

KNOWFOR/PROFOR Global Evaluation
Deep Dive Case Study

WATERSHED DEVELOPMENT IN INDIA
Approach evolving through experience

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ACRONYMS AND ABBREVIATIONS

DANIDA	Danish International Development Agency
DFID	Department for International Development, Government of the United Kingdom
FAO	Food and Agriculture Organization
GIZ	German Agency for International Cooperation
IAS	India Administrative Service
IFPRI	International Food Policy Research Institute
IFS	Indian Forest Service
IWMP	Integrated Watershed Management Programme
JICA	Japan Development Cooperation
KNOWFOR	International Forestry Knowledge Programme of DFID
MoEF	Ministry of Environment and Forests, Government of India
MoAC	Ministry of Agriculture and Cooperation, Government of India
MoRD	Ministry of Rural Development, Government of India
M&E	Monitoring and Evaluation
MYRADA	Mysore Resettlement and Development Agency
NEWMAP	Nigeria Erosion and Watershed Management Project
NGO	Non-Governmental Organization
PMKSY	Pradhan Mantri Krishi Sinchayee Yojana
PROFOR	Program on Forests
RNE	Royal Netherlands Embassy
SDC	Swiss Development Cooperation
Sida	Swedish International Development Agency
TTL	Task Team Leader (World Bank)

SUMMARY

INTRODUCTION

In 2014, PROFOR supported a study that aimed to gather lessons learned and good practices from three high profile and successful watershed management projects in India, across geographical regions and agro-climatic zones:

- The Karnataka Watershed Development Project (2001-2009)
- The Uttaranchal Decentralized Watershed Development Project (2004-2012)
- Himachal Pradesh Mid-Himalayan Watershed Development Project (2005-2017)

The main knowledge product was a peer-reviewed high-quality Report that (1) outlined the evolution of watershed development policy and practice in India - through national government efforts (rising from around USD 200 million per year in 2002-2007 to more than USD 500 million per year currently) and through various World Bank supported projects at state and national level (totaling more than 1 billion USD since 1980); (2) summarized good practices from the projects reviewed; (3) discussed challenges that remained; and (4) drew several important lessons and conclusions.

Apart from the Report, PowerPoint presentations were made for formal launch events, seminars and workshops in India and in Washington DC, while the material in the Report was used for preparing national guidelines, new World Bank-supported watershed projects and training programs in India, Malawi and Nigeria. This Note reviews the context, planning, implementation, and impact of the Report and attempts to draw some conclusions about the contribution of this Report to various outcomes.

CONTEXT

The main reason for the Report was to consolidate lessons learnt from best practices across the many and varied watershed development and management initiatives by government and donor agencies in India, and thus to contribute to improved policies and programs for watershed development and management.

After a national workshop in 1998, there have been no studies that summarized best practices in watershed management in India and could guide future policies and programs. While some lessons from watershed projects implemented by government, donor agencies and NGOs were reviewed at a national conference in 1998, the impacts of such watershed projects analyzed by a study funded by IFPRI in the late 1990s, and some partial reviews (e.g., of specific donor-supported projects) were carried out till about 2010, no further review of the lessons from the performance of watershed management projects - especially the innovative and larger-scale Bank-financed projects formulated during 2000-2004 - had been done till the PROFOR-financed report in 2014.

Since the three World Bank-supported projects designed during the period 2002-2005 represented best practice till then, and they produced lessons for future programs and policies, they were chosen to be the source of future ideas. Given the complexity of the issue, the geographical diversity of a country like India and the variety of programs designed and implemented to address these, it is clear why an assessment of innovative and best practice was seen as being of great use in informing future policies and programs for watershed development and management.

PLANNING

The study team comprised a blend of national and international experts, familiar with watershed development programs and practices both globally and in India. Team members included a practitioner with a leading NGO in India who has authored several books and papers on watershed development in India, a retired Bank staff member with extensive experience in watershed management in several regions, and two current senior World Bank staff members with the global agriculture and watershed management practices, one of whom co-leads the Bank's Watershed Global Solutions Group. The study team planned to review documents, spend time in the field, and connect with stakeholders in a meaningful way to solicit their views.

As the main goal was to influence policy and/or project designs, the study outputs aimed in general at a well-educated and technically-competent pool of stakeholders across government, donors, NGOs, etc. In particular, the study aimed to influence two sets of audiences: technical staff in the Bank and other organizations; and policy makers in the Government of India. It planned to maximize the knowledge uptake by first preparing a high-quality report and then by planning ahead for workshops in India and Washington to disseminate the findings.

The work was completed in two phases. The initial PROFOR funding in 2010-11 supported the field work and development of a draft report and, after the Trust Fund was left to lapse inadvertently, the remaining work was completed with additional funding received in early 2013 – which then supported the development of a final, edited and polished report. Thus, the planning had to change in response to this unexpected development. In addition, presentations and other materials from the Report were modified to suit different audiences and altered based on feedback from previous dissemination and other events.

IMPLEMENTATION

PROCESSES AND PRODUCTS

Four hundred copies of the Report (in English) were printed and distributed to relevant central government agencies, bilateral donors, NGOs, and consulting firms/consultants in India and also to international agencies such as FAO and The Nature Conservancy. Different reports, however, were not prepared for different stakeholder groups. Copies of the report are available on-line. While the Report was the main output of the study, other outputs included a range of knowledge products and dissemination activities - consistent with the target group of the study outputs, viz., technical staff in the Bank and other development organizations, and policy makers in the Government of India. PowerPoint slides thus changed as the team completed each event and received feedback on what the audience felt was more important to learn about.

The study findings and the Report proved relevant and useful not only to the government officials working on revising the national watershed guidelines in India but also to the World Bank technical staff and consultants involved in planning projects, for instance, in Malawi, Haiti and Nigeria. Thus, it was not just the final Report but also the discussions and findings that preceded the final product that proved useful.

OUTCOMES

While the Report may have influenced thinking and possibly future policies, more tangible outcomes included new studies, and influence on project design – in India, Nigeria, Haiti and Malawi - that came about directly because decision-makers (or those who could influence decision-makers) had access to the findings of the study.

- **India:** The outcomes included (1) *the 2011 National Guidelines* for the USD 500 million a year *Integrated Watershed Management Programme (IWMP)* – which drew substantially from the the recommendations in the PROFOR report, especially the work in Karnataka and Uttarakhand - with potentially larger impacts since it IWMP is now the watershed

management component of the USD 850 million a year nation-wide Pradhan Mantri Krishi Sinchayee Yojana (PMKSY); (2) the *Neeranchal National Watershed Project*, a USD 357 million project (with a 50% Bank share) which aims to provide technical support to the IWMP over 8 years, and whose design directly follows from the recommendations of the Report; and (3) a *study on Catchment Assessment and Planning for Watershed Management*, reflecting the need discussed in the PROFOR-supported Report, to analyse how hydrology could be better addressed in IWMP projects.

- **Malawi:** Senior Bank staff incorporated material from the PROFOR-supported report on best practices from India, into the design of the *Shire River Basin Management Project in Malawi*. The PROFOR work also provided a good benchmark to compare the evolution of the Malawi watershed component during implementation.
- **Nigeria:** Senior Bank staff incorporated material from the PROFOR-supported report on best practices from India, into the design of the *Nigeria Erosion and Watershed Management Project* (NEWMAP) and, again, the PROFOR work provides a good benchmark to compare the evolution of the Nigeria watershed component during implementation.
- **Haiti:** Following the formal launch of the report, the World Bank Task Team Leader (TTL) in charge of the *Haiti Sustainable Rural and Small Towns Water and Sanitation Project* – who had attended the launch and picked up a copy of the Report – contacted one of the Bank staff authors to discuss how the lessons learned in the PROFOR-supported Report could improve the design of the Haiti project, in terms of supporting catchment management activities to better manage downstream water flows and to reduce the sedimentation of community water sources.

CONCLUSIONS

- **Substantial impacts on projects and guidelines:** The India, Malawi, Nigeria and Haiti examples illustrate the nature of changes in World Bank practice in designing projects, initiating studies and re-aligning implementation processes, because of the findings of the PROFOR-supported Report.
- **Impact on poverty reduction, biodiversity conservation or climate change:** The IWMP explicitly targets poverty reduction (only partly promotes biodiversity conservation and indirectly addresses climate change), and the report findings influenced national guidelines of all IWMP (and now PMKSY) projects – which are aimed more directly at reducing rural poverty and promoting rural livelihoods.
- **The role of ‘champions’:** A key factor to all these outcomes, however, is the initiative taken by key Bank staff, not only to initiate the work on the Report but also apply the Report findings to other projects. While the role of such ‘champions’ appears necessary to begin a change process, such a process may not have been sustained and translated into actions at various levels of government, had it not been for the deliberate design of the Bank-supported projects and the creation of a further raft of champions at various levels within government departments, who continue to carry forward the agenda of change.
- **Unexpected developments:** The lapsing of the initial PROFOR funding in 2011 was an unexpected development that delayed the production of the final version of the Report. It required sustained efforts by key World Bank staff to find the additional funding necessary to complete the publication and dissemination of the Report.
- **Timing of dissemination events:** While the outcome in Haiti strengthens the justification for project launch and dissemination workshops, one reason that many more of the (World Bank) Task Team Leaders (TTLs) present at these events did not follow up on the Report’s findings could have been timing: unless the information comes at a time when TTLs are directly involved in planning (as in the case of the Haiti TTL), it may not be of direct use, though the TTL would of be course be better informed for the future decision-making.

- Achieving sustainable change: Although there is not much tangible evidence as of now, the various other dissemination events held may have also changed thinking of decision-makers and those who influence decisions. More could be done, however, to achieve sustainable change.

DISCUSSION

PROMISING PRACTICES

- Preparing a high-quality well-reviewed report: The care and planning that went into preparing the report – including the review process within the World Bank – is worth repeating and preserving for future work of this nature.
- Holding launch and dissemination workshops for the Report is currently standard practice but worth carrying on into the future, as it provides rare opportunities for face-to-face contact with experts and senior government officials – and to generate interest in promising work that could lead to changes in policies and practices.
- Presenting Report findings to other development agencies such as FAO in Rome and The Nature Conservancy in Washington was a good initiative and should be continued.

LESSONS LEARNED

- Achieving more by reaching out to a wider audience: Within India, there is a great need to change the thinking among senior and mid-level state-government officials - and among NGOs, academics and the media - a single report in English may not be the best way to do so. It may have helped to make more hard copies available - since not all government officials usually take the trouble to find and download soft copies from the internet.
- Using better ways to reach local audiences: More disaggregated dissemination workshops and seminars, especially at district-level, personal briefings of key senior functionaries and separate workshops with field-level staff would be a useful addition to the usual dissemination channels - as would producing local language versions for different stakeholders, including local communities, district staff and NGOs.
- Following-up on presentations and reports: Regular follow-up to see whether the suggestions and recommendations from the study are being adopted by the state government – and if not, why not – would help to understand important local bottlenecks to planning and implementing changes.
- World Bank staff needs to talk more to each other? Since there is always considerable overlap between forestry, agriculture, water resource development and watershed management projects, it would have been useful to have more briefings and discussions on the findings of the Report with TTLs of different projects, including one-on-one meetings during the planning and/or implementing projects, either in the area – or across areas, e.g., at global staff meets organized by the Bank.
- Update the Best Practice Review? A logical follow-up activity would be to produce a revised version of the review of global best practice in watershed development, which could institutionalize the lessons from this PROFOR Report into global best practice, that serve as benchmarks for other watershed development and management projects globally.

As always, however, the two major constraints of funds and time are often the main reasons why almost all such extensions of dissemination activities do not always take place.

KNOWFOR THEORY OF CHANGE ASSUMPTIONS

Knowledge generation to change in policy and practice: The KNOWFOR Theory of Change is that the creation of knowledge products (Outputs or Level 1) will lead to decision-makers being equipped (Outcomes or Level 2) which, in turn, will lead to changes in policy and practice

(Impacts at Level 3) and thereby to better environmental and social outcomes (Impacts at Level 4). The problem seems to lie in the critical assumption that ‘the “right” policy and decision makers are targeted for the knowledge product’, i.e., ‘those who are likely to be most influential in initiating policy changes are the recipients of the PROFOR knowledge products’.

- Equipping the decision-makers: Most development agencies tend to focus on bureaucrats when conceptualizing, planning and implementing their projects, and tend to leave out the political leadership. One way of ‘equipping decision makers’ is to involve senior politicians such as the Chief Minister of the state in the project planning process – and ask them to endorse the projects publicly. Future World Bank projects will do well to do more to directly ‘equip’ an important class of decision-makers – the politicians – for more effective policy support, particularly at state government level in India.
- Influencing outcomes: Even the best-performing pilots have seldom been scaled up with the same effectiveness, thus belying the underlying premise of all pilots: lessons learnt will inform policy and practice in the larger government-driven programs. There are many reasons why decision-makers (read bureaucrats) seem unable to replicate the success of pilot projects: (1) more flexibility of World Bank-supported projects in design and implementation; clear objectives and deliverables; and had shorter feedback loops for mid-course corrections; (2) political interference and corruption. Since Bank-supported pilot projects have a huge influence on policy and practice in host countries, both the Bank and PROFOR may like to explore ways to study, understand and perhaps even support the process by which governments try to scale up lessons from pilots.

Specific KNOWFOR assumptions: The case study shed light on four specific KNOWFOR assumptions:

- More focus on translating knowledge to specific groups will increase uptake: This is clearly borne out in the reflections by those involved in the Karnataka project, who spoke not only about local-language products but also about holding localized awareness events (workshops, seminars, trainings) tailored to different stakeholder groups.
- Dialogue, engagement, and exchange of ideas and knowledge co-production with decision-makers are crucial to influencing policy and practice. The intensive engagement with state and national government officials through the process of producing the report and disseminating its findings – as well as the presence of the three Bank-supported watershed projects – helped to build awareness, understanding and consensus on key factors that could ultimately improve the policy and practice of watershed management programs in the country.
- Adaptive management and refining the approach based on monitoring and reflection will increase uptake: As exemplified not only by the lapsing of the initial Trust fund to prepare the Report (and the effort subsequently needed to adapt to the situation), but also by the design of World Bank projects both within and outside India using lessons from past projects (and indeed this Report) - adaptive management based on monitoring, evaluation, reflection and discussion is key to increasing the effective uptake of lessons.
- It is possible to enhance uptake by applying lessons from other projects even in highly individualized contexts: That projects in diverse countries such as Nigeria, Malawi and Haiti could benefit from findings from the Indian experience is not an assumption that would be made normally – but the present case study illustrates that, with a champion able to make the linkages and drive the process, it is possible to facilitate the uptake of lessons from other projects even in unlikely contexts.

1. INTRODUCTION

In 2013, PROFOR supported a study¹ that aimed to gather lessons learned and good practices from three high profile and successful watershed management projects in India, across geographical regions and agro-climatic zones:

- The Karnataka Watershed Development Project (2001-2009)
- The Uttaranchal Decentralized Watershed Development Project (2004-2012)²
- Himachal Pradesh Mid-Himalayan Watershed Development Project (2005-2017)

Figure 1: Project Locations within India



¹ Smyle, et al., 2014

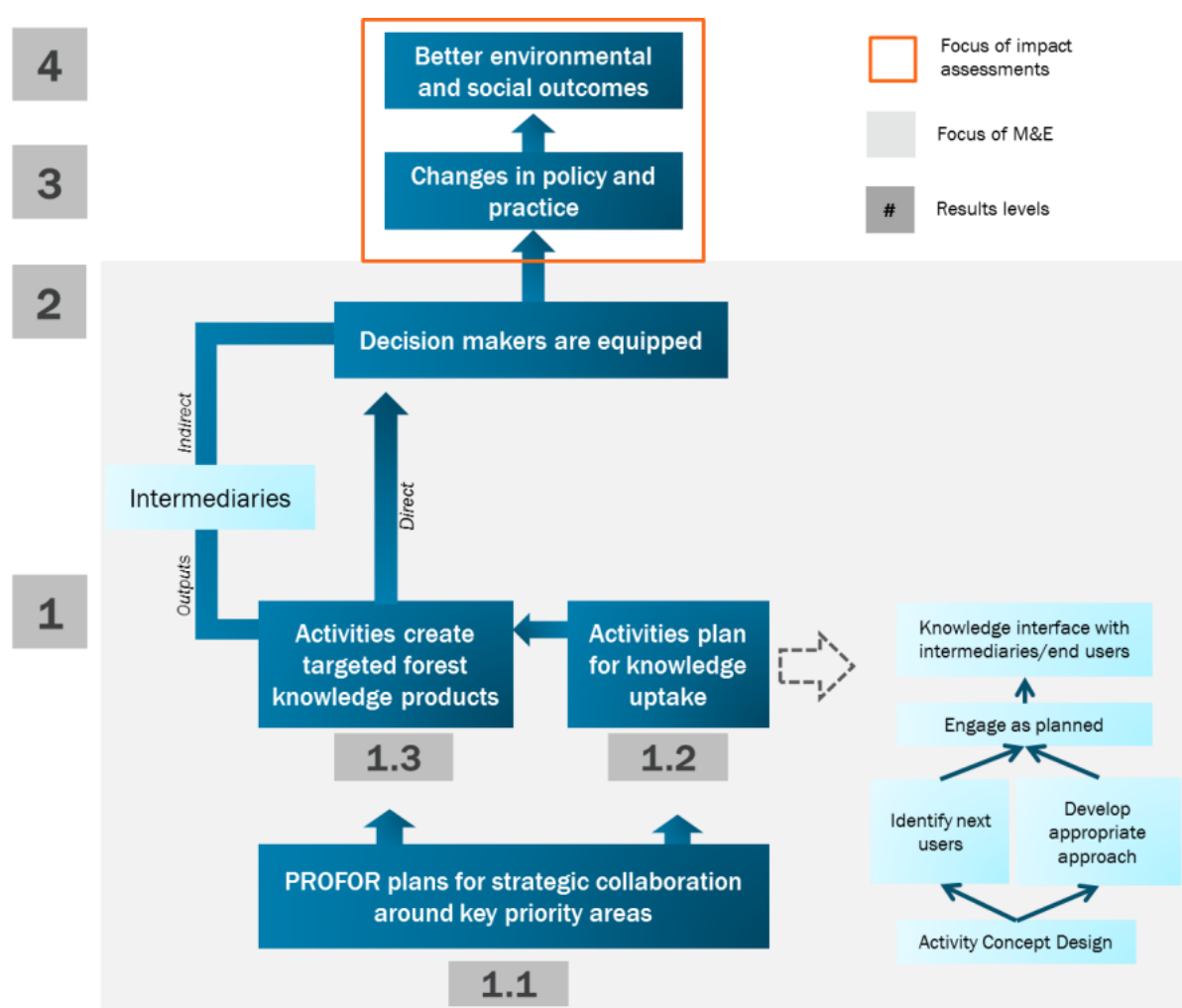
² After 2006, the state of Uttaranchal was renamed as Uttarakhand.

The main knowledge product was a peer-reviewed high-quality Report that outlined the evolution of watershed development policy and practice in India - through national government efforts (rising from around USD 200 million per year in 2002-2007 to more than USD 500 million per year currently) and through various World Bank supported projects at state and national level (totalling more than 1 billion USD since 1980); summarized good practices from the projects reviewed; discussed challenges that remained; and drew several important lessons and conclusions.³

Apart from the Report, PowerPoint presentations were made for formal launch events, seminars and workshops in India and in Washington DC, while the material in the Report was used for preparing national guidelines, new World Bank-supported watershed projects and training programs in India, Malawi and Nigeria.

Since this process of creating knowledge products, using them to equip decision-makers who then go on to change policy and practice is the essence of the Theory of Change underlying PROFOR activities (supported by KNOWFOR) – as illustrated in Figure 1 - this particular activity has been selected to be part of an evaluation of KNOWFOR – and to specifically answer Key Evaluation Question 1 and its sub-questions (see Table 1).

Figure 1: PROFOR's Simplified Theory of Change (TOC)



³ Smyle et al. 2014, pp. xix-xx

Table 1: Key Evaluation Question 1 and its sub-questions

Key evaluation question 1. Did KNOWFOR contribute to equipping decision makers and intermediaries? If so, what lessons can be drawn from KNOWFOR's approach to translating knowledge for action?

- To what extent were programme outcomes realised and were there examples of PROFOR activities (supported through KNOWFOR) contributing to policy or practice change?
- How and under what conditions were decision makers equipped by our knowledge processes and products?
- What were the positive or negative (unexpected) outcomes from these efforts?
- What promising practices can be identified through PROFOR's experience?
- What lessons have been learned from PROFOR's experience?

There were, however, two phases of the work supported by PROFOR funding:

- an initial funding round in 2011 supported the fieldwork and the drafting of the report; and
- a second funding round in 2013 enabled the production of the high-quality peer-reviewed report and various dissemination activities.

Since KNOWFOR started only in 2012, only the impact of the second funding round falls within the scope of this evaluation. A rough guesstimate of the relative contribution of these phases would be 30:70, given that the (1) there was some sharing of information from the initial round that influenced decision-makers; (2) more targeted dissemination activities were planned and carried out in the second round; and (3) there could also have been a 'snowballing effect' in the second round, as more people got to know about the Report following the extended dissemination of the report – and discussion of its findings.

This Note reviews the context, planning, implementation, and impact of the Report, using the Performance Story approach, and attempts to draw some conclusions about the contribution of this Report to various outcomes.

2. CONTEXT

The main reason for the Report was to consolidate lessons learnt from best practices across the many and varied watershed development and management initiatives by government and donor agencies in India, and thus to contribute to improved policies and programs for watershed development and management. After a national workshop in 1998, there have been virtually studies that summarized best practices in watershed management in India and could guide future policies and programs. Since the three World Bank-supported projects designed during the period 2002-2005 represented best practice till then, and they further produced lessons for future programs and policies, they were chosen to be the source of future ideas.

Watershed development and management in India has had a long history in independent India, starting with the River Valley Projects of the 1950s but it was only in the 1980s that the Government of India (GoI) began dryland development programs using a 'watershed approach'. This initiative however was spread across several programs run by three different Ministries, the Ministry of Environment and Forests (MoEF), the Ministry of Agriculture and Cooperation (MoA) and the Ministry of Rural Development (MoRD) (see Box 1).

Box 1: Evolution of Watershed Programs and Policies in India ⁴

1962	Soil Conservation Works in the Catchments of River Valley Projects Scheme
1967	National Policy on watersheds
1971	Rural Works Program - which became the Drought-Prone Areas Programme (DPAP) of MoRD
1978	Desert Development Programme (DDP) of MoRD
1982	Watershed projects in dryland areas by the Indian Council of Agricultural Research, MoA
1985	National Wasteland Development Board (NWDB), MoEF - <i>focused more on tree planting</i>
1987	DPAP and DDP brought under 'watershed mode'
1989	Integrated Wasteland Development Programme (IWDP) of MoRD <i>also now on 'watershed basis'</i>
1990	National Watershed Development Programme in Rainfed Areas (NWDPA) of MoA
1992	NWD Board transferred from MoEF to MoRD – <i>start of focus on community participation</i>
1994	Report of the Hanumantha Rao Committee on Watershed Development, to MoRD
1995	Guidelines for Watershed Development by DoLR, MoRD
1995	National Watershed Development Program of MoRD , bringing DPAP, DDP and IWDP under the same Guidelines for Watershed Development
1995	Report of the High Level (Mohan Daria) Committee on Wastelands Development, to MoRD
1999	Creation of the Department of Land Resources (DoLR) in MoRD <i>responsible for watershed development in waste, degraded, drought-prone and good-quality land vulnerable to degradation</i>
2000	Watershed Management Guidelines for NWDPA of MoA
2001	Common Guidelines for Watershed Development across MoRD
2003	'Hariyalli' Guidelines for Watershed Development projects of MoRD
2006	'From Hariyali to Neeranchal' Guidelines for Watershed Development projects of MoRD
2006	National Rainfed Area Authority (NRAA) set up, <i>to be shared responsibility of MoA and MoRD</i>
2008	Integrated Watershed Management Programme (IWMP) combining erstwhile DPAP, DDP and IWDP
2008	Common Guidelines for Watershed Development Projects of all Ministries, including IWMP
2012	Revised Common Guidelines Watershed Development Projects

While watershed development is seen as a 'successful instrument of rural development', the GOI has steadily placed more importance on – and resources in – these programs.⁵ But, as Box 1 shows, progress has been slow and evolutionary, and tracing the path of this development alone – let alone analyzing and learning the lessons from these programs – can be confusing at best.

⁴ **Programs names are in bold.** The list has been compiled from MoRD (2016) and World Bank (2006)

⁵ Smyle et al. 2014, p. 1.

The World Bank support to the watershed development work in India began in 1980 with the Kandi Watershed and Area Development Project (1980-1988) in the sub-Himalayan region of the Shivalik hills (running from Jammu and Kashmir through Punjab, Himachal Pradesh and Uttarakhand). This was followed in 1983 by the Rainfed Area Watershed Development Project (1983-1995), implemented in selected rainfed areas of four states in south and central India, Andhra Pradesh, Karnataka, Madhya Pradesh and Maharashtra. In the 1990s, the Bank financed three more 'integrated watershed development' projects – and in the decade between 2000 and 2009, it funded the three projects reviewed by the Report. The Bank has continued its support for integrated watershed management in India with new state level projects in Uttarakhand and Karnataka, and the Neeranchal National Watershed Project covering nine states.

The 1990s also saw a mushrooming of watershed development projects by bilateral donors, including the Department for International Development (DFID), Government of the United Kingdom, Swedish International Development Agency (Sida), Swiss Development Cooperation (SDC), the Royal Netherlands Embassy (RNE), the Danish International Development Agency (DANIDA) and the development agencies of Germany and Japan (see Box 2).

Box 2: Major Watershed Projects by bilateral donors (till 2004)

- Water Resource Development and Management (WARDEMA) Project, RNE (Gujarat)
 - Bundelkhand Integrated Water Resource Management Project (BIWRMP), RNE (UP)
 - Western India Rainfed Farming Project, DfID (Rajasthan, Madhya Pradesh, Gujarat)
 - Eastern India Rainfed Farming Project, DfID (Orissa, Bihar, West Bengal)
 - Karnataka Watershed Development (KAWAD) Project, DfID (Karnataka)
 - Western Orissa Rural Livelihoods Project (WORLP), DfID (Orissa)
 - Madhya Pradesh Rural Livelihoods Project (MPRLP), DfID (Madhya Pradesh)
 - Andhra Pradesh Rural Livelihoods Project (APRLP), DfID (Andhra Pradesh)
 - Changar Watershed Development Project, GTZ/KfW (Himachal Pradesh)
 - PAHAL Project, SDC (Rajasthan)
 - Attapady Soil Conservation Project, JICA/JBIC (Kerala)
 - Tamil Nadu Watershed Development Project, DANIDA (Tamil Nadu)
 - Orissa Watershed Development Project, DANIDA (Orissa)
 - Madhya Pradesh Watershed Development Project, DANIDA (Madhya Pradesh)
 - Karnataka Watershed Development Project, DANIDA (Karnataka)
 - Participatory Integrated Development of Watersheds (PIDOW) Project, SDC (Karnataka)
 - Doon Valley Integrated Watershed Management Project, European Commission (Uttarakhand)
 - Karnataka Integrated Watershed Management Project, KfW (Karnataka)
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In addition, prominent NGOs such as MYRADA in Karnataka, the Social Centre in Maharashtra, and the Rural Development Trust in Andhra Pradesh had been developing and implementing watershed development projects in India at least since the 1980s, each providing a rich source of lessons for improvement. One estimate is that 10,000 watershed development projects were under implementation in different parts of India between 1994 and 1999.⁶ The World Bank projects, however, have been substantially larger in scale than those supported by bi-lateral donors.

Most of the bilateral support stopped, however, when a large number of smaller donors were asked by the Government of India in 2004 to reduce their program-related activities in India. This meant that only a handful of external support agencies such as the World Bank, Asian Development Bank, GIZ and JICA remained – but only a very few such as the World Bank continued to work on watershed development, and to document lessons and findings from innovative design and implementation.

⁶ Sharma (2005)

While some lessons from watershed projects implemented by government, donor agencies and NGOs were reviewed at a national conference in 1998,⁷ the impacts of such watershed projects analysed by a study funded by IFPRI in the late 1990s,⁸ and some partial reviews (e.g., of specific donor-supported projects) were carried out till about 2010,⁹ no further review of the lessons from the performance of watershed management projects - especially the innovative and larger-scale Bank-financed projects formulated during 2000-2004 - was carried out till the PROFOR-financed report in 2014.

Given the complexity of the issue, the geographical diversity of a country like India and the variety of programs designed and implemented to address these, it is clear that an assessment of innovative and best practice can be of great use in informing future policies and programs for watershed development and management.

⁷ Farrington, et al (1999)

⁸ Kerr (2002)

⁹ Apart from Sharma (2005), see Ninan (1998), Vania and Bansuri (2004), Reddy, et al. (2004) and Chhotray (2004).

3. PLANNING

The study team comprised a blend of national and international experts, familiar with watershed development programs and practices both globally and in India. Team members included a practitioner with a leading NGO in India who has authored several books and papers on watershed development in India, a retired Bank staff member with extensive experience in watershed management in several regions, and two current senior World Bank staff members with the global agriculture and watershed management practices, one of whom co-leads the Bank's Watershed Global Solutions Group. The study team planned to review documents, spend time in the field, and connect with stakeholders in a meaningful way to solicit their views.

As the main goal was to influence policy and/or project designs, the study outputs aimed in general at a well-educated and technically-competent pool of stakeholders across government, donors, NGOs, etc., and more specifically at two sets of audiences: technical staff in the Bank and other organizations; and policy makers in the Government of India. It planned to maximize the knowledge uptake by first preparing a high-quality report and then by planning ahead for workshops in India and Washington to disseminate the findings.

The work was completed in two phases. The initial PROFOR funding in 2010-11 supported the field work and development of a draft report and, after the Trust Fund was left to lapse inadvertently, additional funding was received in early 2013 – which then supported the development of a final, edited and polished report. Thus, the planning had to change in response to this unexpected development. In addition, presentations and other materials from the Report were modified to suit different audiences and altered based on feedback from previous dissemination and other events.

4. IMPLEMENTATION

4.1 PROCESSES AND PRODUCTS

Four hundred copies of the Report (in English) were printed and distributed to relevant central government agencies, bilateral donors, NGOs, and consulting firms/consultants in India, and also to international agencies such as FAO and The Nature Conservancy. Different reports, however, were not prepared for different stakeholder groups. Copies of the report are available on-line.¹⁰

While the Report was the main output of the study, other outputs included a range of knowledge products and dissemination activities - consistent with the target group of the study outputs, viz., technical staff in the Bank and other development organizations, and policy makers in the Government of India. The various outputs from the two phases of this work (2010-11 and (2013-15) are given below (Table 2).

Table 2: Outputs and processes influenced by the work on the Report

Feb 2010	Presentation in Malawi during preparation of the Shire River Basin Management project, based on preliminary work by Smyle and Lobo in 2010
Apr 2010	Presentation at World Bank - South Asia Global Retreat on Rain-fed Agriculture, New Delhi, based on preliminary work done by Smyle and Lobo.
Nov 2010	Use of the same preliminary material for the preparation of the Nigeria Erosion and Watershed Management (NEWMAP) Project
Mar 2012	Presentation in Uganda linked to preparation of a new Watershed Management Project
Feb 2013	Presentation in Washington DC on 'Dryland Development in India and Watershed Management' at the Global Sustainable Development Forum, drawing on the material that ultimately came out of the PROFOR report.
Jun 2013	Presentations in India to senior policy officials and other stakeholders as part of preparing the Neeranchal National Watershed Project
Aug 2014	Article in technical journal in India ¹¹
Oct 2014	Formal launch workshop in Washington DC
Dec 2014	Formal launch seminar in New Delhi
Mar 2016	Presentation to the Food and Agriculture Organization (FAO) in Rome as part of sharing knowledge on best practice in watershed management
Sep 2016	Material used for training in Nigeria for the Erosion and Watershed Management Project
Feb 2017	Material to be used for further training in Nigeria for the Erosion and Watershed Management Project

As mentioned earlier, presentations changed to suit various audiences, sometimes to give more focus on specific technical areas, such as landscape-level water resource assessments, improved market linkages for farmers and the use of GIS for better planning and M&E of field-level project activities. The PowerPoint slides also changed as the team completed each event and received feedback on what the audience was looking for or what they felt was more important to learn about. For instance, in dissemination events outside India, audiences wanted more information about how the Indian projects were implemented and the institutional arrangements with communities.

The study findings and the Report proved relevant and useful not only to the government officials working on revising the national watershed guidelines in India but also to the World Bank technical staff and consultants involved in planning projects, for instance, in Malawi, Haiti and Nigeria. Thus,

¹⁰ See

<http://www.profor.info/sites/profor.info/files/docs/Watershed%20Development%20in%20India%20An%20Approach%20Evolving%20through%20Experience.pdf>

¹¹ Milne (2014).

it was not just the final Report but the discussions and findings that preceded the final product that also proved useful. And, as the outcomes indicate, the findings of the Report were put to a wide range of uses in these locations.

4.2 OUTCOMES

While the Report may have influenced thinking and possibly future policies, more tangible outcomes included new studies, and influence on project design – in India, Nigeria, Haiti and Malawi – that came about directly because decision-makers (or those who could influence decision-makers) had access to the findings of the study. How this happened in each of these cases is briefly described below.

India

2011 IWMP Guidelines: There is almost a direct match between the recommendations in the PROFOR-supported report, especially the work in Karnataka and Uttarakhand, and the design of these Guidelines, and; the main messages in the final PROFOR report are certainly evident in the latest guidelines. Although the influence on the 2011 Guidelines was certainly not shaped by one World Bank report, it was a combination of the thinking captured by the Report and the advocacy of these messages by people who were in a position to influence decision-makers that caused the outcome. And this is a significant outcome, given the size of the Integrated Watershed Management Programme (IWMP) of the Government of India (~USD 500 million/year) – and, given that the IWMP is now the watershed component of an even larger nation-wide program called the Prime Minister's Krishi Sinchayee Yojana (PMKSY), with an outlay of USD 850 million for 2016-17 alone,¹² its potential impact is even larger.

Neeranchal National Watershed Project: Aimed at supporting the Government of India's IWMP, this USD 357 million project – with the World Bank's contribution of 50% – was signed in July 2014. It provides technical assistance to 'improve incremental conservation outcomes and agricultural yields for communities across selected sites' and to adopt 'more effective processes and technologies' into the IWMP – both of which directly follow from the recommendations of the Report.¹³ In addition, the technical component of Neeranchal also addresses landscape-level watershed planning in order to bring hydrology more clearly into the ambit of the IWMP/PMKSY – another key recommendation of the Report. The fact that the Joint Secretary in charge of the IWMP at the DoLR, Mr. Sandeep Dave, was previously the Project Director of the World Bank-supported Sujala Watershed Development project in Karnataka meant that he was not only familiar with the merits of the innovations being brought in by Neeranchal – but also aware of the gaps in the Karnataka project that needed to be addressed. Specific elements of the Neeranchal design that drew from the Report's main findings include:

- Better technical and scientific inputs to support improved planning at field level, crop selection and water management
- Support for landscape-scale assessments to guide micro-watershed planning
- Improved M&E for greater transparency
- Support for improved market linkages for farmers to increase farm-based livelihoods

Over the course of the 8-year USD 357 million Neeranchal project, this technical support is expected to translate into policy and program improvements that will affect the Indian watershed management program, for which the Government of India has allocated INR 1,550 crores (around USD 228 million) for 2017-18 alone.¹⁴ Given its objectives to address water resource and

¹² IBT (2017)

¹³ World Bank.2016a

¹⁴ DoLR (2016).

watershed management in dryland areas through improved technology and techniques, the IWMP could have significant impacts on poverty reduction, biodiversity conservation and climate change.

Catchment Assessment and Planning for Watershed Management: The need to better understand the hydrology of watershed management prompted another PROFOR-funded study, as part of the preparation of the Neeranchal Project, to analyze how hydrology could be better addressed in IWMP projects.¹⁵ It was initiated and managed by Grant Milne, Senior Natural Resource Management Specialist at the World Bank, who had also initiated the PROFOR-supported Report profiled in this Case Study, and the findings were presented to Mr. Sandeep Dave, Joint Secretary (in charge of the Neeranchal Project), Department of Land Resources, Ministry of Rural Development, Government of India, and his team in charge of the Neeranchal project. The rationale for this study comes directly from the discussion in the PROFOR Report of managing upstream and downstream inter-relations (Section 5.3 of the Report).

Malawi

Shire River Basin Management Project¹⁶ (P117617): There is a strong linkage between the recommendations in the PROFOR-supported report and the final design of the Catchment Management component of the Malawi project. The linkage was facilitated by a senior Bank Task Manager from India, who was part of the Malawi team from the concept stage and thus able to draw on best practices from India as synthesized in the PROFOR-supported report. Seminars to colleagues and counterparts were delivered during early preparation in Lilongwe, and soft copies of the Report were distributed subsequently. The PROFOR work also provided a good benchmark to compare the evolution of the Malawi watershed component during implementation.

Grant Milne of the World Bank clarified that ‘One particularly innovative activity that derived from the PROFOR work - even before the Final Report was completed - was to use simple hydrological and spatial models to map out erosion risk and downstream costs to help counterparts select priority areas for project sites in the catchment management component. This work was very successful and provided a strong foundation to move the component forward with confidence so that investments would be targeting priority sites.’

Other lessons from the PROFOR-supported report that were incorporated directly into the Malawi project design were to:

- Include a livelihoods component in the catchment management activities in order to provide better equity to women and landless
- Build strong local institutions for participatory planning and implementation
- Use an NGO or technical agency to help implement the work at a local level
- Use a third party to support M&E.
- Start catchment planning with a landscape level assessment on each of the four major sites (of around 35,000 ha) to:
 - Understand the upstream and downstream linkages in the landscape scale catchment, pressures on natural resources, and hotspots for interventions
 - Identify priority areas for major infrastructure investments within a limited budget envelope (road and bridge upgrading, check dams, market areas, and medium scale irrigation).
 - Guide development of a sub-catchment plan to identify priorities for field level interventions with communities; and
 - Guide local catchment management action plans with communities

¹⁵ James et al (2015).

¹⁶ World Bank (2016b).

Grant Milne elaborated that ‘an unintended outcome was the incorporation of the catchment management approach - heavily modeled after the recommendations from the PROFOR-support report - into new National Guidelines on Integrated Catchment Management and Rural Livelihoods in Malawi that were developed through the Shire project.’ While the national guidelines are much broader in scope than the PROFOR-supported Report, there is a strong correlation with key points in the Guidelines that pertain to catchment management planning, such as:

- Defining the catchment and identifying stakeholders
- Building strong local institutions
- Undertaking a thorough assessment of the catchment, supported by thematic geo-spatial data and ground surveys
- Participatory planning at the micro-catchment scale
- Robust monitoring and evaluation

Nigeria

Nigeria Erosion and Watershed Management Project (NEWMAP):¹⁷ There is also a strong linkage between the recommendations in the PROFOR-supported report and the final design of the Catchment Management component of the Nigeria project. Again a key team member leading the design and supervision of the Catchment Management component in the Nigeria project was also involved in the India program and in the development of the PROFOR-supported report. This allowed direct incorporation of best practices in the PROFOR-supported report into the NEWMAP project design through seminars to colleagues and counterparts during early preparation, distributing soft copies of the PROFOR-supported report when it was completed, and by direct work on project design and implementation. Again, the PROFOR work provides a good benchmark to compare the evolution of the Nigeria watershed component during implementation.

Some of the key lessons learned from the Report and incorporated into the catchment management component of the NEWMAP project are to:

- Integrate gully rehabilitation within a large scale catchment management plan based on good information, spatial data, and stakeholder participation
- Add a livelihoods component to provide for better equity across women’s groups
- Build strong local institutions; using field NGOs to support institutional development and livelihoods; and
- Use a third party monitoring and evaluation (M&E) agency.
- Integrate lessons from the PROFOR-supported report directly into modules for training courses on integrated catchment management. Two courses have been delivered to about 75 participants from 14 project states who are now engaging in catchment management and implementation. The PROFOR-supported report was provided as a soft copy to all participants as part of salient reference material.

Haiti

HT Sustainable Rural and Small Towns Water and Sanitation Project):¹⁸ Following the formal launch of the report, the World Bank Task Team Leader (TTL) in charge of the Haiti project – who had attended the launch and picked up a copy of the Report - contacted one of the Bank staff authors to discuss how the lessons learned in the PROFOR-supported Report could improve the design of the Haiti project, in terms of supporting catchment management activities to reduce downstream water flows and sedimentation of community water sources. After two meetings to discuss practical approaches for better catchment management in the project areas, Grant Milne helped the TTL draft Terms of Reference (TORs) for a consultancy that could provide the team and

¹⁷ World Bank (2016c)

¹⁸ World Bank. (2016d).

counterparts with spatial information on catchment characteristics at a landscape scale to help set priorities for selecting sites and identifying appropriate soil and water conservation investments.

4.3 CONCLUSIONS

Substantial impacts on projects and guidelines: The India, Malawi, Nigeria and Haiti examples illustrate the nature of changes in World Bank practice in designing projects, initiating studies and re-aligning implementation processes as a result of the findings of the PROFOR supported Report. The India work, in particular, is significant in that, from the assorted work done by various agencies and programs over the years, the best practices have been condensed into revised guidelines for the national watershed program, the IWMP; and technical support has been provided to the main national-level watershed development program in India, the PMKSY. Not all the Report findings, however, were reflected in the revised national guidelines, including key provisions to make women co-signatories for village-level funds, an issue that is discussed in greater detail in the next section.

Impact on poverty reduction, biodiversity conservation or climate change: The IWMP explicitly targets poverty reduction and the report findings have influenced national guidelines of all IWMP (and now PMKSY) projects – which are aimed at poverty reduction and rural livelihood promotion. The IWMP partly addresses biodiversity conservation – through plantations and afforestation within watershed management projects – but does not explicitly address issues such as wetland conservation, specie selection within afforestation programs (i.e., avoiding or removing alien species), selection of most appropriate livestock breeds for particular agro-ecological zones or maintaining environmental flows in streams and rivers. Climate change is not addressed directly and, while improved soil fertility, ground and surface water storage does help to reduce the vulnerability of agriculture to increasing climatic variability, fully addressing the impacts of remains the next frontier of change for watershed management projects, perhaps even globally.

The role of ‘champions’: A key factor to all these outcomes, however, is the initiative taken by key Bank staff, not only to initiate the work on the Report but also apply the Report findings to other projects. But, while the role of such ‘champions’ appears necessary to begin a change process, it may not have been sustained and translated into actions at various levels of government, had it not been for the deliberate design of the Bank-supported projects - flexibility to innovate, quick feedback and support on technical issues and the semi-independent set up of working on a project within departments exclusively created for watershed management¹⁹ - and the creation of a further raft of champions at various levels within government departments, who continue to carry forward the agenda of change.

Unexpected developments: The lapsing of the initial PROFOR funding in 2011 was an unexpected development that delayed the production of the final version of the Report. It required sustained efforts by key World Bank staff to find the additional funding necessary to complete the publication and dissemination of the Report.

Timing of dissemination events: While the outcome in Haiti strengthens the justification for project launch and dissemination workshops, one reason that many more of the TTLs present at these events did not follow up on the Report’s findings could have been timing: unless the information came at a time when TTLs are directly involved in planning (as in the case of the Haiti TTL), it may not be of direct use, though the TTL would of be course be better informed for the future decision-making.

Achieving sustainable change: Although there is not much tangible evidence as of now, the various other dissemination events held may have also changed thinking of decision-makers and those who influence decisions. More could be done, however, to achieve sustainable change, especially in the Indian context, as discussed in the next section.

¹⁹ The Watershed Development Directorates/Departments created in both Karnataka and Uttarakhand in the early 2000s brought technical experts on deputation from related departments, allowing them to provide the multi-disciplinary focus that watershed management requires.

5. DISCUSSION

5.1 PROMISING PRACTICES

Preparing a high-quality well-reviewed report

The care and planning that went into preparing the report – including the review process within the World Bank – is worth repeating and preserving for future work of this nature. The draft Report was reviewed internally by World Bank – South Asia staff (Ranjan Samantaray, William MaGrath and Madhur Gautam) and it was peer reviewed by Dr. John Kerr of the Michigan State University (and the author of the 2002 IFPRI study of the benefits of watershed development programs in India) and Dr. Shawki Barghouti, Executive Director, Middle East and North Africa Network of Centres of Excellence (and the World Bank Task Team Leader of one of the early Bank Projects in India).

Holding launch and dissemination workshops for the Report

Although this is now standard practice, it is worth carrying on into the future, as it provides rare opportunities for face-to-face contact with experts and senior government officials. Even within the World Bank, such events help to bring new information to World Bank TTLs and outside experts – and to generate interest in promising work that could lead to changes in policies and practices.

Presenting Report findings to other development agencies

Presenting the Report to FAO in Rome and The Nature Conservancy in Washington was a good initiative and should be continued. Although many donor agencies that had funded watershed development work in India have stopped doing so since 2004 (e.g., DANIDA, Sida and SDC), they continue to do such work in other developing countries around the world, especially in Africa. Further, international agencies such as the FAO influence global practice in natural resource management and agriculture and it is therefore important to keep such stakeholders informed.

5.2 LESSONS LEARNED

Achieving more by reaching out to a wider audience

Within India, while national government is responsible for funding and laying down guidelines for the implementation of watershed development programs like the IWMP, state government departments and officials are basically responsible for actual project formulation and implementation. Unfortunately, the flexibility and promising approaches built into the national guidelines are not exploited by state departments which are often content with ‘ticking boxes’ and implementing and completing projects as a routine. There is therefore a great need to change the thinking among these senior and mid-level state-government officials and also among NGOs, academics and the media – and a single report in English is not necessarily the best way to do so. Also, it may have helped to make more copies directly available since not all government officials would usually take the trouble to find and download copies from the internet.

Using better ways to reach local audiences

Mr. Aloysius Fernandez of the prominent and well-respected NGO called MYRADA based in Bangalore felt that ‘more disaggregated dissemination workshops and seminars, especially at district-level, personal briefings of key senior functionaries and separate workshops with field-level staff would definitely be a useful addition to the usual dissemination channels.’

Also, as Mr. Rajanna, formerly with the Karnataka Watershed Development Project (known locally as *Sujala*), noted, that ‘local language versions for different stakeholders - including local communities, and district-level government and NGO staff - involved in work planning, implementation and monitoring would definitely help to increase awareness.’ All of this would of course spur innovative thinking that would improve the program’s effectiveness and impact in the future.

Following-up on presentations and reports

Finally, as Mr. DJK Sharma, former Project Director of the *Gramya Phase I* project in Uttarakhand observed, “There must be regular follow-up to see whether the suggestions and recommendations from the study are being adopted by the state government – and if not, why not”. Such follow-up visits – at state and district-levels could reveal important local bottlenecks to planning and implementing changes based on the findings of the report.

World Bank staff needs to talk more to each other?

Since there is always considerable overlap between forestry, agriculture, water resource development and watershed management projects, it would have been good to have more briefings and discussions with TTLs on the findings of the Report, including one-on-one meetings with TTLs in the process of planning or implementing projects either in the area – or across areas, e.g., at global staff meets organized by the Bank. Grant Milne however underscored the time constraints of Bank staff when he noted: “I would have liked to present the Report at one of the [World Bank’s] global retreats but it is hard to get specific topics like this on the agenda!”

Update the Best Practice Review?

A logical follow-up activity would be to produce a revised version of the review of global best practice in watershed development (Darghouth, et al., 2008), which could institutionalize the lessons from this PROFOR Report into global best practice, that serve as benchmarks for other watershed development and management projects around the globe.

As always, however, the two major constraints of funds and time are often the main reasons why almost all such extensions of dissemination activities do not always take place.

5.3 KNOWFOR THEORY OF CHANGE ASSUMPTIONS

Knowledge generation to change in policy and practice

The KNOWFOR Theory of Change is that the creation of knowledge products (Outputs or Level 1) will lead to decision-makers being equipped (Outcomes or Level 2) which, in turn, will lead to changes in policy and practice (Impacts at Level 3) and thereby to better environmental and social outcomes (Impacts at Level 4). While KNOWFOR acknowledges that “outcomes to a significant extent and impacts will be far less influenced by PROFOR-funded activities alone”, the problem seems to lie in the critical assumption that ‘the “right” policy and decision makers are targeted for the knowledge product’, i.e., ‘those who are likely to be most influential in initiating policy changes are the recipients of the PROFOR knowledge products’.

Equipping the decision-makers

Most development agencies tend to focus on bureaucrats when conceptualizing, planning and implementing their projects, and tend to leave out the political leadership. While this approach has several advantages (e.g., bureaucrats tend to be better educated and well-informed, and more

easily accessible), key decisions usually have to be endorsed and approved by the politicians – especially those at state-level in India, given that state governments are responsible for implementing projects. And when political decisions (e.g., to not charge farmers for groundwater use – which can accelerate groundwater withdrawal) are taken, despite their arguments and objections, bureaucrats finally have no option but to endorse and implement these policies and decisions. One way of ‘equipping decision makers’ is to involve senior politicians such as the Chief Minister of the state in the project planning process – and ask them to endorse the projects publicly.

There are, however, two sides to this step: On the one hand, as Mr. Rajanna (formerly a state government official with the Sujala projects) said, ‘strong political will at the top will send a clear signal to the grass root functionaries that the Minister is personally interested in the good performance of the project’. Mr. Rajiv Ranjan, Commissioner, Department of Watershed Development, Government of Karnataka also clarified that, in all regular government projects implemented, ‘we always take the politicians on board with us’.

On the other hand, however, as Mr. DJK Sharma, former Project Director of the World Bank supported Uttarakhand Watershed Development project, stated, ‘involving politicians, especially in today’s climate, runs the risk of attracting unwanted political interference in the planning and implementation of the project’.

A middle path was explored by the Karnataka Watershed Development Project where, as Mr. Rajanna explained, ‘the Minister and local politicians were only informed about the project – and asked only to endorse the plans drawn up over a one-year period by the local farmers and local government (the Gram Panchayat)’, thereby reducing the possibility of interference.

In any case, projects such as the World Bank supported watershed development projects will do well to do more to directly ‘equip’ an important class of decision-makers – the politicians – for more effective policy support, particularly at state government level in India.

Influencing outcomes

All through the evolution of watershed development and management projects in India, even the best-performing pilots have seldom been scaled up with the same effectiveness. This belies the underlying premise of all pilots – that the lessons learnt here will inform policy and practice in the larger government-driven programs. In the case of the three watershed management projects, all three managed to influence not only the national-level guidelines but also the state-level guidelines and implementation of IWMP projects. The latter, however, have almost never been as effective as the pilots.

There are many reasons why decision-makers (read bureaucrats) seem unable to replicate the success of pilot projects. As Mr. Rajiv Ranjan explained, World Bank supported projects had more flexibility in design and implementation, had clear objectives and deliverables, and had shorter feedback loops for mid-course corrections. Regular government programs including the IWMP had a fixed set of guidelines, fixed funding patterns and procurement rules, delays in payments, and the quality of implementation (e.g., degree of community participation, nature of monitoring and flexibility to adopt a single set of guidelines to vastly differing contexts) depended more often than not on the commitment and inventiveness of the official in charge of implementation.

Another major issue is political interference and corruption. While the three Bank-supported projects reviewed by the PROFOR report had succeeded in transferring a sense of ownership and control over both planning and budgets to local communities – and thereby virtually eliminated the contractors and middlemen who are a prime source of ‘leakages’ in the government system, it has been difficult to translate this practice into national and state guidelines for the IWMP. Mr. DJK Sharma felt that ‘a major achievement of the Uttarakhand project was to grant financial autonomy to the Gram Panchayat – by substituting a woman member of the Gram Panchayat sub-committee responsible for project implementation as a co-signatory for Panchayat-level funding, instead of the usual government functionary,’ – and yet, this simple policy measure – which

eliminated a large amount of corruption in procurement and construction - could not be included in the national or state guidelines for normal government projects. A possible reason for this is the potential erosion of financial control traditionally wielded by government - because of its historic need for 'checks and balances' to restrict financial malpractice. The fact that it worked well in Uttarakhand and Karnataka was apparently not enough to recommend this practice nation-wide.

Since World Bank supported pilot projects have a huge influence on policy and practice in host countries, both the Bank and PROFOR may like to explore ways to study, understand and perhaps even support the process by which governments try to scale up lessons from pilots.

Feedback on specific KNOWFOR assumptions

This case study can also shed light on four specific KNOWFOR assumptions:

- More focus on translating knowledge to specific groups will increase uptake: This is clearly borne out in the reflections by those involved in the Karnataka project, who spoke not only about local-language products but also about holding localized awareness events (workshops, seminars, trainings) tailored to different stakeholder groups.
- Dialogue, engagement, and exchange of ideas and knowledge co-production with decision-makers are crucial to influencing policy and practice. The intensive engagement with state and national government officials through the process of producing the report and disseminating its findings – as well as the presence of the three Bank-supported watershed projects – helped to build awareness, understanding and consensus on key factors that could improve the policy and practice of watershed management programs in the country. This is a key factor that led to the change in national IWMP guidelines and the design of the Neeranchal project for technical support to the IWMP.
- Adaptive management and refining the approach based on monitoring and reflection will increase uptake: As exemplified not only by the lapsing of the initial Trust fund to prepare the Report (and the effort subsequently needed to adapt to the situation), but also by the design of World Bank projects both within and outside India using lessons from past projects (and indeed this Report) - adaptive management based on monitoring, evaluation, reflection and discussion is key to increasing the effective uptake of lessons.
- It is possible to enhance uptake by applying lessons from other projects even in highly individualized contexts: That projects in diverse countries such as Nigeria, Malawi and Haiti could benefit from findings from the Indian experience is not an assumption that would be made normally – but the present case study illustrates that, with a champion able to make the linkages and drive the process, it is possible to facilitate the uptake of lessons from other projects even in unlikely contexts.

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Annex 1: Methodology

Persons met

Over the course of two weeks, the following persons were interviewed as part of this case study (Table A1).

Location	Name	Designation	Organization	Comments
Bangalore	M. Rajanna	Ex-Additional Director	Department of Agriculture, Government of Karnataka	Worked on Sujala 1 in Karnataka
Bangalore	Rajiv Ranjan, IAS	Commissioner	Watershed Development Department Government of Karnataka	Worked on Sujala 1, 2 and 3 in Karnataka
Bangalore	Aloysius Fernandez	Ex-Executive Director	MYRADA	An NGO involved in Sujala 1 and 2
Dehradun	W. Longvah, IFS	Project Director (Admin.)	Watershed Management Directorate Government of Uttarakhand	Worked on Gramya 1 and now on working on Gramya 2 in Uttarakhand
Dehradun	Neena Grewal, IFS	Additional Director (Planning) & Project Director UDWDP - 2	Watershed Management Directorate Government of Uttarakhand	Uttarakhand Decentralized Watershed Development Project (UDWDP) – 2 is informally known as Gramya -2
Dehradun	D.J.K. Sharma, IFS	Ex-Project Director, 'Gramya'	Watershed Management Directorate Government of Uttarakhand	Project Director of Gramya 1 and, till recently, of Gramya 2. Now back in the Forest Department, Government of Uttarakhand

Checklist of questions to interviewees

The following were the main questions asked, around which supplementary questions were asked and issues of interest were explored.

- What are the key differences you have experienced working for the World Bank supported watershed management projects vis-à-vis in the regular government department?
- What have been the main lessons you have learnt from this experience, professionally and personally?
- What has been the outreach of the project to other stakeholders, e.g., government, NGOs, media and academics?
- What do you feel are the ways in which the project influenced (1) project designs; (2) implementation processes and (3) other government policies?
- What suggestions would you have to improve project design and processes in future?
- Have you read the PROFOR-supported Report and if so, have you used it? If yes, how?

Interview with Grant Milne

In addition to the above, a detailed questionnaire was emailed to Grant Milne, TTL of the Karnataka and Neeranchal Projects, with the following questions:

- Who was the project's intended knowledge audience?
- How was the project designed to maximize knowledge uptake?
- In particular, how did the project target knowledge products to reach priority groups?
- How, if at all, were the plans changed during the project in response to new information?
- What knowledge products did the project actually produce?
- How, if at all, did the project plans reflect issues relevant to women and girls
- How, if at all, were knowledge processes or products changed or improved due to audience feedback
- Did this include changing the nature of the knowledge products?
- Please provide the number of people participating in knowledge events, including the number of decision makers, or the numbers of women and girls
- Were there attendee evaluations of the knowledge events
- Could you list the knowledge dissemination activities besides the report/s, such as briefings, workshops, conferences, press releases, and presentations
- How many copies of printed knowledge products have been distributed? In what languages?
- How many copies were sent to specific target audience members, including key decision makers, in government, the donor community, the NGO community, etc.? Who else received copies from the project?
- Are knowledge products available online? If yes, are download statistics available?
- Is a website available? If yes, records available for web page views?
- To what extent did this project achieve or not achieve its desired effect? And in particular, did the project contribute to any practice or policy changes?
- How well or poorly did the project design fit the country?
- Were any people better equipped to make and influence decisions because of this project? Can you give examples? Can you point to specific decision makers?
- Did involving the decision makers in project design, execution, or reporting increase the project's impact? If yes, how?
- Can you point to how this project contributed to any changes affecting poverty reduction, biodiversity conservation, or climate change?
- Did the project trigger any unexpected outcomes or influences, good or bad?
- What more, if anything, needs to happen before real and sustainable change is achieved in this project?
- Thinking just about what you learned while doing this project, how, if at all, did you apply what you learned from your early efforts to your later efforts at spreading knowledge?
- How, if at all, did you apply experience from other projects in shaping the knowledge dissemination practices of this project?

- Were there things that should have been done differently in hindsight? What could have been done that might have made this project even more influential?
- Were there good things done and shouldn't be forgotten, practices that can be used again in other projects?
- How, if at all, did the project target its knowledge products to reach priority groups?
- In retrospect, how might you have done the targeting differently?

Annex 2: Results Chart²⁰

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
<p>How did the project contribute to the intended outcomes?</p> <p>1. Did the project produce relevant knowledge and data and communications pieces, to achieve its aims?</p>	<p>PROFOR supported a study that produced a discussion paper in 2011 and a high-quality peer-reviewed Report in 2014, that fulfilled the aim of gathering lessons and good practices from three high-profile and successful World Bank-supported watershed management projects in India.</p> <p>An online publication also resulted based on the material contained in the Report.</p>	<ul style="list-style-type: none"> • High quality report: The PROFOR-supported Report was produced by a carefully selected team, including national and international experts, familiar with watershed development programs and practices both globally and in India, Team members included a practitioner with a leading NGO in India who has authored several books and papers on watershed development in India, a retired Bank staff member with extensive experience in watershed management in several regions, and two current senior World Bank staff members with the global agriculture and watershed management practices. The study team reviewed documents, spent time in the field, and solicited inputs from stakeholders. • Discussion paper: The 2011 document is a World Bank internal discussion document (Smyle & Lobo, 2011)¹ • The Report was a peer-reviewed publication (World Bank document, 2014)² with peer reviewers mentioned in the Acknowledgements section • An online publication also resulted from the Report Milne, 2014.³

²⁰ Superscripts refer to the evidence listed in the References and Evidence Table in Annex 2

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
	<p>The PROFOR funded report (i) outlined the evolution of watershed development policy and practice in India - through national government efforts and through various World Bank supported projects at state and national level, (ii) summarized good practices from the projects reviewed, (iii) discussed challenges that remained, and, (iv) drew several important lessons and conclusions for the future development of World Bank supported watershed management projects and elsewhere and national and state government policies in India</p> <p>The Report was extremely relevant as it filled an important gap in the existing literature - the three World Bank supported projects had not been reviewed systematically and lessons drawn from these experiences.</p> <p>PowerPoint presentations were made for formal launch events, seminars and workshops in India, Rome (FAO) and in Washington DC.</p>	<p>A review brings out this gap in the relevant literature. See, for instance, Ninan, 2008⁴, Farrington et al. 1999,⁵ Reddy et al. 2004⁶, Vania & Bansuri 2004⁷, Sharma 2005⁸, Kerr et al., 2006,^{9 & 10}.</p> <p>Material from this Report was used in presentations made at launch workshops and seminars in India in 2014,^{18, 19} at the FAO (Rome) in 2016,^{20 & 22} and to the Nature Conservancy²³ (Washington DC) in 2016.</p>
<p>2. Did the project engage effectively with relevant stakeholders?</p>	<p>Directly relevant stakeholders: Government, NGOs, World Bank and donor agency staff</p> <ul style="list-style-type: none"> Four hundred copies of the Report (in English) were printed and distributed to relevant central government agencies, bilateral donors, NGOs, and consulting firms/consultants in India and also to international agencies such as FAO and the Nature Conservancy, and made available online. PowerPoint presentations on the main messages in the Report were also made to international agencies such as FAO and the Nature Conservancy, besides World Bank supported watershed management projects, being planned, implemented or extended in India, Malawi and Nigeria. <p>Other relevant stakeholders: Government, and World Bank staff in other countries</p>	<ul style="list-style-type: none"> Grant Milne, TTL, World Bank, confirmed that 400 copies of the report were printed and distributed.³⁰ Copies of the report are still available online. Copies of the report were distributed and Powerpoint presentations made to staff at FAO in Rome in 2016^{20,22} and the Nature Conservancy in Washington²³ India: Dissemination and stakeholder outreach events were held with senior government officials and World Bank staff members in India in 2014, at the launch of the World Bank-supported Neeranchal National Watershed Project of the Government of India.^{17, 18, 19} The Report was shared with World Bank consultants, staff and government officials working on designing new projects in India, Malawi and Nigeria – as reflected in the Project Appraisal Documents of these World Bank-supported Watershed Management Projects ^{32,33,34}.

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
	<ul style="list-style-type: none"> Material from the Report was shared with a spectrum of stakeholders, in Malawi, Nigeria and Haiti, through workshops, launch events, seminars and training programs. Presentations changed to suit various audiences, sometimes to give more focus on specific technical areas, such as landscape-level water resource assessments, improved market linkages for farmers and the use of GIS for better planning and M&E of field-level project activities. The PowerPoint slides also changed as the team completed each event and received feedback on what the audience was looking for or what they felt was more important to learn about. For instance, in dissemination events outside India, audiences wanted more information about how the Indian projects were implemented and the institutional arrangements with communities. 	<ul style="list-style-type: none"> Material from the report was shared through workshops and meetings with World Bank and Government staff working on designing new watershed management projects in Malawi¹¹ and Nigeria¹³ in 2010, Uganda¹⁴ in 2012, and India¹⁶ in 2013. Material from the Report was also used while designing training programs for the NEWMAP Project in Nigeria²¹ The TTL for the World Bank-supported Haiti project attended the Dissemination meeting in Washington DC, took a copy of the Report and later met Grant Milne to discuss the possibilities of using a similar approach in Haiti (as reported by Grant Milne during his interview for this case study³⁰).
3.Are the target audiences aware of the project's outputs?	<p>State and national government officials in the concerned ministries and departments in India, consultants and NGOs working on World Bank-supported watershed management projects are aware of the Report – and its contents.</p> <p>Participants in training programs and exposure visits to India from Nigeria and Malawi are aware of the contents of the PROFOR-supported Report.</p>	<p>Reported by all participants interviewed for the case study, including the following:</p> <p>Karnataka State, India: The Head of a prominent NGO²⁶ implementing watershed development programs in the state; the Head²⁵ of the State Government Department administering Watershed Management Programs in the state; and an ex-government official who worked in the World Bank supported project in the state²⁴</p> <p>Uttarakhand State, India: Two senior state government officials in the Watershed Management Directorate (WMD) in the state capital, overseeing the implementation of watershed management programs in the state^{27,28}; and the ex-Head of the WMD, who also worked in the World Bank supported project in the state²⁹</p>

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
		<p>Nigeria: Government and non-government participants in training programs of NEWMAP in Nigeria were aware of the Report and its contents²¹</p> <p>Malawi: The participants of the exposure visits to India, drawn from government and non-government staff from Malawi, were also aware of the contents of the report – and this was reported in the Aide Memoire of the World Bank Mission that visited after the visit, in 2014.³⁵</p>
<p>4. Are the target audiences/stakeholders using the project's output, and how are they using them? (or are they equipped?)</p>	<p>India: The contents of the Report was used while framing the 2011 Guidelines of the Integrated Watershed Management Project (IWMP), implemented by the Department of Land Resources, Ministry of Rural Development, Government of India.</p> <p>Malawi: <u>Shire River Basin Management Project (P117617):</u> There is a strong linkage between the recommendations in the PROFOR-supported report and the final design of the Catchment Management component of the Malawi project. The linkage was facilitated by a senior Bank Task Manager from India, who was part of the Malawi team from the concept stage and thus able to draw on best practices from India as synthesized in the PROFOR-supported report. Seminars to colleagues and counterparts were delivered during early preparation in Lilongwe, and soft copies of the Report were distributed subsequently. The PROFOR work also provided a good benchmark to compare the evolution of the Malawi watershed component during implementation.</p> <p>Nigeria: <u>Nigeria Erosion and Watershed Management Project (NEWMAP):</u> There is also a strong linkage between the recommendations in the PROFOR-supported report and the final design of the Catchment Management component of the Nigeria project. Again, a key team member leading the design and supervision of the Catchment Management component in the Nigeria project was also involved in the India program and in the development of the PROFOR-supported report. This allowed direct incorporation of best</p>	<p>India: See National Guidelines³¹ and interviews with the Head of the State Government Department for Watershed Management (GoK2).²⁵</p> <p>The findings were also extensively used in developing the PAD of the World Bank-supported Neeranchal National Watershed Project of the Government of India,³⁴ being implemented by the Department of Land Resources, Ministry of Rural Development of the Government of India. The PAD makes the following references to the material contained in the PROFOR-funded Report (emphasis added):</p> <ul style="list-style-type: none"> • <u>Project Components:</u> 'The most recent generation of single-state, Bank-supported projects in Himachal Pradesh, Uttarakhand, and Karnataka continue to generate valuable lessons across a wide range of landscapes.' (p. 7). Footnote 10 to this text states: 'Component 3 was designed with inputs from the new Bank-supported operation in Karnataka, with a similar design to the proposed Neeranchal operation. The Karnataka project was approved by the Bank's Board of Executive Directors on September 6, 2012, and will provide valuable guidance on detailed activity description, costs, implementation arrangements, potential service providers, financial management and procurement, etc.' (p. 10). • <u>Lessons Learned and Reflected in the Project Design:</u> 'The project design reflects lessons from recent

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
	<p>practices in the PROFOR-supported report into the NEWMAP project design through seminars to colleagues and counterparts during early preparation, distributing soft copies of the PROFOR-supported report when it was completed, and by direct work on project design and implementation. Again, the PROFOR work provides a good benchmark to compare the evolution of the Nigeria watershed component during implementation.</p> <p>Haiti: HT Sustainable Rural and Small Towns Water and Sanitation Project): Following the formal launch of the report, the World Bank Task Team Leader (TTL) in charge of the Haiti project – who had attended the launch and picked up a copy of the Report - contacted one of the Bank staff authors to discuss how the lessons learned in the PROFOR-supported Report could improve the design of the Haiti project, in terms of supporting catchment management activities to reduce downstream water flows and sedimentation of community water sources. After two meetings to discuss practical approaches for better catchment management in the project areas, Grant Milne helped the TTL draft Terms of Reference (TORs) for a consultancy that could provide the team and counterparts with spatial information on catchment characteristics at a landscape scale to help set priorities for selecting sites and identifying appropriate soil and water conservation investments.</p>	<p>analytical work, ongoing and completed watershed operations in India, and international best practices'. Footnote 11 to this text states: 'This section is based on a separate technical paper on best practices that has been prepared and filed. The technical paper drew from a recent report evaluating best practices of three recent Bank-supported watershed projects in India; evaluations of older Bank-supported watershed projects in India; a World Bank study on global best practices in watershed management, and a synthesis of best practices from non-Bank projects in India. Section E also draws on an institutional study completed for IWMP as part of project preparation (see Annex 6). (p. 12)'</p> <ul style="list-style-type: none"> • Lessons Learned and Reflected in the Project Design: 'Critical lessons have been incorporated into the project design to strengthen IWMP across seven key issues as follows: a) Issue 1: Narrow planning scale, fragmented programming and partial solutions Overview: IWMP is executed through clusters of small micro-watersheds (each usually 500 ha to 700 ha) covering an average of 5,000 ha and often defined as "sub-watersheds". This scale is ideal for participatory planning with communities. However, a larger-scale planning framework of 25,000 ha or more would help identify broader land and water issues, and linkages between upper and lower catchments. Hydrology is poorly integrated into watershed planning in India. In addition, while IWMP and several other schemes have large budgets for the development of rain-fed areas, each of these is conceived and implemented in departmental silos without unified mechanisms for coordination and convergence. Best practice: Global practice is now shifting to initiate planning with watershed assessment at a larger scale, and incorporating better hydrological data. These planning processes are proving useful in facilitating more effective program integration. Project

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
		<p>solution: Components 1 and 2 will provide the skills, tools and methodologies for stakeholders to strengthen IWMP planning approaches and data base development in Component 3. These new planning approaches would incorporate broader participation from other stakeholders, facilitate better program integration through a watershed management framework at landscape scales, and include better hydrological inputs.</p> <p>b) Issue 2: Strengthening participatory, evidence-based micro-watershed'</p> <ul style="list-style-type: none"> • IMPLEMENTATION: Component 3. Support to IWMP in Participating States: “The M&E improvements will be guided by the award-winning example from the earlier Bank-supported Karnataka Watershed Development Project (known locally as “Sujala”), which utilized remote sensing, GIS and computer based data flow for ongoing monitoring’ (p. 16). The footnote to the above text reads as: ‘The Sujala project was the recipient of five prestigious national awards; National Productivity Awards 2007 and 2009; National Water Award 2007; Earth Care Award 2008; and National E-Governance Award 2009.The project also won three international awards: Globe Sustainability Research Award in 2010, presented in Stockholm; Geospatial Excellence Award 2010, presented at the 9th Annual Asian Conference on Geospatial Information, Technology and Applications in Malaysia; and the Intel Environment Award as part of the Tech Awards Laureates 2013.The project also won a World Bank IEG award for Excellence in M&E in 2011.’ (p. 16). <p>Malawi: Grant Milne of the World Bank clarified that ‘One particularly innovative activity that derived from the PROFOR work - even before the Final Report was completed - was to use simple hydrological and spatial models to map out erosion risk and downstream costs to help counterparts</p>

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
		<p>select priority areas for project sites in the catchment management component. This work was very successful and provided a strong foundation to move the component forward with confidence so that investments would be targeting priority sites.' (see Case Study interview³⁰)</p> <p>B.K. Ranganath Monitoring and Evaluation Specialist Indian Space Research Organization Bangalore, who worked on the M&E system for the World Bank-supported watershed management project in Karnataka (which was reviewed in the PROFOR-funded Report) was part of the team that prepared the Shire River Basin Management Project document for the World Bank. (see Malawi, Project Appraisal Document (PAD), p. ix).³³</p> <p>Grant Milne was acknowledged as being in the Project Technical Committee and contributing to the 2015 Malawi National Guidelines on Integrated Catchment Management and Rural Infrastructure (see Acknowledgements, GoM, 2015).³⁶</p> <p>Nigeria: The PAD for the NEWMAP Project³² references the 2011 Discussion paper (Smyle and Lobo)¹ and also notes the following in relation to the work done in India, reviewed and summarized in the PROFOR-funded Report (emphasis added):</p> <ul style="list-style-type: none"> • <u>Lessons Learned and Reflected in the Project Design</u> 'Lessons come from Nigeria's Ecological Fund, Kenya's experience with governance in community-driven development programs, the Bank lending portfolio in Nigeria, TerrAfrica's regional investment portfolio and knowledge products, Bank-financed watershed development programs in China, India and Latin America, the US Chesapeake Bay watershed program, and an international review of good practice of gully remediation in Brazil, Australia, Ethiopia and elsewhere' (fn 12, p 14)

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
		<ul style="list-style-type: none"> • <u>The project's strategic approach to northern intervention sites (in Annex 2: Detailed Project Description):</u> 'Natural regeneration of vegetation cover could be a low-cost and effective community-driven approach for the northern states. The approach can bring entire landscapes back into production to the benefit of local communities. It has been successfully demonstrated just across the border in the Maradi region of the Republic of Niger, in other African countries, and countries in other regions such as India.' (p. 44) • <u>Overview of Proposed M&E System for NEWMAP (in Annex 3: Project implementation arrangements):</u> 'The project will also participate in regional, continental and global mutual learning events with Nigeria's neighbors involved in the Sahel and West Africa Program in support of the Great Green Wall, and TerrAfrica's continental learning events on sustainable land management. Globally, south-south exchanges may be set up, potentially with Brazil which has had some success in urban gully rehabilitation, as well as India and China which have had success in large scale landscape and watershed rehabilitation through Bank-financed operations.' (p. 102) • <u>Project Management Information System (MIS) (in Annex 3: Project implementation arrangements):</u> 'Concurrent monitoring will be supported by a web-enabled computerized MIS that will be developed through project support. It will be an integral part of the M&E system, wherever necessary integrated into the overall implementing agency MIS systems. Off-the-shelf MIS software is readily available that can be customized for the NEWMAP operation to facilitate structured data entry at field level (in all states), which can then be consolidated at state and national levels' (p. 104). A footnote to the above text reads as: 'A good example is

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
		<p>the MIS software developed by the Indian Space Research Organization (ISRO) to handle M&E data for the award-winning Karnataka Watershed Development Project, supported by the Bank. ISRO also designed user-friendly software to facilitate community level micro-watershed planning, linked to thematic GIS maps' (p. 104)</p> <ul style="list-style-type: none"> • <u>Global Best Practices in Watershed Management (in Annex 9: Integrated Watershed Management and Global Best Practices)</u>: 'The 2008 World Bank Report Watershed Management Approaches, Policies and Operations: Lessons for Scaling-up offers a body of learning on best-practices in watershed management approaches. The review of some 15 years of practices identified factors of success for achieving goals of upland soil and water conservation and of intensification of natural resource use to increase the incomes of upland populations in a sustainable way. Even though there were significant variations in practice and performance, and although adaptation and flexibility are hallmarks of all good projects, some principal factors of success were common. These are detailed below, and augmented with material from other sources⁴⁴, and will serve as the framework for benchmarking of the Nigeria Erosion and Watershed Management Project (NEWMAP) operation.' (p, 182). A footnote to the text above reads as: 'Many of these lessons are drawn from Dargouth et al (2009); Smyle and Lobo (2011); FAO/TerrAfrica 2009; Liniger et al (2011).'
5. Have the end of project outcomes been realized?	<p>Yes, and there were also unexpected outcomes in terms of impacts in other countries such as Nigeria and Malawi.</p> <p>India: The outcomes included (1) <u>the 2011 National Guidelines</u> for the USD 500 million a year Integrated Watershed Management Programme (IWMP) – which drew substantially from the the recommendations in the PROFOR</p>	<p>India: The link to the National Guidelines³¹ was emphasized by all the key government stakeholders interviewed for the case study (GOK2²⁵, GOUK1²⁷, GOUK2²⁸, GOUK3²⁹), as well as the TTL Grant Milne.³⁰</p>

Learning questions	Summary of results achieved	Evidence supporting summary statement of results
	<p>report, especially the work in Karnataka and Uttarakhand - with potentially larger impacts since it IWMP is now the watershed management component of the USD 850 million a year nation-wide Pradhan Mantri Krishi Sinchayee Yojana (PMKSY); (2) <u>Neeranchal National Watershed Project</u>, a USD 357 million project (with a 50% Bank share) which aims to provide technical support to the IWMP over 8 years, and whose design directly follows from the recommendations of the Report; and (3) a study on <u>Catchment Assessment and Planning for Watershed Management</u>, reflecting the need discussed in the PROFOR-supported Report, to analyze how hydrology could be better addressed in IWMP projects.</p> <p>Nigeria: The PROFOR-supported Report, and its contents, influenced the design of the World Bank-supported NEWMAP project</p> <p>Malawi: The PROFOR-supported Report, and its contents, influenced the design of the World Bank-supported Shire River Basin Management Project.</p>	<p>The PAD of the Neeranchal National Watershed Project³⁴ makes substantial references (see the responses to the earlier question).</p> <p>The Catchment Assessment Management and Planning Study³⁷ was a direct result of the perceived need for a better hydrology component in watershed management projects, brought out in the PROFOR-supported Report.</p> <p>Nigeria: See the PAD of the NEWMAP Project.³² for details of the impact of the PROFOR-supported Report (detailed in the responses to the earlier question)</p> <p>Malawi: See the PAD of the Shire River Basin Management Project.³³ for details of the impact of the PROFOR-supported Report (detailed in the responses to the earlier question)</p>

Annex 3: References and Evidence Table

Ref.	Evidence type	Author	Reference	Date
1	World Bank Document	Smyle, J., and C. Lobo	Smyle, J., and C. Lobo 2011. Watershed development in India – an evolving approach. Internal discussion paper, Agriculture and Rural Development Department, South Asia. World Bank, Washington D.C.	2011
2	Peer-reviewed publication	Smyle, J., C. Lobo, G. Milne and M. Williams.	Smyle, J., C. Lobo, G. Milne and M. Williams. 2014. Watershed Development in India: An Approach Evolving through Experience. [pdf] Washington DC: The World Bank, Agriculture and Environmental Services Discussion Paper 04.	2014
3	Online Publication	Grant Milne	Milne, G.R. 2014. World Bank Experience with Watershed Management – Key Lessons Learned. In Focus, www.thewaterdigest.com. August 2014.	2014
4	Research Paper	Ninan, K. N.,	Ninan, K. N., 1998. An Assessment of European aided Watershed Development Projects in India from the Perspective of Poverty Reduction and the Poor. Copenhagen: Danish Institute for International Studies;	1998
5	Book	Farrington, J., C. Turton and A.J. James	Farrington, J., C. Turton and A.J. James. 1999. Participatory Watershed Development: Challenges for the 21 st Century. New Delhi: Oxford University Press.	1999
6	Conference Paper	Reddy, Y.V.R., G. Sastry, B. Hemalatha, O. Prakash and Y.S. Ramakrishna	Reddy, Y.V.R., G. Sastry, B. Hemalatha, O. Prakash and Y.S. Ramakrishna. 2004. "Evaluation of Watershed Development Programmes in India" in Conserving Soil and Water for Society: Sharing Solutions. Proceedings of the 13 th International Soil Conservation Organization Conference July 2004, Brisbane	2004
7	Book	Vania, F., and T. Bansuri	Vania, F., and T. Bansuri, 2004. Making Watershed Management Work in India: London: International Institute for Environment and Development	2004

Ref.	Evidence type	Author	Reference	Date
8	Conference Paper	Sharma. S	Sharma. S., 2005. Rethinking Watershed Development in India: Strategy for the 21 st Century [pdf] in M. Achouri, L. Tennyson, K. Upadhyay and R. White (eds.) Preparing for the Next Generation of Watershed Management Programmes and Projects: Proceedings of the Asian Regional Workshop, Kathmandu, Nepal, 11-13 September 2003.	2005
9	Peer-reviewed publication	John Kerr, Grant Milne, Vasudha Chhotray and A J James	John Kerr, Grant Milne, Vasudha Chhotray and A J James, 2006. Managing Watershed Externalities in India: Theory and Practice, Environment, Development and Sustainability, 2006. DOI 10.1007/s10668-005-9022-3	2006
10	World Bank Document	John Kerr, Pari Baumann, Vasudha Chhotray, A J James and Grant Milne	John Kerr, Pari Baumann, Vasudha Chhotray, A J James and Grant Milne, 2006. Managing Watershed Externalities in India. Washington DC: World Bank, Agriculture and Rural Development Sector Unit, South Asia Region. Discussion Paper Series, Report No. 1	2006
11	PowerPoint presentation Unpublished	Grant Milne	PowerPoint presentation to the Malawi Project Preparation Team and Government of Malawi staff in Malawi, from Grant Milne, TTL, World Bank; Lilongwe, 2010.	2010
12	Conference Agenda. Unpublished	World Bank - South Asia Global Retreat on Rain-fed Agriculture, New Delhi	Unpublished Conference Agenda for World Bank - South Asia Global Retreat on Rain-fed Agriculture, New Delhi, India	2010
13	PowerPoint presentation Unpublished	Grant Milne	PowerPoint presentation to the Malawi Project Preparation Team and Government of Nigeria staff in Nigeria, from Grant Milne, TTL, World Bank; Lagos, 2010.	2010
14	PowerPoint presentation Unpublished	Grant Milne	PowerPoint presentation to World Bank and Government of Uganda staff in Uganda, from Grant Milne, TTL, World Bank; Kampala, 2012.	2012
15	PowerPoint presentation. Unpublished	Grant Milne	PowerPoint presentation on 'Dryland Development in India and Watershed Management' to the Global Sustainable Development Forum, Washington DC.	2013

Ref.	Evidence type	Author	Reference	Date
16	PowerPoint presentation. Unpublished	Grant Milne	PowerPoint presentation to World Bank and Government of India staff in India from Grant Milne, TTL, World Bank; New Delhi, 2013	2013
17	PowerPoint presentation Unpublished	Grant Milne	PowerPoint presentation to senior Government of India officials and World Bank staff in India from Grant Milne, TTL, World Bank, for the Neeranchal Project Launch Workshop, New Delhi, 2013	2013
18	PowerPoint presentation Unpublished	Grant Milne	PowerPoint presentation to World Bank staff in Washington DC, from Grant Milne, TTL, World Bank, for the Neeranchal Project Launch Workshop; Washington DC, 2014	2014
19	PowerPoint presentation Unpublished	Grant Milne	PowerPoint presentation to World Bank staff and senior government officials in New Delhi, from Grant Milne, TTL, World Bank, for the Neeranchal Project Launch Seminar, New Delhi, 2014	2014
20	PowerPoint presentation. Unpublished	FAO, Rome	PowerPoint presentation to the FAO in Rome as part of international conference on Sharing Knowledge on Best Practice in Watershed Management	2016
21	Training Material. Unpublished	Grant Milne	Grant Milne, Material used for initial training in Nigeria for the NEWMAP Project, Lagos, Nigeria, Lagos: World Bank, 2016	2016
22	PowerPoint Presentation. Unpublished	Grant Milne	Grant Milne, Report presented to FAO, Dissemination Meeting, Rome, 2016	2016
23	PowerPoint Presentation. Unpublished	Grant Milne	Report presented to The Nature Conservancy, Dissemination Meeting, Washington DC, 2016	2016
24	Interview text. Unpublished	Informant GoK1 (M. Rajanna)	Case study Interview	2017
25	Interview text. Unpublished	Informant GoK2 (Rajiv Ranjan)	Case study Interview	2017
26	Interview text. Unpublished	Informant NGO1 (Aloysius Fernandez)	Case study Interview	2017

Ref.	Evidence type	Author	Reference	Date
27	Interview text. Unpublished	Informant GoUK1 (W. Longvah)	Case study Interview	2017
28	Interview text. Unpublished	Informant GoUK2 (Neena Grewal)	Case study Interview	2017
29	Interview text. Unpublished	Informant GoUK3 (DJK Sharma)	Case study Interview	2017
30	Interview text. Unpublished	Informant WB1 (Grant Milne)	Case study Interview	2017
31	National Guidelines, published	DoLR	DOLR, 2011. Integrated Watershed Management Programme, National Guidelines. Department of Land Resources, Ministry of Rural Development, Government of India, 2011	2011
32	World Bank Document	Environment and Natural Resources Management Unit, Sustainable Development Department, Western Africa Country Department-2, Africa Region, World Bank	World Bank, 2012. Project Appraisal Document on proposed credits to the Federal Republic of Nigeria for the Nigeria Erosion and Watershed Management Project, Environment and Natural Resources Management Unit, Sustainable Development Department, Western Africa Country Department-2, Africa Region, World Bank, 12 April 2012	2012
33	World Bank Document	Environment and Natural Resources Management Unit, Sustainable Development Department, Southern Africa Country Department-3, Africa Region. World Bank	World Bank, 2012. Project Appraisal Document on proposed credits to the Republic of Malawi for the Shire River Basin Management Program (Phase I) Project APL in support of the Shire River Basin Management Program. 23 May 2012. Washington DC: Environment and Natural Resources Management Unit (AFTEN), Sustainable Development Department, Southern Africa Country Department-3 (AFCW3), Africa Region. World Bank.	2012
34	World Bank Document	Sustainable Development Unit India Country Management Unit	World Bank, 2012. Project Appraisal Document on proposed credits to the Republic of India for the Neeranchal National Watershed Project 20 June 2014. Washington DC: Sustainable	2012

Ref.	Evidence type	Author	Reference	Date
		South Asia Regional Office, World Bank	Development Unit India Country Management Unit South Asia Regional Office, World Bank.	
35	World Bank Document	World Bank Mission Team to Malawi	Malawi Shire River Basin Management Program (Phase I) Project [P117617/P127866] Implementation Support Mission (June 9 - 20, 2014) Aide Memoire,	2014
36	Ministry of Agriculture, Irrigation & Water Development, Government of Malawi.	Government of Malawi	GoM, 2015. Malawi National Guidelines: Integrated Catchment Management and Rural Infrastructure, Volume I: Theory and Procedural Catchment Management Guidelines. Lilongwe: Ministry of Agriculture, Irrigation & Water Development, Government of Malawi	2015
37	Peer-reviewed World Bank Report	A J James et al.,	James, A. J., M. Dinesh Kumar, James Batchelor, Charles Batchelor, Nitin Bassi, Jitendra Choudhary, David Gandhi, Geoff Syme, Grant Milne and Priti Kumar. 2015. Catchment Assessment and Planning for Watershed Management. Washington DC: The World Bank, PROFOR and Agriculture Global Practice.	2015