetation cover on the programme areas: opportunity costs in the form of alternative usage options rarely arise, and many households participate in the Government's subsidy programme for protecting forest areas, which can be regarded – at least in part – as socially motivated (see above - Efficiency). The Forestry Administration employs an adequate number of staff (“village guards”) who check compliance with the protection requirements on site (and who are themselves supervised regularly). In this context, more stringent grazing monitoring (which, generally is declining - see above) appears advisable on “closure” areas in Chifeng (project A), in particular. In Hebei (project C) there is also a strong regulatory protection mechanism via the “Mountain Closure Regulation”. Certainly the consistency, with which this policy is implemented and monitored, is partly due to the province's importance for the environmental situation in the Greater Beijing region.

Many of the employees trained in the course of the project are still working for the Forestry Administration or have moved from early programme positions to management positions within the county or district Forestry Administration. Important project approaches are incorporated in standard training schemes and have, as a result, become part of the Forestry Administration's daily work.

**Sustainability rating: 2 (all 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:

<b>Level 1</b>	Very good result that clearly exceeds expectations
<b>Level 2</b>	Good result, fully in line with expectations and without any significant shortcomings
<b>Level 3</b>	Satisfactory result – project falls short of expectations but the positive results dominate
<b>Level 4</b>	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
<b>Level 5</b>	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
<b>Level 6</b>	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).