Evaluation of the Better Mill Initiative (BMI) in China

Evaluation Report (final version)

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Executive summary

Despite progress during the last decade, the textile sector is still listed by China as one of its 14 most polluting industrial sectors The textile sector counts for 11.2% of total industrial wastewater and 8.9% of total industrial COD in China.¹ Therefore, the textile sector has been identified as one of the key industries in China for demonstrating it's 'environmental pollution emission permit system', which is becoming a key industrial environmental management instrument. The Better Mill Initiative (BMI) was launched in 2013 by Solidaridad, in partnership with H&M, to help improve sustainability in the fashion supply chain in China – in response to environmental demands coming increasingly via major fashion brands, and through a growing body of domestic legislation.

BMI aimed to empower participating textile mills to clean their production processes through capacity building and training, strengthening the enabling environment, and promoting concepts and progress more broadly within the sector. The textiles sector is complex. Any improvements to its environmental footprint can only come through an industry-wide, holistic and innovative approach. The BMI therefore held its focus purposefully broad.

By the end of 2016, results included 43 mills (nominated by six European brands) having identified (and already implemented a substantial amount of) 675 improvements across seven priority 'themes' of water and waste water, energy, air emissions, solid waste, chemical management and working conditions. Although the implementation is still not finished yet, the resulting savings are encouraging: an estimated 7 200 t of chemicals, 144 000 t CO2, and 72 million RMB (about EUR 9.74 million).

BMI has run for three years and partners and stakeholders support its continued implementation but are now proposing that it could be scaled up for broader impact (even to other countries). In June 2016, a tender for an independent evaluation was launched with the purpose of capturing lessons learned during the implementation of the programme so far (with a view to improving it), and coming up with evidence-based insights for a potential new phase.

Evaluation's objectives

The objectives of the independent external evaluation were to:

¹ China Ministry of Environmental Protection, 2015

- Take stock of the impact of the BMI by verifying the reported achievements on a spot check basis (implemented measures and their impact);
- Learn about what works in the approach, what does not work for the different partners involved (mills, brands, service providers and Solidaridad), and to provide insights that need to be taken into account in order to adapt and improve future work. This relates to the process, the content as well as the implementation method of the programme.
- Contribute to the knowledge base about innovation programmes as well as the business case of (environmental) improvements and how that promotes continuous improvement.
- Contribute to learning and exchange between different stakeholders and programmes currently being implemented in the sector.
- Prove input for evidence-based communication: The evaluation will capture key findings (positive and negative) for the purposes of providing an objective evidence base for internal and external communication. The evaluation results are likely to be integrated in programme communication materials under development.

Evaluation methodology

The evaluation was conducted from October to December 2016, by an international team of experts from China and the Netherlands. Their methodology, starting from BMI's Theory of Change conducted desk research, stakeholder interviews, and an e-survey amongst participating mills. It used original project documentation to identify the aims and objectives of BMI and sought baseline data to help ascertain the degree of change achieved so far.

This report presents the findings and recommendations of the evaluation. The evaluation addressed programme design, relevance, management, effectiveness, efficiency, and impact, and the main report is presented using this structure.

Key findings

Project design – as guidance for implementation this was adequate but gaps in the design affected the efficient implementation of the programme. These included: lack of communications structures and procedures, and lack of clear performance measures or indicators to enable effective monitoring and evaluation;

Mill selection – brands identified mills for participation. Mills, however, were not assessed for their existing level of Cleaner Production (CP) awareness or implementation so training and other support was not specifically targeted;

Breadth of approach – there is general agreement that change must come from addressing all aspects of the sector and a holistic approach is required. However, a broad focus also can affect effectiveness and impact at a programme level, spreading resources and focus too thinly;

Data collection and analysis – there was a lack of baseline data and targets, data collection was adequate at the mills but its analysis was weak, and estimations were common compared to actual measurements;

Capacity building – mills appreciated the expert support towards implementing changes, but capacity building in their businesses was not regarded as sufficient to enable them to continue improvements on their own (i.e. after the programme ended)

Results – improvements were achieved, due to implemented (technical and nontechnical) measures, in energy and water saving, resource conservation, reduced pollution, chemical management, and in the optimisation of related production processes; similarly, in health and safety (particularly energy and chemicals and to a lesser extent, water efficiency). However, due to the lack of accurate data collection the quantitative validation was not possible;

Continuous improvements – despite the results, limited evidence was found to indicate that improvements will continue i.e. little in the way of embedding improvements into management systems and building capacity of staff;

Stakeholder dialogue – the involvement of local authorities and sector associations, having technical knowledge, contact networks and carry leverage especially towards smaller, tier 2 mills, in the current programme was limited;

Knowledge capture – taking stock of lessons learnt and undertaking internal evaluations has been scarcely applied;

Outreach – activities were ad hoc and the launched web portal is not used to its full capacity;

Budget (programme management) – 40% of the programme budget was used for programme management, coordination and generic activities what is seen as high;

Budget (mills) – the costs for services to mills were approximately 12. 500 Euro per mill, including training, network meetings and activities to aggregate best practices. This is regarded as high, in the context of the price of CP assessment (without training) on the commercial market of 4.000 to 7.500 Euro;

Value-for-money (mills) - for the mills, their 3.000 Euro participation fee and investments, compared favourably to annual savings. This was even more attractive in the light of possible grants of up to 15.000 Euro from Chinese local authorities.

Value-for-money (brands) - brands saw good value-for-money during this stage of BMI about their 10.000 Euro allocation per mill, but do not regard the same amount acceptable for any scaling-up activities.

Project design	
Conclusions	Recommendations
The programme design was much broader and holistic than actually implemented, especially interventions beyond the direct scope of mills' support have been downscaled for different reasons, resulting in poor effectiveness especially on strengthening the enabling environment. The programme design lacked communication structures and procedures and clear performance measures / indicators and related M&E-procedures. This resulted in insufficient opportunities to adjust the approach during the implementation period.	• BMI should formalise joint periodic knowledge capturing with involved key stakeholders (brands, mills and implementers) in order to secure a proper learning curve and optimise the effectiveness and efficiency.

Relevance		
Conclusions		
The relevance of the BMI-objectives and areas of intended impact areas ² were judged by all relevant stakeholders, e.g. brands, mills and sector associations, to be good / high. The evaluation showed that two of the most important arguments for mill participating in BMI are (1) the tightened (and upcoming stringent) environmental legislation in China, and (2) the continued operational importance of addressing		

² The direct support and capacity building of (tier 2 mills) as well as strengthening the enabling environment and secure proper outreach of achieved results (e.g. best practices).

Effectiveness	
Conclusions	Recommendations
The effectiveness of BMI's approach varies from good for the direct mills intervention to just moderate for the outreach and visibility and poor for the strengthening of the enabling environment.	 BMI should employ a dual-track approach (different training approach, different level of on-site support, etc.) – to customise the approach better to the requirements of the mills (at least 'matured' versus 'newcomers'). BMI should enlarge the group of stakeholders (sector associations and local autorithies) directly involved in their actions to utilise their networks to get in contact with mills and to enhance the enabling envirionment (diffusion of best practices, utilisation of policy instruments).

Efficiency	
Conclusions	Recommendations
The efficiency of BMI is assessed as poor due to high programme management costs and high mills intervention costs. However, most stakeholders still perceived BMI at this moment as ' value for money '; this should not be interpreted similar to cost-effective.	 BMI should optimise - via their dual-track and modular mill approach, potentially in combination with a modular fee system - the costs for mills interventions. BMI should more strictly split the roles of implementation (mainly covered by qualified service providers) and programme management (guidance and quality control and thereby avoiding duplication.

Scalability	
Conclusions	Recommendations
The potential of and interest for upscaling the chosen approach is assessed as good / high . All brands still underpin the relevance of the BMI-objectives and would be interested to stay (or for non-involved brands become) involved in future activities – upscaling plans – under the condition that the set up of BMI will change, in order to increase the effectiveness and efficiency of the action.	 BMI must align closely with other initiatives (especially SAC and ZDHC) to build upon and utilise knowledge and materials and potentially even join hands, up to full convergence, to avoid duplication and create synergy.

评估报告概要

尽管中国纺织行业在过去的 10 年里取得了较大的发展,但目前仍然是 14 个主要污染行业之一。中国纺织业废水排放量占工业废水排放量的 11.2%, COD 排放量占工业 COD 排放量的 8.9%³。因此,纺织业作为主要污染行业已经 被确定为首批实施排污许可证的行业之一,排污许可证也正成为中国工业环境 管理的主要制度。印染企业创佳项目(BMI)由禾众基金会与 H&M 服装品牌于 2013 年共同发起,旨在响应服装品牌日益提高的环境保护要求以及国内日益严 厉的环境法规,提升服装产业链的可持续发展能力。

印染企业创佳项目的目的是通过能力建设、培训、强化企业环境保护氛围, 更广泛地推进全行业产业链的概念和合作,促进参与项目的印染企业开展清洁 生产。纺织业非常复杂,其任何的环境保护改善都必须依赖于整个行业的、综 合的、创新的措施。印染企业创佳项目明确将项目核心建立在这种广泛的概念 之上。

截至 2016 年底,印染企业创佳项目的 43 家参与企业(由欧洲六个服装品 牌推荐)已经确定了涵盖水和废水、能源、大气污染排放、固废,化学品管理 和劳动条件等七个方面的 675 个清洁生产改进方案(其中相当一部分方案已经 实施)。尽管改进方案还没有完成,但项目已经取得了以下成效:节省化学品 7,200 吨, CO₂ 减排 144,000 吨,节约成本 7200 万元人民币(相当于 974 万 欧元)。

印染企业创佳项目已经实施三年,项目实施单位及项目利益攸关方支持项 目继续实施,并通过扩大项目实施规模来扩大项目的影响(甚至把项目推广到 其他国家)。2016 年 6 月,启动了项目第三方独立评估的招标,进行第三方 评估的目的在于凝练项目实施以来取得的经验,以期改进,并为项目可能的后 续行动提供有事实依据的愿景。

³环境保护部,2015

评估目的

第三方独立评估的目的是:

- 通过现场考察(已经实施的改进方案及其影响),核实项目报告的成果, 摸清印染企业创佳项目产生的影响;
- 鉴别项目实施中哪些方法有效,哪些方法对于项目不同的利益攸关方(印 染企业、品牌、服务提供商以及禾众基金会)无效。通过评估,为今后的 项目实施提供改进建议,这些建议涉及到项目过程、项目内容以及项目实 施方法等;
- 有助于创新项目的科学基础和(环境)改进的商业模式,以及如何促进项目的持续改进;
- 有助于项目的利益攸关方以及行业内正在开展的其他项目间开展互相学习 和交流;
- 为以事实为依据的项目宣传提供支撑。评估将凝练出主要结论(正面的和 负面的),其目的是为项目的内外沟通和宣传提供客观证据。评估结果很 可能纳入正在编写的项目宣传材料中。

评估方法

评估由中荷国际专家组于 2016 年 10 月-12 月实施。评估方法包括对印染 企业创佳项目实现的变化进行案头研究,走访利益攸关方,通过电子邮件对参 与企业进行问卷调查等。依据项目的原始文件鉴别印染企业创佳项目的目标和 目的,并通过核实基准数据,帮助项目确认通过项目实施以来实现的改进程度。

本报告展示了评估的结论及建议,评估的主要要素,包括项目设计、项目 意义、项目管理、项目成效、项目效率以及项目影响等。这几个要素也是主评 估报告的基本结构。

主要发现

项目设计 - 项目设计作为项目实施的导则是恰当的,但项目设计中存在的 缺陷影响了项目的有效实施。这些缺陷包括:缺少项目沟通的结构和程序,缺 少清晰的项目绩效监控或有效监测,缺少项目实施效果评估指标;

印染企业的选择 - 品牌指定参与项目的印染企业。但是选择企业时,并没 有评估企业目前开展清洁生产的意愿或实施水平,因此,项目中为参与企业提 供的培训和其他支持措施针对性不强;

方法的广度 - 一般来说,改进源于对行业的各个方面的关注以及整体性措施。然而,关注的广度也会影响项目的有效性和项目层面的影响。过度扩大项目的涉及范围则会导致聚焦不够。

数据收集与分析 - 缺少基准数据及目标。从参与项目的印染企业收集数据 是恰当的,但数据分析不够,企业数据多为预测而非实测。 **能力建设** - 参与企业从专家对企业改进的支持中受益匪浅,但是这种能力 建设还不足以促使企业自己进行持续改进(如在项目结束后)。

结果 - 由于实施了各种技术的和非技术的措施,项目取得了在节能节水、资源保护、减少污染、化学品管理、优化相关生产过程等方面的改进。同样,在健康与劳动安全等方面也取得了改进(尤其是能源与化学品、用水效率等,风险也降到了较低程度)。但是,由于缺乏准确的数据收集,很难对数据进行量化核实。

持续改进 - 除了项目期取得的成效外,证明将进行持续改进的证据有限,例如,将改进纳入企业管理系统和人员能力建设方面的措施有限。

利益攸关者对话 - 项目实施中,当地政府和行业协会为小型企业、二级参与企业提供技术知识、联系网络和标杆有限。

知识捕获 - 项目经验总结和内部评估等方面做得不够。

拓展 - 拓展活动都是临时的,项目网页没有发挥全部作用。

预算(项目管理)-项目预算的 40%用于项目管理、项目协调和一般性活动,该预算太高。

预算(企业)-对每家参与的印染企业的服务费用大约为 12.500 欧元,这 些费用包括培训、联谊会议以及最佳案例的综合等。这笔预算较高。目前市场 上商业化清洁生产审计(不包括培训)的价格在 4,000-7,500 欧元。

物有所值(企业) - 对参与企业而言,因实施项目而每年节省的费用比其 3000 欧元的项目参与费和投资更有吸引力。如果考虑到中国地方政府为每个清 洁生产审计项目补贴 15,000 欧元,该吸引力会更大。

物有所值(品牌) - 品牌在项目现阶段对每个参与企业资助 10,000 欧元也 是物超所值的。但是,此资助额度对项目后期的推广是不可接受的。

主要结论和建议

项目设计		
结论	建议	
项目的设计比其实际实施更宏观更综合,尤其是除对参与企业的直接支持外, 由于各种原因使得干预程度降低很多,并 因此导致项目在构建行业政策氛围方面成 效甚微。	 印染企业创佳项目应该与利益攸关方 (品牌、印染企业和项目实施单位) 建立定期协商与分享经验的沟通机 制,以确保项目的有效沟通,实现项 目效率与效果的最大化。 	
项目设计缺乏沟通宣传的结构和程序, 缺乏清晰的绩效监控或监测,缺乏评估 (M&E)的相关指标。由此导致在项目实 施中,及时调整方法的机会有限。		

项目意义		
结论	建议	
印染企业创佳项目的目标和关注的领域是 如品牌、印染企业和行业协会等所有利益 攸关方共同商定的,因此,项目意义大。 本评估表明印染企业参与本项目的最重要 的两个原因是: (1)中国日益严厉(即 将到来的)的环境立法,(2)品牌日益 关注环境风险,要求也越来越高。	 印染企业创佳项目要加强与其他项目 全方位的联合,以减少项目重复,并 通过项目间的互惠,促使项目在资料 开发方面的预算分配最优化。 印染企业创佳项目应采用模块化的方 法-联合分散的企业,基于为品牌(和 企业)的需求,为其提供更多选择。 	
项目3	效果	
结论 印染企业创佳项目在直接支持参与企业层 面效果很好,在项目拓展和宣传层面效果 一般,在构建行业政策环境层面效果较 差。	 建议 印染企业创佳项目应该采用双轨制 (不同的培训方法、不同程度的现场 支持等),使项目方法更切合企业的 需求(至少在"成熟"与"新人"之 间选择)。 印染企业创佳项目应该扩大直接参与 项目的利益攸关群体(如行业协会和 地方政府),以很好地利用这些机构 的网络与参与企业建立联系,改善行 业政策的环境氛围(有利于最佳实践 的推广、利用政策工具等)。 	
项目刻	效率	
结论	建议	
印染企业创佳项目的效率比较低,主要原因是项目管理成本高、支持企业的成本也高。虽然多数利益攸关者仍然认为现阶段 印染企业创佳项目物有所值,但这不能解 析为成本效益高。	 印染企业创佳项目应该通过其双轨制 和模块化的企业清洁生产审计方法优 化效率。通过企业组合清洁生产审 计,降低审计成本。 印染企业创佳项目应该更严格地区分 项目实施(主要由合格的服务提供商 负责)和项目管理(项目指导,质量 保证)的角色,以避免角色重叠。 	
项目的可	推广性	
结论 项目的可推广性很好/高。参与的所有品 牌仍然认定本项目的客观意义,对继续参 与(或之前未参与的品牌,将参与)本项 目的后续行动充满信心。在改变印染企业	建议 印染企业创佳项目要加强与其他项目的合作(尤其是 SAC 和 ZDHC),共享项目资源和资料,以避免不同项目间的重复,增加项目间综合,今后甚至可以直接开展与其他项目全方位的 	

创佳项目现有框架的前提下,制定后续推	合作。
广计划,以提升后续项目的效率和效果。	

Abbreviations

BMI	Better Mills Initiative
CDPA	China Dyeing and Printing Association
СМ	Chemical Management
CNCPC	China National Cleaner Production Centre
CNTAC	China National Textile and Apparel Council
СР	Cleaner Production
СРА	Cleaner Production Assessment
EHS	Environment, Health and Safety
EMS	Environmental Management System
M&E	Monitoring and Evaluation
NRDC	National Research Defense Council
OHS	Occupational Health and Safety
SAC	Sustainable Apparel Coalition
STWI	Swedish Textile Water Initiative
ТоС	Theory of Change
ZDHC	Zero Discharge of Hazardous Chemicals
ZU	Zhejiang University

1. Introduction

An independent evaluation on the Better Mills Initiative (BMI) was launched mid 2016. Dialogue with a range of stakeholders had shown that there is both a need and an interest for scaling up the Better Mill Initiative. Bearing this in mind, Solidaridad is currently in the process of identifying what the next phase for BMI should look like and what the opportunities and interests are for scaling up and possibly broadening the geographical reach to other key sourcing regions / countries. Thereof the focus of the evaluation is not limited to the programme activities of BMI itself, but also forward looking; the potential of BMI to be scaled up in the future.

The Evaluation Team was led by Frans Verspeek⁴ as International Evaluation Expert/Team Leader, and Chinese experts Zhang Mingshun⁵, Shen Ping and Xie Yu⁶.

The Evaluation Team was appointed by Solidaridad and C&A Foundation following a competitive selection process; none of these individuals were involved in the preparation nor implementation of BMI. The evaluation effort spanned the period of October till December 2016.

⁴ Mr Verspeek - team leader - holds a Master degree in Environmental Sciences and has 20+ years of experience in developing and implementing different types of industrial Cleaner Production projects and programmes - also in the textile sector and thereby ample experience in the different approaches of technical assistance of enterprises, capacity building and sharing best practices to a broader group. He has over 15 years of experience in projects in China. He is an experienced team leader managing multi-cultural teams and conducting multi-stakeholder dialogue processes and conducting evaluation studies – from assessing individual factory assessments up to complex international projects.

⁵ Mr. Zhang Mingshun is a senior sustainability expert, with 20+ years working experiences in a variety of sustainability projects, partially within an international setting, a.o. involved in the final evaluation of the EU-China Environmental Management Co-operation Programme (EMCP) and the EU-China Environmental Governance Programme (ESP) in recent years.

⁶ Mr. Shen Ping and Mad. Xie Yu are both employed by CERC, with extensive experience in CPassessments in the textile industry. Both are certified CP-auditors according to Chinese regulation.

2. Better Mills Initiative

2.1. Introduction

This section gives a short introduction on BMI – it's objectives, envisioned outputs and outcomes and implementation structure. In Annex 1 further details are presented.

2.2. The programme

There was a broad recognised significant scope for maximizing the impact of initiatives minimizing the environmental footprint of the textile industry through an industry wide approach. However, it was felt - overcoming some of the challenges identified – would require an innovative approach. The Better Mill Initiative (BMI) has been developed by Solidaridad in partnership with H&M⁷, as a result-oriented programme with the objective to improve the sustainability performance of textile wet processing in the fashion supply chain in China. The programme aimed to empower participants to achieve measurable improvements from a sustainability perspective.

2.3. Programme objectives

Overall objective:

To improve the sustainability performance of Textile Wet Processing in the fashion supply chain in China

Specific objectives:

- 1. Promoting sustainable production in 75 mills
- 2. Strengthening enabling environment
- 3. Outreach and communication

Actions:

- 1. The Better Mill Initiative is implemented through a combination of training workshops and on-site technical support for participating mills.
 - a. Introducing effective approaches and methods for achieving measurable improvement in energy saving, water saving, resource conservation, reduced pollution, chemical management and related production process optimization as well as occupational

⁷ The exact historic initiation of BMI is perceived differently by the stakeholders – but it can be described as a co-creation between Solidaridad and H&M – informal communications in 2012 and 2013 between staff of Solidaridad-China, Solidaridad-NL and H&M-office in Asia with C&A as close follower. Initially also CNTAC was involved in preparatory talks.

health and safety. In addition, participating mills are supported in addressing specific problems encountered in these thematic areas;

- Aligning the support offered with major global sustainability initiatives, such as the Sustainable Apparel Coalition (SAC)'s Higg Index and the Joint Roadmap towards Zero Discharge of Hazardous Chemicals (ZDHC) coalition;
- c. Sharing international and national good and best practices from the textile dyeing and finishing sector.
- d. Additionally, in line with Solidaridad's commitment to fostering a mind-set of continuous improvement, participating mills are empowered to build their internal capacity as well as to implement an effective internal management system that supports progress towards sustainability.
- 2. Contribute to a strengthening enabling environment by identifying solutions to address 3 key challenges in the textile sector in China.
- 3. Through communication best practices and case studies are collected and shared to encourage replication in China's textile sector.



Figure 1 - Structure of BMI

From the start the focus of BMI was deliberately very broad, certainly compared to several other initiatives – covering 7 themes ⁸ – based on the philosophy that such broad coverage is essential because all themes are interlinked. Part of the working conditions theme have been excluded during the programme (after

⁸ (1) Water, (2) Waste water, (3) Energy, (4) Air, (5) Chemicals, (6) Waste, and (7) Working conditions.

phase 2) – specifically on request of (at least) one brand, to further focus the action.





During each phase of BMI tailored class room training workshops have been staged for the participating mills (and the brands). Two two-day training workshops were staged on Cleaner Production, two one-day workshops on Chemical Management, and four specific on social issues:

The 4 training workshops therefore covered the following topics:

- Social & labour awareness training, mainly focus on the establishment and dissolution of labour contract, working hours, wages and social welfare;
- Workplace health and safety, including OHS risk management, involving all stakeholders in EHS management, functioning OHS committee and effective problem solving practices.
- Communication and social dialogue training on how to improve communication between workers and management.
- Internal management system training on processes to set up an effective internal management system within an organization.
- Information disclosure and crisis management.

2.4. Original defined outputs / outcomes / results / targets

- Promotion of sustainable production in 75 mills:
 - Functioning CP-team
 - o Internal management system
 - Action Plan
 - 10 improvement options/mill implemented
 - 10-20% water and energy (electricity and steam) savings
 - > 5% improved 'right first time' dyeing
 - o Compliant chemical management
 - o Improved OHS
 - o Improved worker-management dialogue
 - > 15% improved Higg Index Score
- Enhance stakeholder dialogue:
 - Solution directions to address sustainability challenges in the textile sector which fit in the local context
 - $\circ \quad \text{Form strategic collaborations}$
- Outreach & Communication:
 - Programme web-site
 - o Local and international conferences
 - Articles in local and international professional press
 - Utilisation of social media
 - o BMI tools and information made 'open source'
 - Non-participating stakeholders benefit from BMI-results

2.5. Implementation structure

The programme envisioned the following implementation structure.





2.6. Indicators, targets and M&E procedures

BMI's Theory of Change – that will be presented in the next chapter - included an overview of indicators that potentially were envisioned to be used to check progress and to check versus original target. In Annex 3 an analysis is given of these indicators – which indicators felt relevant and which indicators actually were measured. BMI lacked however a M&E-system to track and trace the progress of those KPI's in a regular and systematic manner.

2.7.Budget

Table 1 – BMI's budget

Budget	Original 1.284.000 Euro	Actual 895.700 Euro
Involved mills	75	43
Funding parties: Solidaridad ⁹ Brands (*) Mills (**)	24% 58% 18%	34% 51% 14%

(*) participation fee of 10.000 Euro per related mill

(**) participation fee of 3.000 Euro per mill

⁽⁹⁾ Solidaridad covered the required budget via their 'umbrella' funds from the Dutch Ministry of Foreign Affairs.

3. Evaluation Objectives, Methodology and Limitations

3.1. Objectives of the evaluation

The objectives of the independent external evaluation are to:

- Take stock of the impact of the BMI by verifying the reported achievements on a spot check basis (implemented measures and their impact);
- Learn about what works in the approach, what does not work for the different partners involved (mills, brands, service providers and Solidaridad), and to provide insights that need to be taken into account in order to adapt and improve future work. This relates to the process, the content as well as the implementation method of the programme.
- Contribute to the knowledge base about innovation programmes as well as the business case of (environmental) improvements and how that promotes continuous improvement.
- Contribute to learning and exchange between different stakeholders and programmes currently being implemented in the sector.
- Prove input for evidence-based communication: The evaluation will capture key findings (positive and negative) for the purposes of providing an objective evidence base for internal and external communication. The evaluation results are likely to be integrated in programme communication materials under development.

The evaluation focussed – in line with the above listed objectives – not only on the (direct) technical and economic outcome of the work at the participating mills (the tangible outcome of the Cleaner Production and Chemical Management assessments and in-tangible outcome of the capacity building activities). In addition, it also investigated the entire set up of the programme and analysed the impact of the programme. As a result the effectiveness and efficiency of the approach is assessed and, as recommendation, provides guidance for improvements towards the ultimate goal to scale up the BMI programme.

3.2. Evaluation methodology

The evaluation started with analysing:

- What is the perception of different stakeholders towards the validity of the original strategy and are the programme interventions necessary to achieve the objectives goals.
- To what extend did the interventions take place.
- Why did certain interventions take place at limited scale. What hampered the intervention. Or was there a deliberate choice to downscale original plans.

The fact finding and analysis of the 4 standard evaluation criteria (project relevance, effectiveness, efficiency and impact and sustainability of project results) is centred around the following key questions.

Relevance	To what extent was the BMI programme relevant to the		
	priorities and policies of its target groups (with specific focus		
	to brands and retailers (partners and non-partners) and		
	factories in China).		
Effectiveness	To what extent did the programme attain or still likely to		
	attain its objectives, directly or indirectly, intended or		
	unintended)?		
Efficiency	To what extent was the BMI programme value for money?		
Scaling up	What are the opportunities to strengthen the BMI approach		
	to scale-up the programme?		

Table 2 - Key evaluation questions

The criteria 'impact and sustainability of project results' focused mainly on the 'scaling up' opportunities and to lesser extend on the impact of the programme itself. The programme itself more has to be seen as a 'large' pilot project (involving 43 mills out of a group of thousands mills in China) with certainly tangible environmental impacts (already partially estimated shortly after the project finalization) but the more relevant issue for evaluation (and for Solidaridad) will be if and how the BMI-approach has opportunities for scaling-up (and under which conditions), to achieve substantial impact in the long run.

These key evaluation questions are translated in more 'operational' interview questions per type of stakeholder – drafts of these questionnaires are presented in Annex 7.

Interviews were semi-structured and qualitative, with sufficient flexibility to allow new lines of questioning to be followed where necessary, particularly with regard to reconstructing project histories and baseline situations (as recalled by beneficiaries). Most of the interviews were conducted with all three evaluators present so that notes could be taken and perspectives triangulated within the team and also with documentary evidence. While maintaining the independence of the evaluation the approach was participatory and open in order to facilitate cordial and constructive dialogue with all stakeholders.

The evaluation used a simple qualitative scale to rate project relevance, effectiveness, efficiency, impact and scalability (see table below). The scale rating was based on evidence collected by the team. In order to improve the

credibility and validity of findings on which ratings were based, the team triangulated data where possible and appropriate.

Rating	Definition
Good	Evidence of achievement of outputs / outcomes
	Presence of conditions / actions that support progress towards
	impact and / or sustainability in which major threats or barriers
	have been mitigated
Moderate	Some evidence of achievement of outputs / outcomes
	Presence of conditions / action that support progress toward
	impact and / or sustainability but threats and barriers may not
	have been mitigated
Poor	Little evidence of achievement of outputs / outcomes
	No significant presence of conditions / actions that support
	progress toward impact and / or sustainability and threats or
	barriers remain in place

Table 3 – Evaluation rating scale

The evaluation team used different methods to ensure that data gathering and analysis deliver evidence-based qualitative and quantitative information, based on diverse sources. The use of different data and sources, and methods to gather data aimed to ensure triangulation to validate facts.

The approach applied 3 different data gathering methods:

- 1. Desk review of project documents:
 - Programme documents: starting document describing the original objectives, planned actions, assumptions, etc.;
 - Internal programme management documentation: internal memo's within Solidaridad, internal progress documentation, financial documentation (income and spending per cost item, potentially related to time sheets to analyse spent time per action);
 - Contractual documents: contracts with the brands, contracts with the mills and contracts with the implementers;
 - Training materials: power points used by the different trainers (partially bilingual, but merely in Chinese);
 - Information of events: agenda, participants lists, meeting notes and evaluation forms (to collect recommendations and suggestions for improvement);
 - Company reports: for each mills 3 to 4 individual reports are prepared (all in Chinese), a baseline report, a mid-term report, a final report and a chemical management report;

- Programme reports: aggregated reports presenting the results of the programme, aggregated (internal) database of options (and achieved environmental improvements);
- Documentation related to visibility actions: articles, presentations during conferences, press coverage;
- Already conducted 'self-evaluations / assessments': Solidaridad-China conducted a 'customer satisfaction evaluation during the classroom workshops', Solidaridad-Netherlands conducted an FSPevaluation and BMI was one of the case studies in this evaluation, at a meta-level. C&A did a field evaluation in China on some of their mills, and one mill involved in BMI was also interviewed;
- Available information on parallel initiatives: web-sites and brochures described the structure, set-up, objectives, activities and potential fee for participants.
- 2. Interviews with different groups of stakeholders (for details see Annex 5):
 - Solidaridad: Solidaridad-NL and Solidaridad-China with specific tasks and responsibilities;
 - Implementers: 2 key implementers were contracted Zhejiang University CP team (responsible for the CP-part of the mills support) and STS (responsible for the chemical management part of the mills support); during phase 1 also Huntsman supported the programme (free of charge). These teams operated mainly independently and parallel, with some communication links. In addition to these individual experts supported BMI for specific modules (for the social issues: management systems, communication for social dialogue, labour relations);
 - Participating brands: 6 brands (H&M, C&A, New Look, Bestseller, Primark and Tommy Hilfiger). From each brand the responsible coordinator the Chinese/Asian region has been contacted, sometimes added with a representative from HQ;
 - Non-participating brands: 3 non-participating brands (Inditex, GAP and G-Star; representing a diversity in geographic orientation and also in experience and involvement in other initiatives) have been interviewed to get insight in their non-interest to join the BMI;
 - Participating mills: 43 mills were involved in the BMI-programme.
 28% of this group (12 mills) have been directly interviewed;

- External stakeholders:
 - China National Textile and Apparel Council (CNTAC) and China Printing and Dyeing Association (CPDA) – the 2 leading Chinese textile associations – have been interviewed, and via them getting adequate insights in the latest trends and developments in the textile sector in China;
 - Institute of Public & Environmental Affairs (IPE) ¹⁰ and China National Cleaner Production Centre (CNCPC) ¹¹, the first as the pivotal Chinese IT-portal on public disclosure of factory information with regard to sustainability and the latter as the national focal point in China on CPmethodology (guidelines and standards).
- Other initiatives; At least 3 relevant initiatives in the textile sector in China took place in the same period as BMI –Clean by Design implemented by Natural Resources Defense Council (NRDC) ¹², IFC's work ¹³ and the Swedish Textile Water Initiative (STWI) ¹⁴, and in addition relevant initiatives by Zero Discharge of Hazardous Chemicals (ZDHC) ¹⁵ and Sustainable Apparel Coalition (SAC) ¹⁶ were globally launched. An interview with NRDC as the largest initiative has taken place, and facts and figures of the other initiatives (how they are structured, objectives, type of activities, fee model) are covered via desk search and participation at the ZDHC-Conference (Shanghai, November 8, 2016). But this part of the evaluation was explicitly not meant to compare different initiatives with regard to effectiveness and efficiency.
- 3. Survey amongst specific stakeholders: An e-survey has been used with 15 questions (closed-ended questions, see Annex 8) to solicit amongst all 43 participating mills, with a final response of 33 mills (77%).

¹⁰ http://wwwen.ipe.org.cn

¹¹ http://www.cncpn.org.cn/english*.jspx?url=ssss

¹² https://www.nrdc.org/resources/clean-design-apparel-manufacturing-and-pollution

 $[\]label{eq:list} $13 http://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+event s/news/ifc+champions+water+efficiency+in+china+textile+industry $$$

¹⁴ http://stwi.se

¹⁵ http://www.roadmaptozero.com

¹⁶ http://apparelcoalition.org

3.3. Programme theory

Normally the basis of a programme, is laid down in a project document - defining objectives, outputs, outcomes, results and/or impacts - potentially with a logical framework and justified by a Theory of Change. Such logical framework and Theory of Change would be the basis for an evaluation. However, a concrete programme document is not existing in BMI, neither internally nor externally as part of obtained funding, but merely unorthodox presented via a short PowerPoint presentation (see Annex 1) – shortly highlighting the objectives, envisioned actions, and underlying assumptions. Approximately a half-year after the official start of BMI (in April 2014) the coordinating staff of Solidaridad prepared a Theory of Change. Two versions existed ¹⁷. Comparing these ToC-descriptions, they appeared to differ in way of structuring and formulation of specific activities, drivers and impact. BMI itself never prepared a refined ToC, combining these 2, to serve as mutual agreed strategy document.

Based on initial talks with Solidaridad and studying other formal documents, the evaluators made a ToC used as basis for this evaluation (see Figure 4).

The BMI project at meta-level consists of 3 'modules':

- 1. Mill capacity building and technical assistance
- 2. Enabling environment
- 3. Outreach & communication

The evaluators assess this ToC as logical and consistent to achieve the set objectives. At the same time, it is important to realise that these three distinctive modules are interconnected, and as can be seen in the ToC especially the 2nd and 3rd module mainly contribute to the scaling-up objectives (crowding in and/or copying). The effectivity and effectiveness of the direct mill activities (the chosen method for supporting the mills and capacity building) are by itself not sufficient for achieving impact and scale up the programme, but will be co-determined by the results of the other actions (action 2: stakeholder engagement and action 3: communication and outreach).

¹⁷ One prepared by Solidaridad-NL and one prepared by Solidaridad-China.

Figure 4 – BMI's Theory of Change



3.4. Perceived limitations during the evaluation process

The work of the evaluation team was hampered due to the following conditions. However, via utilization of other data gathering approaches the overall fact finding, analyses the evaluation was not endangered; whenever relevant it will be explicitly mentioned in the next chapters which assumptions are taken to fill in the information gaps.

- Document review revealed that structural documentation in BMI was rather scarce and far from systematic; especially with relation to internal project management, strategic decisions, progress monitoring, etc. As a result, the evaluation mainly had to rely on oral information that has been cross-checked amongst different persons to avoid biased interpretation.
- Since the initiation and official start of BMI (mid 2013) staff at several organisations changed jobs, and sometimes a lack of institutional memory hampered the evaluation in combination with the abovementioned lack of systematic documentation. This appeared especially at the office of Solidaridad Netherlands (both involved staff members left) and at several brands. One out of the six brands even declined to be interviewed because "all of the BMI involved staff left already and no knowledge was available why the brand initially joined BMI and what the perception was of the process and results". For the other stakeholders, the available information and sources were sufficient and adequate to properly perform the evaluation.
- Direct accessibility of company reports present at the premises of Solidaridad-China appeared to be problematic due to confidentiality agreements made between Solidaridad and the individual mills. The evaluation team initially planned to get electronic access to all relevant reports, and for planning and logistic reason it was at last moment not doable to read all reports at the spot. The analysis is therefore based on a desk review of \pm 80% of the relevant company reports.
- Claimed tangible impact at the mills (achieved environmental results, made investments and gained revenues) are not in-depth checked and validated. This would require checking actual monitoring results of the implementation at the mills and this evaluation was not meant to do so. Via expert review of the reports and interviews with involved mills an expert opinion is given on the correctness of the claimed results.
- In line with the first issue lack of documentation it appeared that financial project data were scattered and not systemically documented. For this reason, several assumptions had to be taken to analyse the actual expenditure per type of action and thereby slightly hampering the efficiency analysis, without endangering drafting indicative conclusions.

4. Evaluation findings

4.1. Introduction

This chapter presents the facts and findings resulting from the evaluation. Statements of implementers, brands, mills and external stakeholders obtained via the interviews and e-survey, supported at some points by expert judgements from the evaluators. They are structured according the main themes of the evaluation, relevance, effectiveness, efficiency, impact and scalability.

4.2. Relevance

The vast majority of the mills clearly stated during the interviews and the esurvey that the BMI-objectives were and still are (highly) relevant for them. They even consider that the relevance for the mills has increased over the years, due to increased pressure from brands, industry associations and government action. In China, the textile sector is still listed in the priority (14 key) industrial sectors relevant for the majority of environmental problems, especially wastewater problems (already stringent Chinese regulations in recent years and expected even to be further tightened). Sustainability in the textile supply chain is still high on the agenda – environment perhaps even higher than labour issues (see growing interest of international brands to join and actively participate in ZDHC and SAC). As a result, brands are further intensifying their requirements to the supply chain for tier 1, and, also beyond to tier 2 mills.

Reasons for mills to join are diverse as illustrated in box 1 (expressed during the face-to-face interviews with 12 mills and figure 5 (outcome of the e-survey amongst 34 mills) below:

Box 1 - Reasons for mills to join BMI

- The request from their brands was the strongest reason. Almost all of the interviewees mentioned that.
- 2nd reason (mentioned by 50%) why they joined is to get opportunity of exchanging information with other mills.
- The 3rd relevant reason (mentioned by 25%) is that mills were suffering from problems such as high water consumption, low first-time dyeing success rate, unstable waste water treatment, etc., and they expected solutions from the programme.

Source: direct interviews with mills



Figure 5 - Reasons for mills to join BMI (e-survey result)

The abovementioned facts for relevance in line with opinion of the Chinese textile associations (CNTAC and CPDA), but they also mentioned that - similar as China's national focal point on Cleaner Production (CNCPC) – already many activities were implemented in the last decade in the textile sector and thereby availability of CP standards, guidelines and published list of CP technologies and solutions, and a substantial part of mills already did a CP assessment. This is a valid observation but should not be interpreted that the BMI-objectives were or are not relevant anymore. The relevance potentially could be less high for more matured mills that already are exposed to CP, but this could not be assessed via the limited number of interviews conducted.

All involved brands joined BMI because they felt it highly relevant, in line with strategic plans to address the environmental impact of their supply chains and sufficiently customised to their interests. The interest of focus for specific themes (water, chemicals, energy, etc.) varied per brand, but they all felt that the holistic approach was appealing enough and sufficiently addressing each individual interest. At the start of BMI 15+ brands were approached to join BMI, finally resulting in 6 brands signing up; H&M, C&A, Primark , New Look, Bestseller (Jack&Jones) and Tommy Hilfiger. However their involvement was rather different; the majority of the involved mils came from H&M (more than half) and secondly from C&A. The other four were limited involved via one or two mills only.

The major reasons why not more brands did join BMI were: ¹⁸

- The brand was not ready yet for guiding their (tier 2) mills because had no knowledge about their (tier 2) mills neither direct contact with them;
- The chosen approach was felt too broad and the option for a more tailormade approach for the brand was not possible;
- The existence of other initiatives that were more tailored to their needs;
- The cost to join BMI (10.000 Euro/mill) was perceived rather high, especially compared to other potential initiatives (Clean by Design implemented by NRDC was (at that moment) free of charge).
- The long-lasting relation of the brand with the implementer of a parallel initiative.

When reflecting on the themes covered by BMI, according to the mills the most relevant – as part of their broad, holistic approach (with 7 themes) – were and still are water, energy and chemicals. The other themes were reported as of low priority; this however does not implicate that they are perceived as non-relevant.



Figure 6 – Which them of BMI most relevant by mills (e-survey result)

Brands have a less outspoken opinion on which themes are more, or less, relevant, and almost all expressed the importance of a broad holistic approach. When explicitly requested for priotisation, water and chemicals were often mentioned, in relation to past and present brand's corporate strategies.

¹⁸ Mentioned in the 3 interviews staged with non-participating brands

4.3. Effectiveness

Assessing the effectiveness of BMI's approach has to be split into the effectiveness of the 3 different distinctive modules BMI originally envisioned: (i) promotion of sustainable production in mills, (ii) enhance stakeholder dialogue and (iii) communication. In table 4 the key results are presented and briefly commented and the next sections will give further detailed insights.

4.3.1. Promotion of sustainable production in mills

Assessing the overall satisfaction of the mills about BMI we see an overall positive picture; some ambivalency, because of elements that were less well perceived, but 66% was (higly) satisfied.





In order get a better insight in the effectiveness of BMI with regard to mill support we have assessed each sub-intervention; training, on-site visits, reports, and post-project activities.

Table 4 - BMI's achievements versus targsts

(1) Promotion of sustainable production in 75 mills

Target	Achievement	Comment
75 mills	No – 43 mills during phase	
	1-2-3	
Functioning CP-team per mill	Partial	Certainly CP-team functional in mills during the CP-assessments, but no
		evidence that (part of) those teams are still functional post-project
Internal management system per mill	Partial	No clear indicator was defined, nor a baseline, and thereby not possible to
		monitor. However, in the mills reports proper (and systematic)
		description and suggestions for a management system were lacking.
Action Plan per mill	Yes	
10 improvement options per mill implemented	Yes	But because of poor baseline formulation and monitoring it is not
		possible to accurately judge the results and impact.
10-20% water and energy (electricity and steam)	±9% for water	
savings	±6 % for electricity	
At least 5% improved 'right first time'	No information available	
Compliant chemical management	Partial	No clear indicator was defined, nor a baseline, neither monitored. So not
		possible to asses, but some initial measures are introduced.
Improved OHS	Partial	No clear indicator was defined, nor a baseline, neither monitored. So not
		possible to asses, but some initial measures are introduced.
Improved worker-management dialogue	Partial	No clear indicator was defined, nor a baseline, neither monitored. So not
		possible to asses, but some initial measures are introduced and dedicated
		training workshop.
At least 15% improved Higg Index Score	No information available	Not systematically monitored per mill. So not possible to asses, but due to
		implemented improvements certainly improved scores.

(2) Enhance stakeholder dialogue

Envisioned Achieved		Comment
Solution directions to direct sustainability challenges in the textile sector which fit in the local context	No	Virtual present, but not properly aggregated nor disseminated
Form strategic collaborations	Partial	Yes, at least will some relevant stakeholders

(3) Outreach

Envisioned	Achieved	Comment
Programme web-site	To some extend	A BMI-web-site was operational with limited context. At present (end
		2016) under refurbishment to have web-based tools on. No insight in the
		content
Local and international conferences	Yes	Solidaridad presented BMI results
Articles in local and international professional press	Yes	BMI is covered via several articles
Utilisation of social media	Yes	
BMI tools and information made 'open source'	Limited	A self-assessment tool has beem developed to 'screen' mills before
		entering BMI. At present (end 2016) an on-line verion of this tool is under
		preparation. No insight however yet in the content
Non-participating stakeholders' benefits from BMI-	No	Not assessed - but because the limited dissemination of BMI-results in
results		adequate detail the benefits are at this moment assumed as very limited


Figure 8 – Mills perception on most effective approach (e-survey result)

Involvement of mills

One of the only 'hard' targets in BMI was the number of mills to be reached – 75. However, as can be seen, this is only achieved up to \pm 60% (43 mills). 16 in phase 1 (Zhejiang, Shandong, Jiangsu, Shanghai), 22 in phase 2 (Zhejiang, Jiangsu, Shanghai) and five in phase 3 (Fujian and Guangdong). Before BMI started five mills were assessment as a pilot phase, and at present eight more are involved (as sort of BMI phase 4). All these mills are a result of screening and selection by the brands – in line with the ToC and chosen approach (work via the supply chain). Only once a non-brand related mill approached the programme if they could join. One important fact is that it appeared during the interviews that \pm 50% of the participating mills in BMI already had been supported earlier in conducting a CP-assessment. No evidence is found that this was known to the organisers/implementers beforehand.

Mills participated with 1-5 representatives - those nominated in the CP-team – but there was no continuity for each training (70% of the participants joined every training); partially this is understandable (due to potential conflict of agenda with their day-to-day mill work) and acceptable (because of the specific topic per training), but it also limits proper capacity building of mill's staff, especially when the trainees do not properly disseminate the gained knowledge. Via a one-time (one-day) in-company training in each mill this flaw is partially covered. Most of the brands also participated with their involved BMI-coordinator in these workshops (as observer / trainee); thereby serving also as 'capacity building for the brand' and giving the brands further insights in how mills perceive sustainability issues.

Solidaridad decided, to secure the quality of the work , ease of coordination and create a learning curve with the service providers team, to mainly work with 2 key implementers for the core of the work (Zhejiang University for the CP-work and STS for the CM-work).¹⁹ The quality of these service providers was perceived as adequate to good by the mills, with some connotations.

Box 2 - Mills perception of quality of service providers

- 58% of interviewees highly qualified the experts who visited their plants, because the experts promoted a good amount of options for them.
- 33% of interviewees regard their experts as qualified with enough practical experience, but the options they promoted are not as much as the mills expected.
- 8% of interview stated their expert promoted unpractical options and thus their support was unsatisfying.

Source: interviews with 12 mills

- 58% of interviewees mentioned that the CP expert's support was mainly in aspect of energy; suggestions about emission reduction and process improvement were less than expected.
- 75% of interviewees mentioned that the CM expert's support is helpful and practical. Source: interviews with 12 mills

Training

The training and materials and the training was judged to be adequate, based on the interviews and e-survey, but were certainly not seen as the most effective step. 20

¹⁹ On specific elements (especially related to social issues) individual consultants were hired on a caseto-case basis and Solidaridad-China staff supported the sub-contractors in their work.

²⁰ This is less positive than the rather very high positive scores mills gave via the customer satisfaction forms filled in during the BMI-programme itself: that overall self-evaluation gave on all questions a rather inflated score of above 9 (on a rating from 1-10) with almost no 'distinctiveness' and barely any suggestions for improvement.

Table 5 - Quality assessment of the training workshops and materials

	Strengths	
٠	The relevant Chinese CP and CM regulation and standards, both national	
	and local, are properly quoted and explained;	
•	Abudannt CP (best) practices presented, covering energy saving, water	
	consumption reduction, waste water reuse and treatment, as well as	
	process optimization. However, some data are not up-to-date figures, some	
	recommended technologies are restrained by conditions which is not	
	clearly explained;	
•	The training slides on CM are rich in details. Concepts are properly	
	explained by illustration as well as examples.	
•	CM training materials are well demonstrated with words, figures, tables and	
	pictures.	
	Weaknesses:	
•	The CP training materials are felt as comparatively monotonous., especially	
	the CP conception and procedure parts;	
•	• The lack of explanation how to apply CP-assessment themselves – the CP	
	assessment methodology and procedure.	
•	Limited training time; abudant training materials to be presented in very	
	limited time, resulting in a rather one-direction lecturing approach without	
	more effective interactive teaching methods.	
•	Al training materials lack a proper (standardised) design, and	
	harmonisation of logo's.	
	Source: interviews with 12 mills and with brands that joined the training	
	backed up by the opinion of the evaluators (as CP and training experts).	

On-site visits

The on-site visits - baseline assessment – were mostly preferred, according the – survey (see figure 8), and felt most effective by the mills with even a strong request to upgrade the numbers. ²¹

There were some problems / deficiencies that hampered the on-site visits and the actual CP-assessment:

• The absence of effective facility management. In some mills, no environmental management systems are available or teams responsible for environmental management and especially no specific staff designated for chemicals.

 $^{^{21}}$ This is in line with the direct interviews according to 80% of the respondents.

• Lack of adequate metering systems at departmental or unit level in the mills. And as a result substantial data used in the CP-assessments are estimations only.

Box 3 - Quality of data in BMI's CP-assessments

According to the mills' representatives nearly all the data (>90%) listed in the reports, including the investment, operating fees, savings and price of by products, are estimated/calculated, not regularly measured.

Source: interviews with 12 mills.

As a result of the training workshop and on-site visits for each participating mill separate reports have been prepared. ²² Generally, the evaluators assess – based on their own CP-expertise and knowledge of conducting CP-assessments - the reports are acceptable with basically sufficient data and proper statistics. They are in compliance with the Chinese 'standard' CP-report structure. But also several flaws are found – see table below.

It appeared that (at least) 14 out of the 43 mills (33%) received a subsidy in the period after they participated in BMI, from the local Chinese authorities (varying from 7.500 to 15.000 Euro). ²³ The decision for a subsidy is mainly based on external review of the CP-report by Chinese local authorities. The option to obtain such subsidy was not instigated by BMI but an independent action from the mills itself.

Table 6 -	Quality	assessment of the	mills reports
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Strengths		
Chemicals:		
• CM assessment reports have generally a high quality; written with		
sufficient data and information and proper suggestions.		
Energy:		
• CP assessment reports are adequate with regard to energy data; clearly		
and thoroughly listed.		
Weaknesses		
Water and emissions:		

²² A Baseline Cleaner Production report, Mid-term Cleaner Production report, Final Cleaner Production report and Chemical Management report. The first 3 reports have been prepared by consultants of Zhejiang University and the latter (CM) report by consultants of STS.

²³ This information is collected via public accessible web-sites from provincial authorities in China. It is not clear if other mills also submitted a request for a subsidy.

• Environmental data (emission) are sometimes insufficient in the CP-reports;

• CP-reports also lack material balance and water balance calculations. *Data collection and analysis:*

- Generally it appears that most of the data were collected / listed in the reports, but not used for the problem analysis and option generation;
- Options seems are rarely based on the analysis of the collected data, which makes the data collection seemly pointless to some extent;
- Nearly all the data used for ROI calculation are estimations and not actual achievements.

ROI-calculations:

• ROI calculation is not clear enough, due to the lack of details, such as which savings actually incorportated in the calculations, no investment breakdown, maintenance and operation cost of new equipment/facility not always accounted, etc.

Source: interviews with 12 mills and backed up by the opinion of the evaluators (as CP-experts).

Solidaridad attempted to use the environmental facility module of the Higg index as a self-assessment, as an indication of performance and understanding of the key sustainability areas. As an active SAC member, Solidaridad was also interested to understand how the results of the on-site resource efficiency assessments and chemical assessments compare to the mills own assessment and to see if the Higg Index would lead to the identification of improvement actions in addition to those recommended by the expert team. Prior to completing the online self-assessment questionnaire, a group training on Higg index was organized by Solidaridad. In addition, offsite support was offered for problem solving and advice. The challenges for accessing the online selfassessment tool was the major problem prohibiting the mills to completing the questionnaire, which was mainly due to the firewall issue in China. The mills moreover did not fully see the added value of filling out the Higg Index in addition to the intensive activities as part of BMI. Higg itself did not in itself contribute to effectiveness of BMI, but the other way around BMI activities supported improved HIGG performance.

Identified improvements

As part of the evaluation an assessment is made of the longlist of identified options, and – an initial check of the stage of implementation of these options.²⁴

²⁴ As part of the e-survey and the individual mills interviews

The evaluation explicitly did not try to validate the accuracy of the options, because this would require almost a new CP-assessment. Neither the actual claimed environmental impacts are validated for the same reason.

During the first three phases of BMI ± 675 options were identified in 43 mills – listed via an internal Excel-document.²⁵ This however does not implicate that 675 'unique' best practices are identified for this sector, but \pm 300. A number of best practices were generically applicable for many mills.

Almost all of the options are felt feasible by the involved mills, and almost no option was rejected. This can be justified that most likely the service providers already filtered the options themselves and only listed the options that were felt – and perhaps during on-site visit discussed – to be feasible.

At the same time it appeared that over 50% of the identified options already were known by the mills. This is also reflected in the comments made by the mills on the perceived experience/expertise by the service providers.

Box 4 - Mills perception on quality of suggested CP-improvements

60% of mills is very positive, but the remaining group commented that the level of suggested improvements was less (innovative) than expected. 1 mill expressed strong dissatisfaction on the results – support was below expectation and options were already known or unpractical. This mill had most likely high expectations, due to fact that they already participated beforehand in CP-assessments.

Source: interviews with 12 mills

This is not an unknown fact in CP-assessments; supporting a factory during CP should also strongly engage factory knowledge in cause analysis and option generation. The CP-assessment can be still seen as successful even if the options are only partially identified by the external expert. The CP-assessment should be regarded successful if – due to the exposure of the external expert – the factory finally decides to implement those options. New eyes apparently were needed to take that step. And that appeared the case, because most options are implemented or under implementation.

²⁵ During the evaluation only 25% of the reports have been studied, and the analysis of the options is mainly based on this Excel-template overview of options (consisting the \pm 600 options identified during phase 1 and 2).

Box 5 – Implemented level of CP-options

Out of the 148 options reported, 125 options (84%) were implemented according to the mills, and at least 82 (55%) implemented options could be validated by the evaluators. Source: interviews with 12 mills

Post-project activities

A final very relevant fact is the level of post-project activities: 83% of the mills (based on the interviews) have contacted with ZU experts after the project, in order to get information about new technologies, new equipment, as well as follow up the questions and problems which was not solved during the project. Mills made, during the direct interviews, suggestions what they missed during BMI and how they felt BMI could be more appealing for mills (see box 6), and more suggestion are listed as part of the scalability section (see chapter 4.5.2).

Box 6 - Mills perception of missing elements in BMI

- Support to access loans and credits (mentioned by 80% of the mills)
- Practical self-assessment tool (36%), including practical tool for developing an action plan and mill's internal monitoring and reporting
- On-line database with best-practices (27%)
- Industrial benchmarking

Source: interviews with 12 mills

There is initial evidence, that there is at least some continuous improvement ongoing in the mills; e.g. generation of own ideas for improvements post-project (see box 7). When assessing the learning effect – can miils continue themselves (and thereby assuming that the training and capacity building part was sufficient). All the mills stated they're now aware of the relevance of CP. But only 25% think they are capable of continuing assessment post-project fully by themselves. Two explicitly mentioned that they enhanced their capability of "self-improvement", making changes in company organizational structure and employee KPI system but at the same time 66% stated that they still need outsource assistance to carry out CP auditing/assessment post-project.

Box 7 - Post-project activities at mills

42% of the mills regarded the contact quite satisfying and helpful, while the other did not receive solid support yet but still looking forward to a good satisfying result. 14 new options in 5 mills have already been implemented post-project, 5 new options in 2 mills are in progress and 1 new option in 1 mill is in plan.

Source: interviews with 12 mills

4.3.2. Effectiveness of strengthening the enabling environment

As a result of downscaling the original envisioned interventions in strengthening the enabling environment, it is logically that the objectives and targets have not been achieved. The limited involvement and participation of service providers (beyond the scope of direct mill interventions), other stakeholders, target groups and final beneficiaries in the BMI was insufficient to achieve the intended result to strengthen the enabling environment. The involvement of sector associations and local authorities was limited, besides some bilateral communication, participation during some training events and at the BMI-conference. The original envisioned regular stakeholder dialogue to discuss lessons learnt from BMI and strategies for strengthening the enabling environment has never taken place. As a result of not formalising the Steering Committee or Multi-Advisory Committee no formal communication structure or procedure was in place in BMI. Communication with involved brands, and external stakeholders in China took place on a more informal and irregular, ad-hoc basis without group interaction. Communication with brands – besides the direct contact with brand representatives when they participated at training workshops - was mainly done via tele calls and e-mail communication and preparation of required aggregated reports on mills results nominated by the respective brands. Almost all brands almost mentioned during the interviews that more regular the communication would have been preferred.

4.3.3. Effectiveness of the outreach

As a similar result of downscaling the interventions in outreach also here objectives and targets have only been patially achieved. Dissemination and visibility of BMI-results initially was envisioned to be more formalised – via the establishment of a customised web-portal – to share the training materials and achieved results. Outreach and visibility activities have taken place, but especially the failure to launch (in a timely way) of an adequate web-portal seriously affected the knowledge sharing objective of BMI. A BMI-website was launched but contained during the project period itself rather limited information (brief aggregated results reports and announcement of events). So far the training materials, results and best practices are poorly disseminated, and an on-line self-assessment tool is not ready yet.

Visibility of BMI has taken place on an ad-hoc basis – via organising of specific BMI seminars, joining other events and coverage in different media. In Annex 12 an overview is given of the visibility actions. This evaluation did, in line with

Solidaridad's request, not conduct a (broad) survey in the textile sector (in China amongst mills or local authorities, and globally amongst brands purchasing in China) to assess the visibility of BMI, its approach, its results and best practices. However, there is– agreed upon in the interviews with the sector associations - insufficient evidence to confirm that BMI is broadly known in the Chinese textile sector and within the local Chinese authorities responsible for environmental and industrial issues.

4.4. Efficiency / cost-effectiveness

Originally the budget plan gave indicative budget allocation per intervention.

Result area 1: Mills improvements	671.763		52%
CP assessments & training	457.013	36%	
Social assessments & training	39.000	3%	
CM assessments & training	126.250	10%	
Material costs	49.500	4 %	
Result 2: Strengthening enabling environment	92.500		7%
Result 3: Outreach & communication	74.500		6%
PM and contingency ²⁶	445.175		35%
Total programme costs	1.283.938		100 %

Table 7 - Original allocation per budget line

In chapter 2 it was already mentioned that the original budget of 1284.000 Euro was lowered to 898.700 Euro, due to lesser brands and mills involved. This budget is financed via 3 channels: 34% funding via Solidaridad, 51% from the participating brands (10.000 Euro/related mill) and 14% from the mills (3.000 Euro/mill).

The assessment cost-effectiveness of the BMI-activities was hampered by the incomplete overview of expenditures (no proper figures available yet for 2016), a and lack of justification of costs per specific activities.²⁷ Assumptions have been made to still analyse the costs versus activities and thereby giving insight in the efficiency of BMI. But it remains not do-able to present planned budget versuse actual expenditure, beyond the very rough split between activity based expenditure versus programme management costs.

²⁶ From available documents it was not clear how much contingency was foreseen.

²⁷ An overview was available of percentage of work time spent on each activity, but this was not based on actual time registration systems and thereby not a reliable source

Based on the assessment the most relevant facts are:

Торіс	Fact
Overall spent budget	898.700 Euro; this could however not be fully
	verified, because Solidaridad could not provide an
	overview of expenditure for the period Jan-Jun 2016
	32% of the budget is spent for staffing costs of
	Solidaridad;
	40% for sub-contracting experts (including their
	travel costs);
	28% for diversity of material costs (office
	Solidaridad in China, BMI-meetings, communication,
	evaluation study).
Programme	Estimated as at least 40% - compared to the original
management costs	envisioned 35% (which also included contingency)
Direct intervention	Estimated as at least 12.500 Euro – compared to the
costs per mill (this	original envisioned 9.000 Euro
includes training,	
workshops and on-site	
support)	

Table 8 - Actual allocation per budget line

Both facts – the programme management costs (40%) and the direct mills costs (12.500 Euro/mill) – are the key facts that determine the cost-effectiveness of BMI.

Programme management costs

Based on the information presented by Solidaridad-China it can be concluded that $\pm 13\%$ of their time was spent on direct mills interventions (pre-project communication and screening of mills and supporting the service providers during the capacity building activities) and $\pm 17\%$ on communication and outreach. The remaining part is regarded as programme management, despite the fact that Solidaridad-China only classify 6% as actual programment. However, participation in training workshops, participation in on-site visits and quality control of reports from service providers are by the evaluators also as programmem management. If this would be classified as direct mills related costs, the question would raise if this is not doubling the tasks of sub-contracted service providers, and it will perhaps reduce the programme management costs but at the same time will increase the direct mills costs to perhaps 15.000 Euro/mill.

For Solidaridad-NL the programme management percentage of their time is even higher because they were rarely involved in actual mills activities – only sometimes participating in meetings and joining a mill visit. No accurate figures can be given to split their time input to programme management, support for component 2 and support for component 3. But taken into consideration that most activities took place in China, and in Mandarin, the actual direct time input for component 2 and 3 also is limited, and merely strategic advice how to implement the activities.

Direct mills costs

The direct mills cost are now estimated around 1.2500 Euro/mill. This includes all activities directly related to working with the mills; so not only the on-site assessments and reporting but also the capacity building activities and networking meetings. This is essential to mention, in case one wants to compare this number with similar figures of other programmes. This evaluation did not investigate the exact costs figures of other initiatives, but wants to stipulate that this is always a sensitive matter; varying from mainly technical oriented with less or almost no capacity building activities, up to almost only capacity building actions without direct technical support and everything in-between. The market price in China for a merely Technical Asisstance focussed CP-assessment (without capacity building elements) is ± 4.000 Euro (to max. 7.500 Euro).

And the scale of technical support can be also very divers; from focussing on a selected number of best practices (approach by NRDC's Clean By Design) up to mainly oriented on large technical improvements, often linked with high investments (approach by IFC).

One other fact should be taking into consideration when assessing and drafting conclusions on the figure of 12.500 Euro/mill. This is the opportunity for mills can obtain a subsidy from local Chinese government from 7.500 up to 15.000 Euro (14 mills - 30% of the participating mills already received this subsidy).

Finally how did the mills and brands perceive the costs of BMI and related to that BMI's business model (cost division per funding partner)? The division of costs in BMI - between Solidaridad, factories and brands – is relatively unique, compared to other initiatives. Often most of the budget is donor financed with limited contributions from brands and almost none from mills. At the same time a tendency is upcoming – recognised also by other initiatives - that contribution from the actual beneficiaries (mills and brands) should be part of a costs model, to create 'ownership'.

Firstly brands positive on 'value for money' - their fund allocation of 10.000 Euro per nominated mill was felt adequate during this 'pilot' stage of BMI - but they immediately stipulated that it would be too high when upscaling towards many more mills.



Figure 9 – Mills willingness for paying higher fee (e-survey result)

Almost all mills found the present fee of 3.000 Euro acceptable – but it is important to put that also in the perspective of the option for subsidy – and a large group is even are willing to pay, if specific elements of BMI will be revised (more support, suggestions related to this are addressed in the next chapter on scalability).

4.5. Impact with main emphasis on the scalability of the programme

4.5.1. Impact

The evaluation itself was not explicitly aimed to investigate and validate the impact of BMI till now. This was discussed during the set-up of the evaluation, merely because of the limited size of BMI (43 mills only).

BMI made a calculation of tangible environmental and economic impacts achieved during the different phases. The figure below showed the impact after phase II; at this moment after implementing \pm 600 improvements certainly environmental achievements are achieved at mill level, their surrounding environment (because less air and water pollution) and the workers in the mills (improved workers conditions). No unintended negative impacts are seen.

iii

Figure 10 - BMI's environmental achievements

In earlier sections of this evaluation report is is already mentioned that the evaluators felt it almost impossible to properly identify and validate the actual environmental benefits, because it appered at the on-site visits during the interviews that in most mills there is are no sensors or meters in place which is essential to calculate the emission reduction, thus no records of past performance. Also in Chinese IPE-database no historical data were found from the mills participating in BMI. In term of energy saving, the records looked a lot better, but still not enough to evaluate the real difference between past and present. The above presented impacts are often based on estimations and calculations only and not or regular, verifiable measurements.

This also limits the financial assessment of savings versus investments; the Return of Investments (ROI) - calculations presented in reports are too vague to make accurate statements.

Box 8 – Assessment of applied method of ROI-caclculations.

The calculation process is very simple. Key figures are listed but without breakdown. For example, general savings were listed without composition of savings such as electricity, water consumption, waste water reduction, etc. In some cases, the maintenance and operation cost of new equipment/facility was not accounted. No clear description of savings per exact time period.

Source: interviews with 12 mills and backed up by the opinion of the evaluators (as CPexperts).

BMI itself reports in is aggregated report after phase 2 – for \pm 600 options implemented in 38 mills over a period of 15 months - that more than 60% of the

options have a pay-back time of less then 2 years, resulting in savings of 9.7 million Euro. Box 8 gives an indication of the investement size per option.

Box 9 - Level of required investment per CP-option

- 400(66%) are low-cost (< 7.000 Euro (50.000 RMB)
- 80(13%) are medium-cost (7.000 70.000 Euro (50,000~500,000RMB)),
- 90 (15%) are high-cost (> 70.000 Euro (500,000RMB)),
- 30 (5%) are not reported with cost.

Source: BMI-report after phase 2

4.5.2. Scalability

The sustainability of BMI is mainly assessed via the potential of and interest for upscaling the chosen approach.

All brands stated in the interviews the relevance of upscaling BMI in a certain way, but at the same time link potential interest to continue their involvement to specific changes in the approach of BMI.

Mills have almost a similar opinion; most of them even want to continue their involvement in BMI but certainly underpin the relevance of upscaling via involving more mills. As demonstrated in figure 11.



Figure 11 - Mills interest to scale-up BMI (e-survey result)



Other stakeholders – especially the sector associations (CNTAC and CPDA) expressed their strong interest to join BMI and jointly work on scaling up the importance; this was originally foreseen in pre-BMI plans, and developed in several programme documents. However, in 2011-2012, insufficient donor funds could be allocated for this approach. As highlighted in the 'relevance' section, they think the programme objectives are still very relevant for China and the Chinese textile sector, and scaling-up and creating impact in the entire sector is therefore essential.

Finally many suggestions are given by the different stakeholders interviewed. All these suggestions are worthwhile to consider to be incorporated in the scaling-up of BMI. The most key elements are already incorporated in the recommendations presented in the final chapter.

Overall design:

- Alignment with other initiatives;
- Involvement other stakeholders (sector associations, local authorities);
- Involvement van garment tier 1 factories;

<u>Cost model</u>

• Offer incentives to the mills who are doing better in BMI project. E.g. brands could provide more contracts to the BMI best performing mills and local governmental could provide financial supports/subsidies/awards to the BMI best performing mills;

Direct mills interventions

- Segmentation of involved mills modular intake;
- Working via industrial parks concept;

- Conduct more detailed baseline assessment for making sure that the project contents are tailor-made and are high relevance to mills' needs;
- Increase the number of on-site visits;
- More networking with similar mills;
- Address higher-investments and facilitate green loans;

Training approach

- More case studies presented in the training courses;
- Trainings should be more tailor-made;
- Apply e-learning concepts;
- Provide more and better self-assessment tools.

<u>Outreach</u>

- Build a joint platform to better share experiences;
- Share experiences of best performing mills and thereby offer practical opportunities for mills in average performance to learn from best performing mills;

Enabling environment

- Facilitate mills in getting green loans (low-interest loans);
- Involve local authorities in the BMI follow up action;
- Launch policy supports with local authorities;
- Link BMI with existing and upcoming Chinese policies- e.g. environmental taxation (emissions, emission trading) and environmental licensing.

5. Conclusions and Recommendations

Based on the assessment of the overall programme, its applied approach, and the outputs as described in the previous chapters - via key facts and findings and opinions from the different stakeholders - the following conclusions can be formulated.

Criteria	Score
Relevance	Good / high
Effectiveness	
Direct mill intervention	Good / strong
Strengthening enabling environment	Poor
Outreach	Poor to moderate
Efficiency	Poor
Impact	Not assessed
Potential for scalabilty	Good / high

Table 9 -	Summary	of eval	luation	results
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Relevance

The **relevance** of the BMI-objectives and areas of intended impact areas²⁸ were judged by all relevant stakeholders, e.g. brands, mills and sector associations, to be **good**.

The evaluation showed that two of the most important arguments for mill participating in BMI are (1) the tightened (and upcoming stringent) environmental legislation in China, and (2) the continued operational importance of addressing environmental risks from the standpoint of the brands.

BMI has chosen for a broad holistic approach – covering seven different themes – and this is on the one hand understood and supported by brands and mills, because the interconnectivenss. However on the otherhand organisation have their own priorities; related to water, chemicals and/or energy.

²⁸ The direct support and capacity building of (tier 2 mills) as well as strengthening the enabling environment and secure proper outreach of achieved results (e.g. best practices).

The judgement of good relevance, by mills and brands, should placed in the context provided by the Chinese National Cleaner Production Centre. Many efforts have taken place in the last decade on development of CP-supporting materials, even specifically tailored to the textile sector and mandatory CP-assessment in different Chinese regions. Despite these efforts – in BMI several mills were also beforehand exposed to other CP-intervention - it still appears that many mills lack the awareness and understanding of continuous improvement assessments and thereby certainly a relevance for CP-activities oriented to build awareness, understanding and capacity in mills itself.

Key recommendation

- 1. BMI must align with other initiatives, , preferable up to full convergency, in order to decrease the number of parallel initiatives and optimise budget utilisation for development of materials via cross fertilisation.
- 2. BMI must apply a modular approach linked to segmentation of the mills that participate and offer brands (and mills) a more needs driven choice.

Contributing recommendations

- BMI should stronger focus on continuous improvement via dedicated capacity building (train how to apply CP) and embedding in environmental management systems.
 - BMI should stronger focus the TA-part of the TA-part on technical and costly improvements, including building convincing business cases and facilitate financial support for these options.

Effectiveness

The **effectiveness** of BMI's approach varies from **good** for the direct mills intervention to **just moderate** for the outreach and visibility and **poor** for the strengthening of the enabling environment.

Actions to create visibility for BMI's approach and results were undertaken; besides several public events and exposure in the media BMI- web-site was launched, however with almost no accesible training materials, tools and best practises. This is a missed chance to disseminate the mateierials and best practices, despite the fact that a large part of the identified improvement options will be applicable for most mills and thereby transferable.

And no evidence is found that the enabling environment is strengthened, most likely as result of the sporadic activities BMI undertook to properly and regularly initiate stakeholder dialogue and co-operate with sector assocations and local authorities. The first part of the conclusion – good effectiveness of BMI's efforts towards mills – need further specification. 43 mills have participated in BMI and tangible results have been achieved – improvements in energy saving, water saving, resource conservation, reduced pollution, chemical management and related production process optimisation as well as occupational health and safety. The exact quantified amount of these improvements can be questioned, because apparently based on estimation and calculations and not on actual measurements. And, the embedding of these efforts into management systems and adequate capacity building of relevant mills' staff is assessed as moderate effective, because only limited evidence is found (yet) of continuous improvements; even when taking into consideration that \pm 50% of the participating mills in BMI already had been supported earlier in conducting a CP-assessment.

This indicates that the type of support for embedding CP knowledge is still inadequate, the understanding how to continue with CP without external external support seems to be insufficient. Part of the group has gained understanding, most likely those who already had some understanding pre-project. However also at least with half of the participating mills – most of them new-comers - the BMI-programme was insufficient in it's capacity building interventions to create sufficient understanding that they are able to continue pos-project.

The amount of mills that participated in BMI stayed below the original target (43 versus 65) and it is relevant to ask if the selection process chosen by BMI is effective enough to upscale to hundreds of mills. Furthermore, the incentive (push / requirement) of brand on tier 2 mills is felt as less strong as assumed, because of the limited direct contact and sphere of influence – and it is suggested that the tier 1 (fashion factories) should be included in the programme and/or the local authorities, because of their more direct contacts with tier 2 mills.

As a result of the informal and irregular communication with stakeholders, the involvement of associations in BMI was limited. CNTAC, as the key sector association in China, was initially involved during the preparatory stage, but as a result of the decision to have a focus on direct mills work and initial efforts to influence the enabling network were downgraded and thereby CNTAC's role. Furthermore, a potential role of CNTAC to facilitate the searching, screening and selection of mills disappeared.

	Key recommendation
3.	BMI should employ a dual-track approach (different training approach,
	different level of on-site support, etc.) – to customise the approach
	better to the requirements of the mills (at least 'matured' versus
	'newcomers').
4.	BMI should enlarge the group of stakeholders (sector associations and
	notworks to get in contact with mills and to onhance the onabling
	environment (diffusion of best practices utilisation of policy
	instruments).
	Contributing recommendations
•	BMI should apply different engagement approaches to attract mills to
	join the programme, not only via the international brands but also via
	involvement of garment tier 1 factories and local stakeholders (sector
	assocations and local authorities) who have more direct leverage to the
	mills.
•	BMI shoulde align with existing and upcoming Chinese policies and
	strategies; e.g. working via industrial parks in specific provinces, link
	environment licensing
•	BMI should develop and employ incentives for mills who are best
	performing in BMI; e.g. brands offer preferential contracting, local
	government offer directly or facilitate financial support for
	investments, etc.
٠	BMI should improve their self-assessment tool and utilise it for
	screening interested mills which track to follow.
•	BMI should develop modular sets of training materials, on different
	topics, and related to the segmentation of the mills.
•	BMI should enlarge the pool of experts they utilise in their direct mills
	interventions; thereby more flexibe in support towards different
	regions.
•	BMI should upgrade their web-portal to share their training materials
	and assessment tools, and an interactive tool for searching best

Efficiency

The **efficiency** of BMI is assessed as poor.

The analysis of expenditures in BMI revealed that \pm 40% of BMI's budget is utilised for programme management, coordination and generic activities and certainly not related to direct mills activities – this is already a very high figure,

taken into consideration that the original BMI broader (non-mill) interventions have been substantially downscaled. This is a consequence of the specific task description chosen by Solidaridad how to control and supervise sub-contractors (especially joining each and every mill visit).

At the same time the 60% of BMI's budget spent on direct mills intervention also should be regarded as high, because it implicates that \pm 12.500 Euro is spent per mill. It is important to realise that this price can't be directly compared to a one-to-one CP-assessment, because the approach also includes (classroom) training and networking meetings and actions to aggregate best practices for dissemination. But even when taking this in consideration, the difference with the present commercial market prices for a proper CP-assessment in China (5.000 EUR) is significant.

Despite this poor qualification of the efficiency, most stakeholders still perceived BMI at this moment as 'value for money'. However, this should not be interpreted similar to cost-effective. The mills are positive in this perspective, because the balance between the participation fee of 3.000 Euro plus the investments made versus the already gained (and upcoming) annual savings is positive. Certainly, if we take into consideration that, potentially as a result of BMI-participation, mills can obtain a subsidy from local Chinese government from 7.500 up to 15.000 Euro (±30% of the participating mills already received this subsidy).

Brands also reflected positive on BMI's present 'value for money'. but with the immediate statement that their fund allocation of 10.000 Euro per nominated mill could be accepted during this 'pilot' stage but can't be continued during upscaling towards many more mills; cost reductions will be essential.

	Key recommendations
5.	BMI should optimise - via their dual-track and modular mill approach,
	potentially in combination with a modular fee system - the costs for
	mills interventions.
6.	BMI should more strictly split the roles of implementation (mainly
	covered by qualified service providers) and programme management
	(guidance and quality control and thereby avoiding duplication.
	Contributing recommendations
•	Contributing recommendationsBMI should develop innovative training methods that are more cost-
•	Contributing recommendations BMI should develop innovative training methods that are more cost- effective (e-learning for those modules and target groups that haven
•	Contributing recommendations BMI should develop innovative training methods that are more cost- effective (e-learning for those modules and target groups that haven shown to be sufficiently matured to be trained virtually).
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•	Contributing recommendationsBMI should develop innovative training methods that are more cost- effective (e-learning for those modules and target groups that haven shown to be sufficiently matured to be trained virtually).BMI should enlarge the pool of experts they utilise in their direct mills interventions; thereby more cost-effective in support towards different

• BMI should stage pre-meetings – and some intermediary knowledge capturing meetings - with the (larger) pool service providers to standardise the training and support materials and calibrate their approach.

Potential of scalability

The **impact** of BMI is mainly assessed as the **potential of and interest for upscaling** the chosen approach. All brands still underscore the relevance of the BMI-objectives and would be interested to stay (or for non-involved brands become) involved in future activities – upscaling plans – under the condition that the set up of BMI will change, in order to increase the effectiveness and efficiency of the action.

Key recommendation			
7.	BMI must explore the upscaling of it's approach, taking into		
	consideration the other recommendations provided.		
8.	BMI must align closely with other initiatives (especially SAC and ZDHC)		
	to build upon and utilise knowledge and materials and potentially even		
	join hands, up to full convergence, to avoid duplication and create		
	synergy.		

Programme design and management:

The **programme design** was much broader and holistic than actually implemented, especially interventions beyond the direct scope of mills' support have been downscaled for different reasons, resulting in poor effectiveness especially on enabling environment.

Furthermore the programme design lacked communication structures and procedures and clear performance measures / indicators and related M&E-procedures. This resulted in insufficient opportunities to adjust the approach during the implementation period.

The **program management** is positively assessed by the different stakeholders involved However, the way of programme management – especially the in-depth and time-consuming control and supervision of the work of subcontractors – has serious consequences for the efficiency of the approach and thereby the opportunities for upscaling.

The communication in BMI has been mainly in Chinese – to ease especially the communication with the mills. All mill reports have been in Chinese only, with only a view translated into English. Training materials also were only available in Chinese. And all workshops were in Chinese only – without translation. This,

understandable, working condition hampered Solidaridad-NL to get proper insight in the progress of BMI and giving customised input, and resulted in redundant programme management interventions that led to higher costs and potentially miscommunications.

Key recommendation
9. BMI should formalise joint periodic knowledge capturing with involved
key stakeholders (brands, mills and implementers) in order to secure a
proper learning curve and optimise the effectiveness and efficiency.
Contributing recommendations
BMI should establish a clear M&E-protocol (indicators and procedures)
• BMI should develop a proper documentation system, to secure
traceability of decisions
• BMI should be managed from China itself, and downscale the role and
involvement of Solidaridad-NL office. The NL-office should only focus
on consistency of the approach, especially during the start-up phase –
in line with global actions – and alignment with actions in other
countries.
• BMI's programme management should revise their present mixed role
of manager, coordinator and implementer, and utilise qualified service
providers for implementation and focus themselves on strategy and
quality control.

6. Annexes

- 1. BMI's 'official' programme document
- 2. BMI's Indicators and achievements
- 3. Interviewed organisations
- 4. Reference documents
- 5. Key questions for the evaluation
- 6. Results of the e-survey
- 7. Quantified information from mills' interviews
- 8. Analysis of the expenditure of BMI
- 9. Analysis of the CP and CM options
- 10. Overview of BMI visibility

Annex 1 BMI's programme document

Introduction to the Better Mill Initiative in China



Overall programmeobjective

To improve the sustainability performance of Textile Wet Processing in the fashion supply chain in China





Specificobjectives









Mill capacity building (15 months in two batches)

EHS Academy: Chemical management basic trainings

7 impact areasaddressed

Factory level implementation covers the following impact areas

- Best practices on water reduction, reuse and recycling
 - BATs* for water conservation

Best practices on sound wastewater treatment

- BATs for wastewater treatment
- Best practice on energy saving
- BATs for energy efficiency
- Awareness training on Chemical Management and ZDHC
- Chemical assessment
- Identify opportunities for reduction, substitution and reuse of chemicals
- Standards and protocols on safe chemical selection, handling, storage and disposal of chemicals
- Wasteminimization;
- Appropriate treatment and disposal of waste generated

(Hazardous) air emission reduction, from boilers, solvent use, printing, etc. BATs for air emission reductions

Awareness raising and support in addressing key social conditions

• Elimination of occupat



Expected results from the mill capacity building

Results per mill:

- Internal management system and functioning team and action plan focused at continuous improvement
- Implementation > 10 improvement options

This is on average expected to lead to:

- 10-20% water and energy (electricity and steam) savings*
- > 5% improved 'right first time' dyeing
- Compliant chemical management
- Improved occupational health and safety
- Improved worker-managementdialogue
- > 15% improved Higg Index Score
- * Normalized reductions

Spin Off :

- A replicable and result oriented approach to support mills
- Best practices, benchmark data and c a s e s

Approach to Multi-StakeholderDialogue

Objective: Contribute to a strengthened enabling environment by identifying solutions to address 3 key challenges to the textile sector in China

Preparatory activities:

- Mapping of stakeholders at the national and regional level
- Mapping of relevant other initiatives (incl. but beyond those of WWF, IFC, NRDC, IPE, China Water Risk)
- Identification of 3 key challenges to mills over a period of 2 years in China through the stakeholder mapping / survey and intensive contact with mills in BMI these could be regulatory / political, technical or related to the surrounding community
- Desk research / analysis of the problems and potential solutions

Facilitating the stakeholder dialogue

- A multi-stakeholder advisory council (MAC) on mill related issues will be formed the MAC consists of representatives from mills, brands, associations, government, technical experts and NGOs.
- In 4-5 MAC meetings spread over the programme the specific topics will be discussed, aiming to come to a common problem analysis, find solution directions which fit the local context.
- Connect with the relevant stakeholder groups to identify if steps can be taken to implement the solutions



Expanding the impact beyond the programme



Alignment and seeking synergies with other initiatives

- Various initiatives offer programmes for the textile industry. These include IFC and NRDC, where WWF has a strong water team, and IPE plays an important role in disclosure of information.
- Solidaridad will initiate bi-annual meetings to identify scope for collaboration, synergies and keep each other informed.
- Solidaridad is exploring the possibility to link interested mills with IFC for access to finance / detailed and bankable investment plans for high cost options
- Solidaridad is exploring with NRDC if there are opportunities for joint communication / events, sharing of tools (e.g. NRDC 10 best practices / Solidaridad tools developed under this programme) and alignment to ensure coherent messaging.
- NRDC and IFC will be both invited to take part in the MAC meetings

<u>Objective</u>: alignment and collaboration where adding value ensuring complementarity – the consultations conclude that the need in the sector is larger than any one organisation can tackle



Ensuring continuity after the programme end



Develop local platforms to drive improvement in consultation with the MAC

continuous

- Allowing for mutual learning and capacity building
- Consider opportunities for Public Disclosure

Establish linkages between these platforms and key 'solution providers'

- Suppliers of inputs (chemicals, machinery, etc.)
- Trainers
- Technical experts
- Knowledge sources

Solidaridad is exploring the possibility to have a database of reliable and quality service providers on the BMI website

Through the experiences in this programme our implementing partners will also further



Communication: Sharing results, experiences, best practices





Communication purpose

- Inspire others to be conscious:
 - Brands to partner with their suppliers for improvement
 - Mills to implement systems for continuous improvement
- Sharing learnings to strengthen important initiatives: SAC / Higg Index, ZDHC, BCI

Communication means

- Programme website with news updates
- Local and international conferences
- Articles in local and international professional press
- Using social media to share information

Sharing tools and information

BMI tools and information will be made 'open source' to allow others to benefit from it



Programme management



Steering Committee

- The Steering Committee will consist of Solidaridad, H&M, 1 other partner brand and 2 representatives of mills
- Meet once or twice per year (in person or through call)
- Will supervise progress and quality and is consulted in case of important changes to the project design or budget
Programme planning

											FAI	R	
			20	13			20	14			20	15	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Preparation												
СР	Batch 1*					20 r	nills						
implemen-	Batch 2**					55 mills							
Stakeholder	Preparation												
dialogue	Meetings												
Communication and outreach							Conti	nuous		-			
Linkages with SAC, ZDHC, etc.							Conti	nuous					
Final report a	nd closing event												

* Batch 1, Yangtze River Delta region (15-20 mills)

** In Batch 2, 1 cluster (15-20 mills) in the Pearl River Delta

Budget

Budget summary	
Result area 1 - Mill improvements	€ 671.763
1) Development of internal systems, resource efficiency and pollution prevention	€ 457.013
2) Social improvements	€ 39.000
3) Chemical management	€ 126.250
4) Events, seminars and innovation budget, Pearl river delta travel budget for trainers/ex	€ 49.500
Result Area 2 - Strengthening the Enabling Environment	€ 92.500
Result Area 3 - Linking, learning and communication	€ 74.500
Project management, coordination, implementation (Solidaridad), contingency	
reserve	€ 445.175
Total programme costs	€ 1.283.938

Cost sharing proposal					
Programme budget				€ 1	.283.938
Indicative commitments from partners	Solidaridad		na	€ 309.000	
Brand contribution: € 10.000 per supplier	Brands	€ 10.000	75	€ 750.000	
Mills: € 3.000 per participating mill	Mills contribut	€ 3.000	75	€ 225.000	
				€ 1	.284.000
Balance					- € 63

Original	Redefined a/o	Target	Achievement	Remarks
indicator	new indicator			
(according to				
ToC)				
Higg index		N/A	N/A	According to present information not
score				standard determined
Higg index delta		N/A	N/A	According to present information not
				standard determined
Production data		N/A	Not relevant	Is no indicator, only in case of production
				data change – production efficiency
				improvement (increased production
				volume) but often that is not related to CP-
				actions, but due to market demand
Water	Water	PM	PM	Doubts on figures (if actual measured or
consumption	consumption			claimed based on assumptions)
	reduction			
Energy	Energy	PM	PM	Doubts on figures (if actual measured or
consumption	consumption			claimed based on assumptions)
	reduction			
Chemical	# chemical	PM	PM	Doubts on figures (if actual measured or
management	substitutions by			claimed based on assumptions)
	less harmful			
	(and/or fully			

Annex 2 BMI's Indicators and achievements

	phased-out)			
	Chemical storage	N/A	PM	
	improvements			
Air emissions		N/A	N/A	Not properly measurable, CO2 calculation
indicator				can be done (in relation to energy), To be
				deleted, potentially replaced by CO2
			NY / A	reduction
Improved OHS		N/A	N/A	Not measured, to be deleted, could have
indicator				been replaced by # accidents a/o # PPE
		NT / A	DM	utilisation increased
#		N/A	PM	Is measured, but # improvements are not so
Improvements				relevant – a rather out-of-date CP-
recommended				influenced wie sutting improvements in
				minuenced via cutting improvements in
SUCCESTED BY	# improvements	Ν / Δ	DM	nore sub-mprovements
	# Improvements	N/A	F IVI	
LVALOATOR	themselves nost-			
	RMI			
#		N/A	PM	See above. Ratio of recommended
improvements				improvements versus accepted and/or
implemented				already implemented improvements can be
				also interesting to analyse – however, often
				expected non-feasible improvements (or
				expected to be rejected) often already not

				listed
	# improvements	N/A	РМ	
	still in the pipeline			
Value of		N/A	РМ	
investments				
made				
SUGGESTED BY	Ratio of	N/A	PM	
EVALUATORS	investments			
	versus annual			
	savings (pay-back			
	time, ROI)			
Management		N/A	PM?	Can be a useful indicator, if operationalised
system				in criteria how to value if management
implemented				system is implemented. However not
				properly determined during baseline
				assessment

# brands	# brands	N/A	15+	
	approached before			
	/ during BMI			
	# brands actually	N/A	6	
	joined BMI			
# mills	# mills pre-	N/A	??	
	selected			
	# mills actually	75	43	

	joined BMI			
SUGGESTED BY	# additional	N/A	РМ	
EVALUATOR	requests from			
	involved mills for			
	post-BMI support			
SUGGESTED BY	# additional	N/A	PM	
EVALUATOR	requests from non-			
	involved mills for			
	support			
# training		N/A	PM and	Only relevant if also satisfaction level of
sessions			PM	networking meetings (in combination with
				number of participants)
# networking		N/A	PM and	Only relevant if also satisfaction level of
meetings			PM	networking meetings (in combination with
				number of participants)
# employees		N/A	PM and	Useful only indicator will reflect also
involved			PM	(1) increased level of awareness amongst
				involved employees
			PM and	(2) ration of level of employees actually
			PM	involved versus total number of
				employees, in combination potentially with
				rate of dissemination
SUGGESTED BY	# stakeholder	N/A	PM	
EVALUATORS	meetings			
SUGGESTED BY	# stakeholders	N/A	PM	

EVALUATORS	engaged			
SUGGESTED BY	# media coverage	N/A	PM	
EVALUATORS				

Annex 3 Interviewed organisations

• Solidaridad (BMI management & coordination)

- Marieke Weerdesteijn and Ariane Biemond (Solidaridad-Netherlands)
- Martin Ma, Zhao Lin and Enxue Wang (Solidaridad-China)

• Brands

1a. Brands involved in BMI

- Harshna Vardhan and Michelle Yu (H&M)
- Adam Brennan (C&A)
- Elvia Shi (New Look)
- Felicity Tapsell & Marcus Meng (Bestseller (Jack & Jones))
- Nany Kusuma (Tommy Hilfiger)

1b. Brands considered to join BMI but declined

- Yung-Joo Lockhorn Lamberts & Frouke Bruinsma (G-Star)
- German Garcia Ibanez (Inditex)
- Melissa Fifield (GAP)
- Mills
 - 12 mills out of the 43 involved mills interviewed face-to-face
 - 33 mills out of the 43 involved mills responded on the e-survey

• Implementers

- Zhao Lin and Enxue Wang (Solidaridad-China)
- Zhejiang University
- Kenneth Wong (STS)

• External stakeholders / experts

• Liang Xiaohui (CNTAC)

• Lin Lin, (CPDA)

- Qiao Qi and Liu Jigyang (CNCPC)
- Cindy Lin (NRDC, implementer of Clean by Design)
- (IPE)
- Jaap van der Meer (IVAM, implementer of IFC's textile project in China)

Annex 4 Reference documents

- Programme documents: starting document describing the original objectives, planned actions, assumptions, etc.;
- Internal programme management documentation: internal memo's within Solidaridad, internal progress documentation, financial documentation (income and spending per cost item, potentially related to time sheets to analyse spent time per action);
- Contractual documents: contracts with the brands, contracts with the mills and contracts with the implementers;
- Training materials: power points used by the different trainers (partially bilingual, but merely in Chinese);
- Information of events: agenda, participants lists, meeting notes and evaluation forms;
- Company reports: for each mill 3 to 4 individual reports are prepared (all in Chinese), a baseline report, a mid-term report, a final report and a chemical management report;
- Programme reports: aggregated reports presenting the results of the programme, aggregated (internal) database of options (and achieved environmental improvements);
- Documentation related to visibility actions: articles, presentations during conferences, press coverage;
- Already conducted 'evaluations': Solidaridad-China conducted a 'customer satisfaction evaluation during the classroom workshops', Solidaridad-Netherlands conducted an FSP-evaluation and BMI was one of the case studies in this evaluation, at a meta-level. C&A did a field evaluation in China on some of their mills, and one mill involved in BMI was also interviewed;
- Available information on parallel initiatives: web-sites and brochures described the structure, set-up, objectives, activities and ⁶⁵ potential fee for participants.

Annex 5 Key questions for the evaluation

Project design and governance structure

- What was the overall goal and related objectives of the BMI programme?
- Are the activities, outputs and outcomes of the BMI programme consistent with the overall goal of the programme?
- What was the underlying Theory of Change of the BMI programme, and was this consistent with the planned activities?
- What was the original implementation structure and related procedures (selected implementers, programme management and coordination via 2 parallel entities (Solidaridad-NL and Solidaridad-China) supervision a/o advisory board, M&E procedures)?
- Is the implementation structure changed during the implementation period? And if so how and why?
- What internal and external communication processes were foreseen?
- Are these communication processes applied according to plan?
- What was the final budget and how is this actually spent per implementer, type of costs (personnel, material costs) and type of action?

Relevance

To what extent is the BMI programme relevant to the priorities and policies of its target groups (with specific focus to brands and retailers (partners and non-partners) and factories in China)?

- To what extent were the objectives and impact areas of the BMI programme as formulated at the start of the programme valid and relevant?
- Are there topics / priorities that were missed?
- To what extent is the programme offered currently valid and relevant?
- What were the reasons (ranked according to importance) for brands to join the programme? And what were potential hesitations to join?
- What were the reasons (ranked according to importance) for brands not to join the programme?
- What were the reasons (ranked according to importance) for mills to join the programme? And what were potential hesitations to join?

Effectiveness

To what extent does the programme attain or is likely to attain its objectives, directly or indirectly, intended or unintended?

- To what extent were the intended results of the BMI achieved?
- In what areas did the BMI achieve most and least results and why?
- What were the major factors (internal and external) influencing the achievement or non- achievement of results?
- How transferable were improvement recommendations between factories?
- To what extent did factories generate their own ideas for areas of improvement?
- How effective were the following approaches training workshops; network meetings and onsite visits at delivering results for the stakeholders involved (factories and brands, and other)?
- To what extent were levels of involvement and participation of different stakeholders sufficient to achieve the intended results?
- What are the probable long-term impacts on the target beneficiaries (mills and factories engaged in wet processing, their surrounding environment and the workers in the mills and factories)?
- Did the BMI programme produce any unintended results / impacts (positive and / or negative)?
- What factors or actors influenced these unintended results?

Efficiency / cost-effectiveness

To what extent is the BMI programme value for money?

- To what extend do stakeholders (brands and mills) consider the programme 'value for money' (qualitative assessment, value being both financial and/or non-financial)?
- What is the return on investment (ROI) for the participating mills (taking into account the programme and the improvements implemented resulting from the programme)?
- What is the ratio between the BMI programme costs and the investments made by individual factories?
- To what extent, if any, have revenues increased due to the programme?
- What was the ratio of fixed (programmatic costs not directly linear with the number of participating factories) to variable costs (linearly linked to the number of factories involved) for the BMI program and can this be optimized with scalability in mind?
- What is the stakeholders' opinion on the division of costs between Solidaridad, factories and brands, as in BMI?
- What is the evaluator's analysis of the programme's efficiency (programme cost per factory)?

- How can BMI programme increase the efficiency and return on investment for partner mills and participating brands and retailers in future programming?
- Which stakeholder(s) are interested to be responsible for bearing programme costs and why?

Sustainability of the results with main emphasis on the scalability of the programme

What are the opportunities to strengthen the BMI approach to scale-up the programme?

- To what extend will the achieved results sustained in the participated factories (e.g. continuation of the work (implementing identified improvements a/o identify new options) in the mill post-project)?
- To what extend will the programme approach prolonged in the sector in China (service providers continue working with involved mills and/or even start working with new mills)?
- What views exist on scaling-up of the BMI programme?
- What areas for improvement can be identified to the BMI approach to increase the applicability and scaling-up?
- To what extent are brands interested in participating in possible follow up programmes?
- Which stakeholders are interested to join hands or support the programme?
- What will be the effectiveness and efficiency involving new stakeholders in a potential scale up?

Annex 6 Results of the e-survey

1. BMI's objective - Improve the sustainability performance of Chinese textile wet processing mills - is relevant for the textile sector? (1 answer possible)





3. Which theme of BMI you found most relevant (max. 3 themes)?



4. What was the primary reason that your mill joined the BMIprogramme (max. 2 answers possible)?



5. Were you satisfied with the way of implementation? (1 answer possible)



6. Which methodological approach utilized by BMI was most effective (2 answers possible)?





7. What you missed the most in the BMI-programme (2 answers possible)?

8. Was the result (the Action Plan) satisfactory for you to implement (1 answer possible)?



9. Was the outcome (the learnings) satisfactory for you to continue 'post-project' yourself? (1 answer possible)?



10.BMI delivers 'value for money' (1 answer possible)?



11.BMI should be further scaled-up / continued support in the present mills during the implementation of the options (1 answer possible)?



12. Would you be willing to pay a higher fee for participating in such project (1 answer possible)?



13.BMI should be further scaled-up in China via involving more mills (1 answer possible)?



14. Would you recommend colleague mills to join the BMI programme if there would be a continuation?



15. What is the key condition to be able to increase the impact of BMI on the Chinese textile sector? (1 answer possible)?



16. What would you recommend to change in the BMI-approach?

- more networking with similar mills.
- conduct more detailed baseline assessment for making sure that the project contents are tailor-made and are high relevance to mills' needs.
- increase the number of on-site visits by experts.
- select experts who have knowledge on mills' need and relevant national and local sustainability policies, regulations and standards.
- more case studies presented in the training courses.
- trainings should be more tailor-made.
- organise mills to visit to best performing mills.
- share experiences of best performing mills and thereby offer practical opportunities for mills in average performance to learn from best performing mills.
- improve insight in (upcoming) policies and brand requirements and influence to have clear and stable policies
- offer incentives to the mills who are doing better in BMI project. E.g. brands could provide more contracts to the BMI best performing mills and local governmental could provide financial supports/subsidies/awards to the BMI best performing mills.
- more on-site technical supports.
- facilitate mills in getting green loans (low-interest loans).
- train managers of mills for improving their awareness of sustainability, in order to ease implementation and continued improvement in mills.
- involve local authorities in the BMI follow up action.
- Launch policy supports with local authorities.

Annex 7 Quantified information from mills' interviews

During the evaluation 12 selected mills were face-to-face interviewed with a semistructured questionnaire. It was envisioned to have a sample of mills that is representative for the entire group in BMI (variety in location, size, related brand, production process). However, due to interest to be interviewed and availability during the evaluation period, not the most optimal sample could be interviewed (especially with regard to interview mills from all 6 involved brands – but that was also not easy to realise because some of the involved brands only participated with one mill):

- Only mills related to (and invited by) H&M, C&A and Bestseller have been interviewed. Logically the mills were not exclusively producing for those brands but also a.o. for Decathlon, Polo, Nike, Adidas, Primark, Burberry, Zara, ...
- 84% of the mills interviewed are based in east China (close to the main service provider, based in Hangzhou), 8% in south China and 8% in middle China (both relatively far from ZU, and resulting in substantial travel time (and costs)). Interviews show that there's no noticeable difference of project effectiveness between those near Hangzhou and those far from it, but logically the cost-effectiveness differs;
- All interviewees were fully involved in the BMI programme, which makes the interviews meaningful and appropriate; 67% of interviewees are mid-level management and 33% are top managers; 42% are directly from/in charge of the EHS section/department of the mill, 25% are from the engineering or equipment or quality section, and 33% are from administrative section.
- 92% of the interviewed mills applied dyeing process, 50% have weaving process, and 58% have finishing process. Only 1 mill was rather different from the others; a leather-making mill. This made them feel that they were limited common ground during meetings and few to share.
- Producing capacity: In term of tons/yr. 8% of the mills produced 40.000+, 17% 10.000~12.000, and 1 small mill producing less than 10000;
- Establishment of the mills: 33% of the mills were erected after 2000, 50% in late 1990s, 17% in early 1990s. But this not immediately reflect the age of the production technology, but sometimes has implications on the production facility (gradually grown and thereby, when not moved to a new venue, not always systematically allocated).

REASONS TO JOIN BMI AND EXPECTATIONS

Awareness of CP or	75% of the mills were not aware of and have not taken part in
participation in the	any similar project before.
past in CP-	But: 50% of the mills once carried out cleaner production
assessment and/o	auditing (due to mandatory requirements from the local
or similar projects	authorities)
Reason for	The request from their brands was the strongest reason. Almost
participation	all of the interviewees mentioned that.
	2^{nd} reason (mentioned by 50%) why they joined is to get

	opportunity of exchanging information with other mills.					
	The 3 rd relevant reason (mentioned by 25%) is that mills were					
	suffering from problems such as high water consumption, low					
	first-time dyeing success rate, unstable waste water treatment,					
	etc., and they expected solutions from the programme.					
Expectations	The biggest expectation (mentioned by all interviewed mills) of					
	the mills for BMI programme is to improve their environmental					
	performance and energy efficiency.					
	The 2nd biggest expectation (75%) is access new clean					
	technologies, either in energy saving, or waste treatment.					

EFFORTS BY THE MILL

Composition of the	Normally, the size of the CP-team members is from 5 to 14
CP-team	people. The average is 7. Only 1 mill's team was very small (2
	people only). 50% of the mills designated a top manager as team
	leader. And 75% of the mills' project coordinators are from
	EHS/energy section, while the other 25% from administrative
	section.
	Normally the members of CP-team are from section of EHS,
	production, technical/equipment, quality, energy/facility,
	chemical management. 25% of the mills included HR,
	administrative, financial section into their team.
Senior	In 50%(6/12) of the mills, top manager was the team leader
management direct	who will hold periodical meeting to be informed of the progress
involvement	and gave direct order and assignment.
	In the other 50%, the team leaders reported to senior manager
	periodically or in case that needed (especially the option
	approval).
Time input	25% of mills stated they input 400~500 man-days in the
	programme, 50% stated 200~400 man-days, 25% stated less
	than 200 man-days. The average is 310 man-days.
The most time-	Option implementation is recognized as by far^{7} the most time-
consuming actions	consuming actions by all the mills. Training is the second most
	time-consuming action, mentioned by 25% mills.
Internal problems	None of the interviewed mills perceived problems, thanks to the
to get commitment	senior manager's leading/coordination.
/ involvement	
Staff participated	Class-room training workshops were normally joined by 5~10
in workshops	people, mainly from the CP-team.
How they value the	All the mills stated they're now are aware of the relevance of CP.
'capacity building'	But only 25% think they are capable of continuing assessment
	post-project fully by themselves – 2 Explicitly mentioned that
	they enhanced their capability of "self-improvement", making
	changes in company organizational structure and employee KPI
	system - and 66% stated that they still need outsource

	assistance to carry out CP auditing/assessment post-project.
Most relevant	83% of mills assess the on-site visit as the most relevant
intervention	intervention, since it was when mill directly got support from
	the expert and it was only for their mill.
	The training is the second-best element in the BMI-approach;
	although 41% think it should be more specific.
	The mid-term review was assessed the least relevant; only 1mill
	stated they gained something from this activity.
Expertise	• 58% of interviewees highly qualified the experts who visited
qualification/	their plants, because the experts promoted a good amount
external experts	of options for them.
support	• 33% of interviewees regard their experts as qualified with
	enough practical experience, but the options they promoted
	are not as much as the mills expected.
	• 8% of interview stated their expert promoted unpractical
	options and thus their support was unsatisfying.
	• 58% of interviewees mentioned that the CP expert's support
	was mainly in aspect of energy. The suggestions about
	emission reduction and process improvement were not as
	satisfied as they expected.
	• 75% of interviewees mentioned that the CM expert's
	support is helpful and practical.
Important	75% of the mills stated all important elements were included
elements missing?	and there's nothing necessary to be added or skipped.
Or anything could	The remaining 25% suggested:
be skipped?	• A grouping/sorting step should be added before the start of
	programme – to sort the similar mills into one group and
	provide different training and technical support to different
	groups. By "similar", it means not only the products and
	process, but also the level of CP experience and status.
	An industrial benchmarking step would be very helpful.
	• 3 onsite visits of the external experts are not enough. 2 or 3
Tutur selle contrat	more visits could be added.
Inter-mills contact	92% of interviewees stated they did contact with other mins;
	nowever, 42% of the mills explained that the contact was only during the training workshop
	$\frac{170}{170}$ of the mills directly benefit from the communication with
	17% of the finite unectly benefit from the communication with a they been a new tech or equipment and adopt it in
	other mins - they learn a new tech of equipment and adopt it in their own plant after the communication
	2204 of interviewoos were not open to share because there were
	competitors in the group. Therefore, their sharing was mainly
	about the facility not the process
Contact with	66% of the mills did contact technology suppliers recommended
technology	by the experts
sunnliers	17% of the mills did contact suppliers, which were not directly
Suppriero	recommended by the experts, but in the direction the experts

	pointed.
	17% of the mills did not contact any suppliers.
	58% of the mills signed contract with the suppliers.
The value of the	83% of interviewees regarded their brand's participation as
brand's	"active" "sufficient" and "stimulating", before, during and after
participation	the project, and 1 mill had only contact with the brand during
	the joint meetings. 1 mill explicitly mentioned they were
	misinformed by their brand, so that they did not fully and
	correctly understand BMI programme at the starting point.

ACTUAL RESULTS

How were data that were used for the analysis collected and validated? Based on specific data collection or based on regular	Generally, most of the data were just collected and listed in the reports, but not well analysed. It's not observed that the data and the options are internally and logically related. Usually, there are not clear logical links between the baseline reports and the final reports. According to the visits, it's found that nearly all the data (>90%) listed in the reports, including the investment, operating fees, savings and price of by products, are estimated/calculated, not regularly measured.
What the analysis new for the mill? What part already known?	In most of cases, the energy-related analysis was not new for the mill.
How many options identified (plus details) – as listed in the report?	There are totally 148 options reported in the 12 mills interviewed. During the site interviews, 125 options (84% of 148) were implemented according to the interviewees, and 82 (55% of 148) implemented options were identified by the interviewers (including management options).
Were the suggested options appropriate? If not, why not? How many options rejected? Technical feasibility, financial viability?	Regarding the options listed in the reports, nearly all of them were appropriate. But it has to be taken into consideration that potential non-feasible options perhaps were not reported in the first place.
Were specific issues overlooked?	Not found.
How was the ROI calculated?	Generally acceptable but far from excellent. The calculation process is very simple. Key figures are listed but without breakdown. For example, general saving was listed without composition of savings such as electricity, water consumption, waste water reduction, etc. In some cases, the maintenance and operation cost of new equipment/facility was not accounted.

LEVEL OF IMPLEMENTATION

Options	The maximum quantity of options implemented in a mill is 16;
implemented	The minimum is 6: the average quantity per mill is 10.5. 4 to 5
	options reported were implemented already (approx. 40% of
	the suggested ontions) With very few still in the nineline (12
	ontions in total in 4 mills). This implicates that the rest ontions
	will not be implemented at short notice. The major reason why
	some options still not implemented yet (hampering factors) are:
	a) lock of hudget h) technical non maturity a) maying plan. In 1
	a) lack of budget, b) technical non-inaturity, c) moving plan. In T
	the experte
Options rejected	Seldom. Unly 1 option (not applicable / not relevant anymore,
post-project	because the mill would move to a new venue)
Actual results	83% of mills provided the investment figure in the interview:
quantified	• >10 million RMB: 4 mills
(economically)	• 5~10 million RMB: 5 mills
	• <5 million RMB: 1mill
	The ROI of above provided by the interviewees are from 1 to 10
	years, which is slightly different from reported in the files. The
	average ROI is hard to calculate. By estimation, it will be $3\sim4$
	years.
Actual results	It was impossible to identify the actual environmental benefits
quantified	onsite during the interview, because most of the cases there is
(environmentally)	no sensors or meters in place which is essential to calculate the
	emission reduction, thus no records of past performance. In
	term of energy saving, the records looked a lot better, but still
	not enough to evaluate the real difference between past and
	present.
New options	• 14 new options in 5 mills have already been implemented
identified post-	post-project.
project	• 5 new options in 2 mills are in progress. ⁸¹
	• 1 new option in 1mill is planned.
Contact with	83% of the mills have contacted with ZH experts after the
project	project, in order to get information about new technologies, new
implementers after	equipment, as well as follow up the questions and problems
the project	which was not solved during the project, and 42% of the mills
	regard this contact quite satisfying and helpful, while the other
	42% did not receive solid support vet but still looking forward
	to a good satisfying result
	to a good satisfying result.

FINAL REPORTING

Overall satisfaction	67% of the mills gave score of 10/10;			
with the outcome	25% score 9/10;			
	8% score 8/10. (this one is the mill who generated all the			
	options themselves, having already very rich CP experience and			
	who suggest the mills should be screened and before the kick-			
	off (in starters and advanced) to better customise the approach			
Highest value	The most frequently mentioned elements:			
	 ideas on new technologies/products/options 			
	 external technical support and analysis 			
	chemical management enhancement			
	 better understanding CP-concept 			
	workers training			
Limited and	More exchange opportunity between similar mills			
missed				
Regarding as 'value	Yes, by 92% interviewees.			
for money'	Not really by 8% (1 mill) interviewee.			
BMI's value	Most of the mills (75%) were not aware of similar projects and			
compared to	thereby can't compare. The remaining 25% regard BMI as			
others	roughly the same as others; only it's more emphasized on			
	energy and chemical managements, which is an advantage.			
	However, they also think it would be better to add more			
	environmental management (waste treatment/ emission			
	reduction technologies) in the programme.			
Recommend other	Yes 83% would pro-actively recommend it to others			
mills for a future	No (17%), unless other mills ask them their opinion			
BMI?				
Final	• A visit at "old" participant mills before the kick-off will be			
recommendations	helpful for the newcomer, to see and understand what old			
about scaling up	participant have gained in the past programme.			
	• Brands should give more credit when purchasing, to those			
	who are active and successful in the BMI programme.			
	• Less "overall" experts, more environmental experts, more			
	process experts.			

Annex 8 Analysis of the expenditure of BMI

Issues that hampered the analysis:

- The book keeping (and time registration) systems of Solidaridad have no system / standardised rules to allocate costs to specific activities
- The spent costs for 2016 could not be specified yet

Assumptions made to tackle these issues:

- An expert's opinion is used to allocate expenditure to either PME-actions (programme management, coordination, evaluation, etc.) or direct mills related activities
- The expenditure for 2016 (6 months) is based on an extrapolation of the expenditures over the previous period
- An assumption is made based on rough time allocation per activity by Solidaridad-staff that 20% of the time input of Solidaridad-China staff directly is related to implementation activities at mills level

					PME	Direct
Staffing costs Solidaridad			€273.728,00	30%		
Costs Solidaridad-NL			€116.894,00	13%		
Staff costs Solidaridad-NL			€102.450,00	11%	€102.450,00	
Assumed staff costs Solidaridad-NL 1st half 2016		alf 2016	€14.444,00	2%	€14.444,00	
Costs Solidaridad-China			€164.508,32	18%		
Staff costs Solidaridad-China	a		€130.695,00	15%	€104.556,00	€26.139,00
Assumed staff costs Solidaridad-China 1st half 2016		€33.813,21	4%	€27.050,66	€6.762,66	

Consultancy costs			€362.553,38	40%		€362.553,38
Additional costs			€254.744,30	28%		
Travel costs SolidaridadNL			€16.338,00	2%	€16.338,00	
Assumed travel costs Solida	ridad-NL 1st ł	nalf 2016	€7.363,50	1%	€7.363,50	
Travel costs Solidaridad-Chi	na		€32.423,00	4%	€25938,40	€6.484,60
Office costs Solidaridad-China			€22.222,00	2%	€22.222,00	
Assumed office costs Solidaridad-China 1st half 2016		€4.400,00	0%	€4.400,00		
Communication costs			€13.350,00	1%		€13.350,00
Meeting costs			€42.170,00	5%		€42.170,00
Assumed meeting costs 201	.6		€15.600,00	2%		€15.600,00
Material costs			€224,00	0%		€224,00
Undefined			€68.878,80	8%		€68.878,80
Evaluation study			€31.775,00	4%	€31.775,00	
			€898.700,00		€366,647,56	€532.052,44
					40,8%	59,2%

Annex 9 Analysis of the CP and CM-options

According to the aggregated Excel file – provided by Solidaridad and made by ZU – there are 598 options in 38 mills in the list (15.7 options per mill)

Required investment for those 598 options

- 400(66%) are low-cost (< 7.000 Euro (50.000 RMB)
- 80(13%) are medium-cost (7.000 70.000 Euro (50,000~500,000RMB)),
- 90 (15%) are high-cost (> 70.000 Euro (500,000RMB)),
- 30 (5%) are not reported with cost.

According to the content of options, it's recognized that there are CP-related options 373(62%) options, and CM-related options 225(38%).

There is an obvious difference between the options related to CP and the ones related to CM. Therefore, in following paragraphs, these options will be counted and categorized separately.

Option Category

CP options (373 options in total)

Category	raw	procure-	process	equipment	Facility	workshop	employee
	material	ment	&control			management	
Options	6	8	66	177	10	93	13
%	1.6	2.1	17.7	47.5	2.7	24.9	3.5

CM options (225 options in total)

Category	supplier	raw material	regulation	Employee	facility	Management
Options	19	5	36	14	56	95
%	8.4	2.2	16	6.2	24.9	42.2

Unique Options

Based on the internal database of all options, in combination with review of several reports, an analysis is made of on uniqueness (and thereby already some indication of transferability), and if already known already or not. After comparing every option, it can be concluded that approx. 50% of the options are identical and thereby transferable from one mill to another.

The group of CP options are more "unique" than the CM options.

Cleaner Production options		
Total options	373	
Unique options		223/373 (60%), in which
Raw material		4/6 (67%)
Procurement		2/8 (25%)
Process & control		55/66 (83%)
Equipment		96/177 (54%)
Facility		6/10 (60%)
Workshop management		52/93(56%)
Employee		7/13(54%)
Most frequently repeated options		
:		t:

• insulation maintenance (21 times)

- old motors fade-out (14 times)
- LED laps (11 times)

Chemical management options:

Total options	225
Unique options	69/225(31%), in which
Supplier	6/19(32%)
Raw material	3/5(60%) ₈₆
Regulation	12/34 (35%)
Employee	4/14 (29%)
Facility	21/56 (38%)
Management	23/95 (24%)

Annex 10 Overview of BMI visibility

1. Presentations in international and/or national workshops/conferences

Date	Topic and main contents	Presentation by
14 Oct. 2015	Sustainable production: is low investment &	Zhao Lin,
	high benefit possible?	Solidaridad
	Presenting main BMI results showing that	China
	low investment can achieve high benefit	
	and impacts.	
18 Nov. 2015	BMI Best practices in water, energy and	Zhao Lin,
	chemicals management.	Solidaridad
	Presenting best practices generated by the	China
	BMI in the fields of water, energy and	

chemical management

2. Hosting workshop/conference

Date	Workshop/conference and main contents	Presented by
18 Nov. 2015	Water Innovation in China's Apparel /	Zhao Lin
	Textile Supply Chain.	Event organised
	Presenting BMI's outputs and experiences	by H&M
	related to water management in textile	
	sector.	

3. Publications of articles

Journal	Article title	Author
ECOTEXTILE	New initiative tackles China's dyeing sector.	Solidaridad
NEWS, Issue		China
No.69, October	Introducing BMI profile	87
2015		
Proceeding of	Improvement of environmental	Luo Xiaoyu
2015 Annual	performance by adopting supply-chain	Solidaridad
Conference on	management models	China
Energy Saving		
and	Presenting how BMI target mills improve	
Environmental	their environmental performance by	
Protection in	adopting supply-chain management	
China's Dyeing	approaches.	
and Printing		
Sector		

4. Lists of mass media that have participated and/or reported BMI activities

- 1) China Environmental News
- 2) China Daily
- 3) Global Times
- 4) Guangming Daily
- 5) Economic Daily
- 6) China Economic Herald
- 7) International Business Daily
- 8) Cankaoxiaoxi
- 9) China Textile News
- 10) China Fashion Weekly
- 11) Beijing Youth Weekly
- 12) Business Value
- 13) NetEase
- 14) H2O-China.com

5. Awards:

BMI has been preselected as a candidate of Ford Motor Company's 2016 Conservation & Environmental Grants China