**United Nations
Educational, Scientific and
Cultural Organization**

**Global
Education
Monitoring
Report**

Background paper prepared for the 2016 Global Education Monitoring Report

Education for people and planet: Creating sustainable futures for all

Education as a Key Driver for Sustainable Development Goals: Case Studies from India

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Background and Introduction

In its 57th meeting in December 2002, the United Nations General Assembly proclaimed the period 2005-2014 as the Decade of Education for Sustainable Development "emphasizing that education is an indispensable element for achieving sustainable development (UNESCO)". The declaration of the United Nations Decade of Education for Sustainable Development (UNDESD) was a culmination of a series of steps that increasingly recognized the role of education as a driver for change. In its introduction to the UNDESD, UNESCO summarizes the thinking that led to the DESD as follows:

"The UN Conference on Environment and Development in 1992, the Earth Summit, gave high priority in its Agenda 21 to the role of education in pursuing the kind of development that would respect and nurture the natural environment. It focused on the process of orienting and re-orienting education in order to foster values and attitudes of respect for the environment and envisaged ways and means of doing so. By the time of the Johannesburg Summit in 2002 the vision broadened to encompass social justice and the fight against poverty as key principles of development that is sustainable. The human and social aspects of sustainable development meant that solidarity, equity, partnership and cooperation were as crucial as scientific approaches to environmental protection. Besides re-affirming the educational objectives of the Millennium Development Goals and the Education for All Dakar Framework for Action, the Summit proposed the Decade of Education for Sustainable Development as a way of signalling that education and learning lie at the heart of approaches to sustainable development" (UNESCO, 2006).

The first international Conference during the UNDESD was hosted by the Centre for Environment Education, India in January 2005. The Ahmedabad Declaration that came out of the Conference emphasized that "a key to sustainable development is the empowerment of all people, according to the principles of equity and social justice, and that a key to such empowerment is action-oriented education" (http://www.ceeindia.org/esf/abad_d.asp).[1]

The widespread acknowledgement that shortfall in public awareness and understanding can seriously compromise efforts and investment towards building social or economic capital was implicit in the UN declaration of the Decade of Education for Sustainable Development (UNDESD) in 2005. The remarkable consultative experience of the just concluded Decade further contributed to a greater awareness of the critically important cross-sectoral role of Education in global and local efforts towards sustainable development. The decade also highlighted the vital need to identify, document and share best practice among global ESD stakeholders (UNESCO, 2012).

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[1] This paper was written by Kartikeya V. Sarabhai and Dr Prithi Nambiar of the Centre for Environment Education and compiled by Sarita Thakore.

A comprehensive set of Sustainable Development Goals (SDGs) were adopted at the UN General Assembly in September 2015 following a complex and global multi-stakeholder consultation process. It is now incumbent on ESD communities to look specifically at each goal and determine how education can play an effective role and act as catalyst to help achieve them.

Increasingly, the emphasis has moved away from a solely economic view of development to a larger view that includes the three pillars of sustainability: environmental, social and economic. With this new emphasis comes also the recognition that policy instruments or technological solutions are not going to be enough and that behavioral change is critical to achieving Sustainable Development. But the proposed SDGs apply to the world as a whole. Thus the role of education in its broadest sense – including training and capacity building, communication and creating public awareness, scientific research, sharing and access to information and networking, and partnerships – becomes a key strategy for achieving the SDGs.

The Paper

Education, in the broadest and most inclusive sense of the term, is conceptualized as having an integral role in bringing about behavior change and influencing decision making for sustainability, and ensuring that people are informed and aware of the risks they face and the positive strategies that may be relevant and feasible in their local communities. While it is necessary to review the components that constitute what we commonly understand by Education, the authors are using the term education in its broader meaning to include education, public awareness, communication, training and capacity building to effect change in attitude and behavior that is sought by Education for Sustainable Development or ESD. We therefore include, in this understanding, formal, non-formal and informal education and learning.

For ESD experts, the struggle has always been about reclaiming the idea of learning from the technical discourse on education that is managerial or instrumental and that merely involves efficient administration by technocrats. ESD is about a "large idea of education that extends well beyond formal schooling", a challenge that "requires a new understanding of ourselves and our place in nature and in time" so that we may "respond with energy, moral stamina, enthusiasm and ecological competence" (Orr, 2001, pp 8-9). Here is where the importance of the distinctions between formal, non-formal and informal learning is overtaken by that of transformative learning which may be enabled by a wide range of managed and/or spontaneous processes of learning triggered by multiple factors, events or agents.

ESD places learning at the heart of education. "The qualities, depth and extent of learning that takes place globally in the next ten to twenty years will determine which path is taken; either moving towards or further away from ecological sustainability" (Sterling, 2001-2004, p 12). ESD in seeking transformative learning, integrates the need for intrinsic values with the quality of learning in terms of participative and democratic methodologies towards the instrumental goal of changing society for better. ESD thus aims to

reconcile processes of learning with the purpose of learning while ensuring that there is democratic ownership and determination of learning.

"An approach that enables 'leapfrogging' to a sustainable future based on educational interventions that spark the innovation and creativity needed to develop alternative paradigms was seen as the need of the hour" (Sarabhai, 2007). "It was not only the paradigm of development that needed to be changed to achieve sustainability, but that the paradigm of education also needed to change in certain fundamental ways" (Sarabhai, 2005, p.178). The India Report presented to the World Conference on Education for Sustainable Development in Bonn, Germany in 2009, outlined initiatives and directions of India's work on educating its citizenry on sustainability.

"Educating for sustainability involves radical change at many levels among individuals, the community and the organization and involves a complex democratic process of societal understanding, interpretation and negotiation before it can be actionalised" (Nambiar, 2014, p.54). Educating for sustainability works through multi-layered processes which seek to secure consensual understanding and ownership to engender lasting change.

This paper will examine a range of case studies from India to highlight the role of Education in the broadest sense of the term as a key enabler in the realization of the sustainable development goals within the highly complex, volatile and interconnected socio-cultural, economic, environmental and political milieu of today.

Case Studies

Case examples, drawn from a range of sectors across urban and rural India where educational efforts have been seen to constitute a critical intervention towards the successful implementation of projects and initiatives, have been reviewed and analyzed as part of this study. These examples highlight the role of education as a tool for effective implementation through capacity building, empowerment, engaging people at various levels to help ensure people develop ownership, values and develop local solutions to local problems.

The following cases illustrate how education can and does play a key role in successful implementation with clear implications for local and global efforts towards the achievement of all SDG goal areas. The case studies are situated within the broad spectrum of education as being transformative learning that brings about behavior change, and connect individuals to society through critical and holistic thinking. The case studies will critically analyze both the role and extent of education and related policy implications.

Case Study 1
People's Biodiversity Registers (PBR)

Rationale: The safeguarding of Biodiversity is a key strategy for several of the Sustainable Development Goals (SDGs), including those on agriculture, food security, health, marine and the terrestrial ecosystem. The *Convention on Biological Diversity (CBD)* sees the participation of the local community as a key strategy and means of implementation of biodiversity conservation. The creation of the People's Biodiversity Register (PBR) has been a successful strategy which was initiated with the passing of the Biodiversity Act in India in 2002 and the subsequent establishment of rules and regulations at the state level. Education and capacity building is integral to this strategy.

Description

By law each village panchayat (local village governing council) must now have its own PBR. In the state of Gujarat alone there are 14500 such Panchayats. The task involves partnership between the agency (which could be an NGO or a governmental body) in charge of the process of setting up the PBR, the State Biodiversity Board, and the Panchayat, which may consist of more than one village or hamlet. The goal is to complete the PBR over a period of one year starting with the formation of the Biodiversity Management Committee (BMC). Currently over 4834 BMCs have been formed and about 114 PBRs approved in Gujarat as until November 2015.

The Centre for Environment Education (CEE) was given the task of implementing the PBR in 35 Panchayats in the state of Gujarat. The methodology and the template developed for the PBR by CEE, is today seen as an exemplar for the entire state. The model includes a three month intensive programme at the village level starting with a three day training workshop for village leaders. This would typically be a group of 30 people representing not only members of the Panchayat but also those connected with other village level institutes such as youth, women self-help groups, village based milk cooperatives etc. Along with this training, a village community awareness programme is also started, which includes a component of school biodiversity activity programmes, running a competition among schools, and organizing small group meetings in the evening. School children are encouraged to write about any one species on a postcard, based on the local knowledge they are able to glean from family and neighbours about that species.

Soon after the initial awareness building and training of leaders, CEE facilitates a Gram Sabha (people included in the electoral rolls of a village), which is a general body meeting of the village. At this meeting, seven members are selected and the necessary resolution is passed for the formation of BMC. A minimum of two women are part of such a constitution.

For the training and organizing of the evening lecture in the village, as well as for conducting school activities, local experts are identified and they become partners. CEE itself has a team of two to three people who work along with the resource persons. Following the three month intensive education period, a seven step process to document the biodiversity of the village is undertaken with groups being in-charge of different sectors. The process involves doing surveys during the three principal seasons i.e. winter, summer and monsoon. The People's Biodiversity Register (PBR) typically ends up documenting 500 – 600 species, along with the traditional knowledge within the community about these species.

CEE today is documenting the whole process and is training other NGOs and groups, not only in Gujarat, but all over India on how to conduct such a programme.

Role and Impact of Education

The educational programme, besides helping document species and preparing PBRs, leads to several other outcomes. The community, usually, is amazed and justifiably proud of the rich biodiversity that exists in their own vicinity. Besides being informed and aware of the traditional knowledge and expertise that exists in their midst, the community also recognizes the value of each species. Due to the generation of PBR, any species which was earlier considered to be as common as weed, is now valued for its nutrition, medicinal and other inherent properties. The process has often led to a dialogue between the older and the younger generations. Perhaps the most important outcome of this process is the empowerment experienced through this collective discovery of local values within the community which was enabled through a largely interpretive educational intervention. In many cases, the community is so enthused by this new awareness and sense of ownership and value that they have been quick to dash off protest letters to the authorities under the ACT when they perceive that a development project may adversely impact the now preciously regarded biodiversity of the village.

The effectiveness of the CEE approach can be attributed to the careful selection and adaptation of the education and communication methodologies that are appropriate to the community such as informal meetings, discussions, exposure tours, campaigns, community activities and games. Awareness campaigns are strongly supported by follow up in terms of technology and knowledge transfer through demonstration and expert consultations or Samvaad (dialogue). Experts were seen as supporting the collection and

validation of knowledge held by the community rather than the other way around. The Intergenerational transfer of community knowledge was found to be a key motivating factor for both adults and children. The community validated its traditional knowledge not through romanticizing it but through carefully evaluating its practical benefits through an analytical approach. Public collection of data, observation and analysis has been seen as a major component of the CEE approach with gender sensitivity being accorded high priority in all processes and women having a majority representation in the BMC. In fact some BMCs entirely consist of women representatives.

Case Study 2
Community Empowerment and Informed Decision-making at the local (village) level: The Case of Mendha Lekha

Rationale: This case study is valuable from the perspective of the role and impact of education as a catalyst for self-determination and empowerment particularly with regard to a community that has been marginalized and neglected for generations. The tribal communities of India traditionally inhabit tracts of land that are in forested or hilly regions with little access to civic amenities or infrastructure leading to a high level of insularity and limited exposure to mainstream life. The process of education, here seen as capacity building and awareness, occurred over a period of 4 to 5 years marked by the deployment of participative and democratic negotiations within the community. The case study is relevant to SDGs 1, 3, 11 and 16 and potentially many others.

Description
In the late 1970s the Indian government proposed an ambitious hydroelectric project in Eastern Maharashtra. For the poor tribals of the region, the project not only meant displacement from their traditional homes and possible social disruption but also the impending destruction of large stretches of forests on which their livelihood and culture heavily depended. The realization of imminent danger forced the tribals into organizing themselves to strongly oppose the project. Many non-governmental organizations (NGOs) helped the local people mobilize and organize public rallies and agitations against the dams. In 1985, in response to prolonged and determined tribal resistance, the planned project was shelved. The anti-dam struggle emphasized and strengthened the determination of the tribal people to take decisions for themselves at the local level on issues and activities directly affecting their lives. It gave rise to a strong movement towards self-rule in the region, based on the revival of tribal cultural identity and greater control over land and resources. Mendha was one of the tribal villages where this process continued to gain momentum resulting in greater and more remarkable benefits for its residents.

Individuals who had been engaged in the anti-dam movement in Mendha, continued to advocate for greater village self-rule and collective responsibility. Discussions ensued over a period of 4-5 years centred on key social issues such as improving the status of women, reducing alcoholism, creating greater personal responsibility, and establishing the means to protect and regulate the use of the surrounding forests. The discussions led to many positive social, cultural and environmental changes, including the development of a forest protection and management system in the village.

Seeds of a very strong movement towards tribal self-rule were sown. Visionaries like Devaji Topa, a local who has not studied beyond primary school and Mohan Hirabai Hiralal of the anti-dam movement motivated and supported the movement. Together they helped initiate the *Jungle Bachao Manav Bachao Andolan* (Save Forest, Save Humanity Movement).

Reacting to the granting of licenses by the government to local brewers of alcohol which aggravated already high levels of alcoholism among the community, the women of the village came forward with the proposal that consumption be restricted locally by the now powerful Gram Sabha. It was collectively decided that no liquor would be purchased, and brewing it at home (which is an accepted practice among the tribals) would be subject to permission from the Gram Sabha.

The community resolution of this social problem was a landmark event in the strengthening of tribal self-rule in Mendha and was accompanied by a greater realisation of the importance of the surrounding forests, and the need to manage them to prevent the increasingly unsustainable commercial exploitation of these valuable common resources.

Village institutions managing forest-related issues In Mendha, the movement towards self-rule and protection of the surrounding forests in the late 1980s led to the creation of three key village institutions. The Gram Sabha (GS) The village council is called the Gram Sabha (GS).It was agreed that the GS would use a consensus process for decision-making, and that the GS would supersede any government or non local authority. The GS started by acquiring factual, legal and political information about the village including various revenue and customary use documents.

The Mahila Mandal (MM): All women in the village (of all ages and classes) are members. Often the GS meetings also work as MM meetings. Forest-related activities carried out by the MM include regular monitoring of the forests, and punishing those who breach forest protection rules.

The Abhyas Gats (AG): This is a study circle which operates as an informal gathering of people. Meetings are convened as and when desired for discussions on any issue. Outsiders are sometimes specially invited if the village wants some specific information or desires a debate on a certain issue. These dialogues have helped the villagers develop their conversation skills, increase their awareness of the outside world, learn about their rights and responsibilities, and obtain important inputs and information which help them make informed decisions at GS meetings. In turn, outsiders have gained insights into village life and the process of village self-rule. For example, discussions initiated by outsiders at the AG significantly helped the village overcome the problem of encroachments on forest land. Discussions in the AG have also been focusing about the negative impacts of fire and hunting on the ecosystem. In recent times, two important study groups have been formed, which include villagers from Mendha and three other neighbouring villages.

These have been formed to:
* study the laws and policies that affect these villages and their natural resources,
* bring together local political leaders to meet and discuss the issues of governance.

These study groups are attended by members and leaders of different political affiliations. These village institutions have ensured that party politics which fragment many Indian villages does not affect these villages.

Role and Impact of Education

The case of Mendha Lekha foregrounds the role of catalytic agencies and processes that were initially external to the community. The NGOs played a critical role in creating awareness among the tribals about the impending impact of the planned dam and helped introduce the community to political and democratic processes of organized dissent. Here education can be seen to play a catalytic as well as a capacity building and empowering role delivered largely through informal means. Members of the community had not completed formal schooling but were well versed in traditional knowledge and socio-cultural wisdom as is the case with indigenous peoples. Thus, they rapidly learned from their exposure to organized dissent and the subsequent success of their movement. The success of the anti-dam movement clearly illustrated the feasibility of self-determination and self-governance to the community who then took on more initiatives based on principles that can be clearly related to the three dimensions of ESD. Perceptually, the community, being relatively homogeneous, had enjoyed a sense of inclusivity traditionally. Thus the learning can be said to occur in conceptual and practical ways where the community transformed its existing relationships with the outside world by seeking power and self-determination through political and democratic processes that their earlier anti-dam struggle had familiarized them with. The impact of education can be measured in terms of the degree of innovation exhibited by the community through initiatives such as the Abhyas Ghats which go beyond the existing framework of the Gram Sabha and the Mahila Mandals to address specific ESD priorities such as relationship building that not only aim to maintain and grow a sense of community but also develop and strengthen the community's links with the outside world which is a key aspect of sustainable development.

Case Study 3
Mahila Kisan Sashaktikaran Pariyojana (MKSP)

Rationale: This case study involves a large scale education and training initiative by the Government of India to address three priority target areas: poverty, the agricultural sector and women. Under this program, over 3000 Community Resource Persons have been trained to promote awareness, provide technical support and services to improve the livelihood and skills of female farmers. The initiative supports upto 700 para professionals working to assist 250,000 female farmers practising sustainable agriculture in 150,000 hectares of land.

Description

The agricultural sector which contributes to 16% of India's GDP is increasingly becoming a female activity. The sector employs 80% of all economically active women who comprise 33% of the agricultural

labour force and 48% of self employed farmers. About 18% of the farm families in India are reported to be headed by women (NSSO Report). Women work as agricultural labourers, unpaid workers in the family farm enterprises or combination of the two and are generally not able to access extension services and production assets like seed, water, credit, subsidy etc. As most of them are not recognized as farmers for want of ownership of land, they are not considered as beneficiaries of various government programmes / services. The wage differentials between men and women being adverse to them, the situation is further aggravated. Some of the tasks performed by the women are not valued adequately and considered less important economically. Further, due to the multiple roles that a woman has to perform within the family and the farm, her access to knowledge and information, is constrained and therefore her opportunities for growth are curtailed.

To improve the present status of women in Agriculture, and to enhance the opportunities for her empowerment, Government of India announced "Mahila Kisan Sashaktikaran Pariyojana", as a sub component of the National Rural Livelihood Mission (NRLM) in 2011. MKSP which means strengthening women farmer in Hindi is a programme specifically intended to empower women in agriculture. It looks at making systematic investments to enhance women's participation and productivity and create and sustain agriculture based livelihoods of rural women.

The primary objective of the MKSP is to empower women in agriculture by making systematic investments to enhance their participation and productivity while creating and sustaining agriculture based livelihoods of rural women. By establishing efficient local resource based agriculture, wherein women in agriculture gain more control over the production resources and manage the support systems, the project seeks to enable them to gain better access to the inputs and services provided by the government and other agencies. Once the production capacities of women in agriculture improve, food security ensues for their families and communities.

The National Rural Livelihood Mission (NRLM) develops a cadre of 'Community Resource persons' (CRPs) who enable, support and build capacity for the effective implementation of various interventions in agriculture. The CRPs receive intensive and continued training that equips them with the required information, knowledge and skills. They form a key mechanism for outreach and for ensuring sustainability at the village level. 3000 CRPs have been trained and deployed for promotion of best practices in the different states of the country. In addition, a total of 500-700 para professionals are working with the communities supporting a total of 250,000 women farmers in practicing sustainable farming in 150, 000 hectares of land.

CRPs mobilize women farmers, facilitate demonstration of sustainable agri- technologies, and facilitate the formation and functioning of appropriate institutional structures within the community for their development and implementation. Women are roped into a learning cycle and provided with direct and indirect support to enable them to learn and adopt appropriate technologies to achieve sustainable

agricultural production. The capacity building programme involves the use of locally adopted, resource conserving, knowledge-centric, farmer-led and environment-friendly technologies; It also inculcates community mobilization skills among women in agriculture thereby demonstrating the benefits of the more sustainable agricultural methods to them. MKSP is implemented by NGOs, CBOs and institutions working in the sector. *(With Inputs from MoRD and Department of Agriculture & Cooperation, March-April, 2014)*

Role and Impact of Education
The initiative has a clear focus and scope and is valuable for its specific orientation in terms of training and the skills required for implementation. While this initiative appears to be an extension program that is geared to a specific target group, what sets it apart may lie in the learning cycle approach that seeks to enable women to continue upgrading their skills and knowledge through continued support and consultation.

Case Study 4
Capacity building Accredited Social Health Activist (ASHA) under National Health Mission

Rationale: This case study is impressive in terms of the sheer scale of operation which covers 18 high focus states of India and the large number of women trained under the program (approximately 460,000) over a period of 3 years making it the world's largest community health worker training program. The study relates to SD goal area 3 which focuses on ensuring healthy lives and well-being for all at all ages including reducing global maternal mortality ratio, death of newborns and under five children, as well as universal access to sexual and reproductive health and universal health coverage. As with all SDGs, this case also has relevance to SDG 5 which addresses gender equality, SDG 8 offering decent work and SDG 11 in terms of building sustainable communities. The case study is significant because it involves non-formal education, capacity building and training of women in rural areas to specifically address measurable health and social development indicators. Not only are all the areas related to SDGs, they are interlinked and affect high priority categories such as women, the rural sector, economically weaker groups and parameters of health that are critical to them.

Description
The National Rural Health Mission (NRHM) was launched in 2005 in the 18 high focus states in India with the objective of providing effective health care to the rural population with emphasis on poor women and children. One of the key components of the NRHM is to provide every village in the country with a trained female community health activist i.e. Accredited Social Health Activist (ASHA). Prior to ASHA, Community Health Worker (CHW) programmes had been implemented in Maharashtra and Chhattisgarh such as the Mitanin programme in Chhattisgarh which served as a model to the ASHA programme.

ASHA represents the pivotal component in the design and strategy of the National Rural Health Mission (NRHM), which, in turn, is a key initiative of the Central government to fulfil its promise on inclusive growth and health related millennium development goals such as lower infant mortality rates (IMR), maternal mortality rates (MMR); as well as the control of specific diseases, and improvement of the nutritional status of children and mothers.

Search in Maharashtra State

The SEARCH NGO (Society for Education, Action, and Research) pioneered home-based neonatal care in tribal districts of Maharashtra in the 1980s. Village health workers (VHW) conducted antenatal and postnatal counselling, birth attendance, and growth monitoring; research results (e.g. Bang et al 2005) attribute decreased neonatal mortality up to 20% compared to the control population. The nutrition counselling interventions led to a significant decrease in the birth of low birth weight babies, and other interventions resulted in a significant decrease in case fatality (60% decrease for preterm, 70% decrease for LBW babies) with a substantial decrease in the incidence of co-morbidities such as sepsis, asphyxia, hypothermia, and feeding problems. Additionally, the SEARCH programme demonstrated how neonatal and childhood pneumonia can be detected and managed in a timely way at community level. SEARCH developed a tool for counting breaths and detecting fast breathing, and the interventions led to a 44% decrease in neonatal mortality attributable to pneumonia.

Mitanin in Chhattisgarh State

The government of Chhattisgarh, in partnership with civil society, launched the Mitanin programme in 2002. Mitanins were trained and supported to conduct household outreach, including essential care of newborns, nutritional counselling, case management of childhood illness, and rights-based activities (e.g. access to basic public services, women's empowerment activities, and mobilization around ICDS and mid-day meals). Mitanin are not salaried, but receive a piece of land for cultivation or by other means, as decided by the villagers. Over 60,000 Mitanin now serve in over 70,000 hamlets, and are supported by 3,000 women engaged as middle-level supervisors. The Mitanin is widely credited for lowering state IMR from 85 in 2002 (the second highest in the country) to 65 in 2005. During the same time period, the state's proportion of underweight children has dropped from 61 to 52%, and full immunizations have risen from 22 to 49% in the 12-24 month age group.

"ASHA create awareness on health and its determinants and mobilize the community towards local health planning and increased utilization and accountability of the existing health services. Their tasks include motivating women to give birth in hospitals, bringing children to immunization clinics, encouraging family planning treating basic illness and injury with first aid, keeping demographic records, and improving village sanitation. They are the interface between the rural populations in tribal and non-tribal areas and

the public health system. ASHA most regularly interact with Auxiliary Nurse Midwife (ANM), Anganwadi worker (AWW), Medical Officers MOs, and Panchayati Raj Institutions (PRI).

The ASHA program was introduced as a key component of the community processes intervention. Over the decade, the ASHA program has emerged as the largest community health worker program in the world, and is considered a critical contributor to enabling people's participation in health. By August 2009, in the high focus states in India, a total of 462,466 ASHAs were selected against the target of 484,599. Thus, about 95% of the target was achieved.

A proposal for certification of ASHAs to enhance competency and professional credibility of ASHAs by knowledge and skill assessment has been approved recently. The certification of ASHAs would be done by National Institute of Open Schooling (NIOS). The following components of the programme, namely, the Training curriculum, State Training Sites/District Training Sites, Trainers and ASHAs and ASHA Facilitators would be taken up for accreditation/certification.

The Certification of ASHAs and accreditation of associated agencies involved in ASHA Training is intended to enhance competency and professional credibility of ASHAs, improve the quality of training and ensure desired programme outcomes, provide an assurance to the community on the quality of services being provided by the ASHA, besides promoting a sense of self recognition and worth for ASHAs.

Guidelines for NGO involvement under NHM during Twelfth Five Year Plan have been issued recently. The new guidelines envisage greater state ownership for NGO led programmes and are intended to provide a broad framework to the States to partner with NGOs and facilitate their participation in capacity building, support for community processes service delivery, develop innovations through research and documentation, advocacy and for supplementing capacities in key areas of the public health system to improve healthcare service delivery" (Ministry of Health and Family Welfare, Government of India).

Role and Impact of Education
The ASHA program is a non formal education program involving structured training and capacity building of women so that they may provide a wide and complex range of critical health support functions for women and children in the rural areas. ASHA is trained to improve awareness about health and to mobilize and provide ongoing support to rural women to achieve health outcomes while increasing the use and accountability of existing health services. The impact of this program can be evaluated against measurable indicators in terms of falling mortality rates and related parameters as they become available in due course. However, the value of enhanced capability, awareness and support is obviously self-explanatory in a heuristic sense. The decision to provide certification further enhances the practical utility of the training in terms of livelihood security and quality control.

Case Study 5

Reducing Sexual Harassment at Workplace: Fair Wear Foundation

Rationale: This case study is valuable as an example of successful direct and peer to peer education which addresses the universally relevant issue of workplace sexual harassment. While legal relief is theoretically available, lack of awareness, gender specific issues brought on by socio-cultural factors such as victim shaming as well as economic and physical vulnerability create conditions that are conducive to sexual harassment. The case study is also significant in terms of scale with over 3500 workers receiving direct training in 24 factories in India and Bangladesh and nearly 15000 workers trained via peer to peer indirect education.

Description
A UN Trust Fund-supported project to reduce workplace sexual harassment is training thousands of workers in 24 factories in India and Bangladesh, through peer-to-peer education.

A recent survey conducted by Fair Wear Foundation a Netherland –based NGO, revealed a disturbingly high percentage of sexual harassment against workers in the garment industries. Violence ranges from verbal and physical abuse to sexual harassment and rape. Approximately 60% of the factory workers have experienced verbal or physical abuse at their workplace. Factors like lack of awareness, embarrassment and the belief that harassment is normal and inevitable, along with discouragement of senior management and complaint systems, prevented these cases from being reported.

Fair Wear Foundation has partnered with garment factories in India and Bangladesh, European clothing brands, governments, civil society organizations and trade unions in Europe and Asia. Social Awareness and Voluntary Education, a human rights organization based in Tirupur, is associated with the Foundation to lead training sessions in six garment factories across the state aimed at reducing workplace sexual harassment.

A woman garment worker on the job at a factory in Tamil Nadu, India. Photo courtesy of Fair Wear Foundation

Viyakula Mary of Social Awareness and Voluntary Education says that in the factories where she has worked, very few effective mechanisms exist for women workers to report any kind of grievance. In the past, as was the case with violence in other social spheres, women were reluctant to report abuse. Women who faced violence also have so little faith in either the police or judicial systems that if a problem persisted, rather than pursue justice, they would simply look for alternative work. In 2013, a new law, the *Sexual Harassment of Women at Workplace Act,* strengthened the legal protection afforded to women working in garment factories in India. To ensure the law is being implemented, Mary believes a holistic approach, including awareness and training, is needed.

"As part of the initiative, the 'Preventing Workplace Violence' project, which is supported by the UN Trust Fund to End Violence against Women, 3,500 workers in India and Bangladesh have received direct training in 24 factories, while another 15,000 workers have been trained via peer-to-peer education.

Women garment workers listen attentively at a training session where they are empowered to speak up about workplace harassment. Photo courtesy of Fair Wear Foundation

The training sessions range from three to six hours and are open to all workers, women and men, as well as management and supervisors. They're conducted during working hours and participants earn at least minimum wages during that time.

"Management now takes quick action when a complaint is brought to them. In the past they would not even know what we were going through," says a 31-year-old female factory worker in Tirupur.

After receiving initial training, workers are nominated to join the management and NGO representatives as part of a newly-established 'Anti-Harassment Committees'. They meet monthly to address harassment cases. This group receives further training in communication and listening, problem-solving and decision-making to help resolve cases.

According to Juliette Li, a coordinator with Fair Wear Foundation, "Lots of women accept sexual harassment because they don't recognize it as such. And if they do, the factory manager doesn't take it seriously. We want to create an atmosphere in which workers can talk to their bosses."

Through the training sessions, women learn to discuss issues of violence and harassment more openly with supervisors and one another. Photo courtesy of Fair Wear Foundation

The project, which started two years ago, is showing initial results. The Anti-Harassment Committees established in the factories where Mary works hear approximately four reports a month. The initiative has lifted the lid on a problem rarely spoken about and empowered workers to also address other issues including workplace discrimination and labour rights.

By participating in anti-harassment committees, women have become more vocal on the factory floor. Whereas no women held supervisory positions in any of the six factories at the beginning of the project, five women have since been promoted to such roles.

"We are empowering women more and they are getting knowledge of all these related issues," says Mary. "We could see after the trainings that the position of women is changing." The impact of the training is seen through the establishment, and increased participation of women in anti-harassment Committees in the factories. Women have become more vocal and the Committees are receiving more complaints, which shows that previously unaddressed issues are now taken up more seriously. (UN Women) "

Role and Impact of Education
The clear identification of the issue through a preliminary survey and the training and awareness programs that were made available in a non gender specific manner show that the impact of education and awareness is highest when it is outcome oriented and problem solving in the approach and methodology that is adopted. The fact that reporting of sexual harassment went up from no reporting (despite the widespread existence of the practice recorded by the survey) to approximately 4 cases reported in a month in just one of the factories that set up an Anti-Harassment committee is indicative of the change in attitudes at the workplace due to increased awareness alongside specific institutional support mechanisms and steps to

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create increased empowerment.

Case Study 6
"Voices against Violence" Curriculum to Stop Violence against Women and Girls

Rationale: This case study is a clearly structured six session non formal certification based education and training of trainers program which is global in nature and aims to train 800,000 young people in 27 countries in ways of addressing violence. This case study develops the notion of partnership through finding commonality of organisational objectives. It directly and creatively addresses SD goal 5.2 as well as related aspects of SD goals 5 and 16 which concern peace and justice.

Description

"Voices against Violence," is a unique non-formal education program that will teach young people how to stop violence against girls and women. It is a pilot program developed by UN Women and WAGGGS under the framework of Global Advocacy Campaign "Stop the Violence: speak out for girls' rights".

The curriculum aims to educate young people about the root causes of violence, involve them in prevention and teach them about accessing support if violence is experienced. Upon completing six training sessions, which are designed with content appropriate to different age levels, Girl Guides and Girl Scouts earn a "Voices against Violence" badge and go on to take community-based action.

The programme started in 2014, aiming for 12 countries, but on receiving overwhelming interest from the girl guiding movement [1] and now 27 countries are engaged. UN Women is supporting the first phase of the programme by supporting the training of 200 National Trainers/Facilitators and 3000 youth leaders in these countries. The youth leaders and facilitators then go on to deliver the curriculum in schools and communities where they work with children and young people between the ages of 5 – 25 years. Upon completion of the curriculum, youth participants develop campaign/prevention activities in partnership with their local communities, to prevent specific forms or issues of violence against women and girls.

The training session discusses various forms of violence, explores common myths and practices that perpetuate harm, learn to conduct national or local campaigns that challenge harmful attitudes, and learn about child protection policies and working with survivors of violence. Country-specific challenges faced by young women and girls and how to adapt the curriculum according to these contexts are also shared. On returning to their countries participants will conduct national trainings among Girl Guides and Girl Scouts.

"By running this tailor-made curriculum in my country, it will definitely help to clear some of the myths and harmful beliefs that are deeply rooted in the girls," said Thammy S.H. Chong, a youth leader and participant from Malaysia. "I truly believe violence against girls and young women can be stopped and prevented. We just have to start working toward it." By the end of 2017, youth leaders will be trained to deliver the curriculum to young people in 25 selected countries.

The programme while in the pilot stage is being monitored and a full evaluation will be conducted in 2017. Various data is being collected including data on improvements/changes in Knowledge, Attitude and Awareness of the youth participants, and initial results are very promising, with 96% participants on average exhibiting improved knowledge, awareness and attitudes.

The first regional "Training of Trainers Workshop" was held in December, 2014 in Pune, India (one of the implementing countries), at the World Association of Girl Guides and Girl Scouts' (WAGGGS) World Centre, more than 50 national trainers and youth leaders from the girl guiding movement across the Asia-Pacific region gathered.

At the first regional training of the "Voices against Violence" curriculum in Pune, India, youth leaders learned how to conduct campaigns challenging harmful attitudes and about child protection policies, among other things. Photo: UN Women/Urjasi Rudra.

The workshop in Pune is the first of four regional trainings on the "Voices against Violence" curriculum, which aims to equip 800,000 young people with the knowledge and tools to address violence against women and girls. Photo: UN Women/Urjasi Rudra

Four series of workshops will take place in different regions, where the curriculum will be delivered to 200 national trainers as part of the global roll out of the programme in more than 12 countries. By the end of 2016, youth leaders will be trained to deliver the curriculum to young people in Brazil, Burkina Faso, the Democratic Republic of the Congo, India, Japan, the Republic of Korea, Malawi, Nigeria, the Philippines, Rwanda, the United States and Zambia (UN Women)

Role and impact of Education
The case study provides education and training across all perceptual, conceptual and practice related dimensions with the specific intent of fostering creativity innovation and capacity building. The educational processes clearly aim to develop problem solving and action oriented capacity building through the choice of an appropriate target group namely the girl guide movement which is at once global, survival skill and action oriented as well as community minded. Capacity building of a highly motivated group such as the girl guides and boy scouts movement which has a clear social, global and service-oriented organizational culture offers an effective approach with a high potential for success. Training is provided through workshops with the objective of enabling trainers to train young people to develop and implement

creative initiatives that address the issue of violence against women. This case study thus focuses on the ESD goal of capacity building and innovation to enable a wide variety of creative responses from young people against violence in their environment.

Case Study 7
Jalsankalp

Rationale: This case study was selected as representative of an innovative and ambitious non formal training and capacity building initiative which also imparts technical skills in the delivery of hardware and software for water management. Water management falls within the scope of the critical SD Goal 6 as well as 3 and 16 which address health and strengthening of institutions respectively. This case study is significant in terms of the size and scale which covers 28 villages across two districts in Gujarat and aims to strengthen forums for self-government and problem solving in comprehensive ways. The case study is impressive primarily due to the sheer complexity of its scope in terms of the skills and processes it aims to deliver.

Description
Sustained access to water and sanitation is essential to ensure a better quality of life and enhanced productivity. Local technical interventions are often used to increase access, but these are prone to neglect and misuse due to lack of community understanding and empowerment. The Jal Sankalp (Pledge for Water) initiative carried out by the Centre for Environment Education in 28 villages in Gujarat, engages communities in a continuous dialogue that helps sustain water and sanitation systems.

Jal Sankalp is part of the larger Community Managed Ghogha Regional Water Supply and Sanitation project ((CMGRWSSP), a Government of Gujarat initiative that covers 82 villages. Jal Sankalp uses innovative communication and education approaches like focus group meetings, demonstration and street theatre and mobile kiosks to create awareness and build capacity within the villages. The project has been able to successfully engage the communities in the capacity-building process, encouraging them to take continuous action to improve their water and sanitation systems.

The project aimed at mobilizing community by raising awareness and soliciting people's participation at the same time ensuring equality in and across the village by protecting the interest of weaker sections; institution-building by forming effective pani samitis in accordance with the guidelines, capacity building them to keep transparent and appropriate accounting system and audit; sanitation and hygiene promotion through awareness campaigns that especially involved women and children, and the construction of sanitation facilities.

CEE's role within the project primarily focused upon community participation through village institution building for planning, monitoring, implementing and later operating and managing the in-village water and sanitation systems.

Interventions under CMGRWSSP were in two broad categories, 'hardware' and 'software'. The hardware provided by the IA mainly comprised inputs of an engineering nature.CEE in the capacity of ISA supported the IA in the initial stages of the project with communication support and facilitation to prepare the communities to receive the hardware provided by the IA and to train them to take over its operation and maintenance (O&M) when it is in place. Capacity building of Village Water Committee members involved group work and exercises to help members share, discuss and learn from each other's experience. Conflict management and its communication processes have been critical and local political and caste dynamics were used positively for village development.

CEE's initiatives aimed principally at empowering the recipients of the project through
- Educating villagers to assess the quality and quantity of construction materials used, and of adherence to specifications and quality of workmanship of the hardware inputs.
- Training selected community members (system operators, PS members) in the basics of O&M, such as elementary repairs, identifying reliable skilled persons to carry out tasks which were beyond their abilities to perform, essential accounting and banking procedures etc.
- Organizing village level events involving school children, inter-village interactions and exposure visits for the villagers to promote the project and reinforce its achievements/
- Helping to organize and guiding, women's SHGs to play an active role in the project.
- Enlisting support of village level education and health functionaries to reinforce the hygiene and sanitation components of the project.
- Participating in Panchayat/PS meetings to help conflict resolution, build consensus between different factions and find a way around ingrained traditional biases with respect to gender and caste roles in the traditional dynamics of the community.
- Working with the villages to set up mechanisms to share experiences, pool resources and exchange know-how for effective and efficient implementation of the project.

Special educational interventions have focused on women and children. Hamlet level meetings, Self Help Groups, exposure visits, celebrating World Days, women using cameras to highlight the need for cleanliness, a sanitation and hygiene campaign with A Day In a Village approach, Village Video sharing the work and the concerns of the village community and transmitted through the disc locally, children's fairs such as Balmelas, farmers and teachers meets and finally federating the individual village water committees into one Jalsankalp Samiti, were part of the CEE initiative.

These educational interventions have been documented for lateral sharing and learning. Educational material such as posters on hygiene, school labels, banners and hoardings and a mobile WATSAN shop have further added value to the educational processes.

Apart from ensuring community participation (especially women and children) at various levels through different ways—games, focus group discussion, puppetry, *nukkad natak.*

Through a Women's Eyes

This was a novel experiment to understand the water and sanitation situation in the villages from the perspective of local women. In eight selected villages small groups of women were trained to use a camera, and asked to move around the villages capturing its water care, sanitation, and hygiene practices, both good and bad.

This involved many firsts for the 46 women who participated. None had so much as touched a camera, let alone use it. Some were PS members, but had been denied opportunities to monitor the work done on the project hardware inputs. For the first time they saw things for themselves, and identified critical omissions that the men-folk—the normal monitors—had not bothered to check. Going about task they observed a 'code of conduct'. They scanned the entire village, snapping good and bad practice, but for negative aspects avoided private spaces.

For the women this was a tremendous learning and self-confidence-building experience and a major eye-opener. The photographs were exhibited on World Women's Day Cluster meet.

A Day in a Village

This was primarily a sanitation and hygiene campaign in each of the 28 villages. It meant spending a whole day from 8 a.m. till 12 midnight addressing sanitation and hygiene issues with children, teachers, women, VWCs and the entire community. The day began with the village school, village rally, slogans and songs, drawing, slogan and essay competitions, snakes and ladders, exhibitions for the school children and teachers. A WATSAN mobile shop sold ladles, nail cutters, soap, sieves, and kites with messages. Children were motivated to collect waste plastic and each child got a school label as a prize for a bag of waste plastic.

Afternoons were spent in dialogue with women in small groups. Flip charts and flash cards helped explain water care, sanitation and hygiene messages.

A demonstration was used to show the importance of washing hands and using a ladle. Women were asked to wash hands in a bowl – this would be drinking water taken from a house the meeting was organized. Pouring the water in a glass, women realized that dirt is not seen but is there. Soap and ladles were sold on the spot.

Some of these interventions which involved street plays, Balmelas or exhibitions for children evolved in response to specific problems that were encountered or situational needs that arose, as the project progressed.

A very significant development in the hardware delivery mechanism is the formation of the Jalsankalp Samiti (JSS)—a federation of the PS's in the project area. A number of panchayats chose to take upon themselves the responsibility of construction rather than contracting it out. They felt that pooling their resources to buy materials, award labour contracts and exercise quality control would save costs and improve the quality of the work. More than the tangible benefits the JSS model brought inter-village cooperation that cut across political and caste loyalties and the egos of the individuals resulting in collective decision-making. The model highlights how educating people through setting up a collective forum can facilitate grassroots-level interaction and networking, enabling communities to take effective control of development activities that directly impinge upon their lives through ongoing learning and improvement of their skills.

Role and Impact of Education
This non formal education program delivered capacity building and technical training to enable the management of infrastructural hardware as well as institute durable processes that enable effective self governance and community building. The impact of this program was seen in the establishment of a federation of Pani Samitis or Jalsankalp, increasing devolution of responsibility taken on by constituent panchayats on a voluntary basis as well as increasing efficiency in the management of resources through cost cutting measures and better financial practices. The capacity building resulted in intangible gains in the form of increased confidence in the villages leading to strong community identity, inter and intra village cooperation, reduced importance accorded to political and caste divisions and an overall progress in terms of self-determination, self-governance and sustainable development.

Case Study 8
## Reviving Traditional Water Harvesting Structures in Rajasthan

Rationale: This case study is a striking example of how education was necessary to create community interest in reviving indigenous and ancient methods of water conservation that fell into disuse as a consequence of the modernization movement. Modernization led to the wholesale abandonment of traditional cultural practice which was dismissed as being backward and inefficient.

Description

Under the leadership of Rajendra Singh, Magsaysay Award Winner, the NGO Tarun Bharat Sangh successfully educated and motivated people about water conservation through the revival of traditional and community water harvesting methods. The group inspired villagers and youth to actively participate in the revival of traditional water harvesting structures called *Johads*, thus addressing the issue of water scarcity and drought in the region.

Though rain water harvesting is not new to India, the revival of traditional rain water harvesting structures in the arid state of Rajasthan are an example of involving the community as a key stakeholder in this venture. The voluntary group,Tarun Bharat Sangh, inspired villagers and youth to actively participate in the revival of traditional water harvesting structures called *Johads*, in response to widespread water scarcity and drought in the region.

Rajasthan has long been known for its underground water supply and harvesting rain water. In centuries past, the community drew on a multitude of traditional water harvesting systems that ensured that the scanty rainfall in the region was optimally utilized to provide adequate water supply for the dry season.The dominant water harvesting structure was the johad, a crescent-shaped dam of earth and rocks, built to intercept rainfall runoff. A johad served two functions. On the surface, it held water for livestock. But like an iceberg, its most important parts were below the surface. By holding water in place, it allowed the liquid to percolate down through the soil. It recharged the aquifer below, as far as a kilometer away. Stored underground, the water could not be lost to evaporation. In the midst of the dry season, without pipes or ditches to deliver water, villagers could always count on plenty of water from their wells, and irrigated fields lush with wheat, mustard and beans. A johad was more than any one family could build. It took a village. But because every villager had a stake in the johads, residents banded together to build and maintain them.
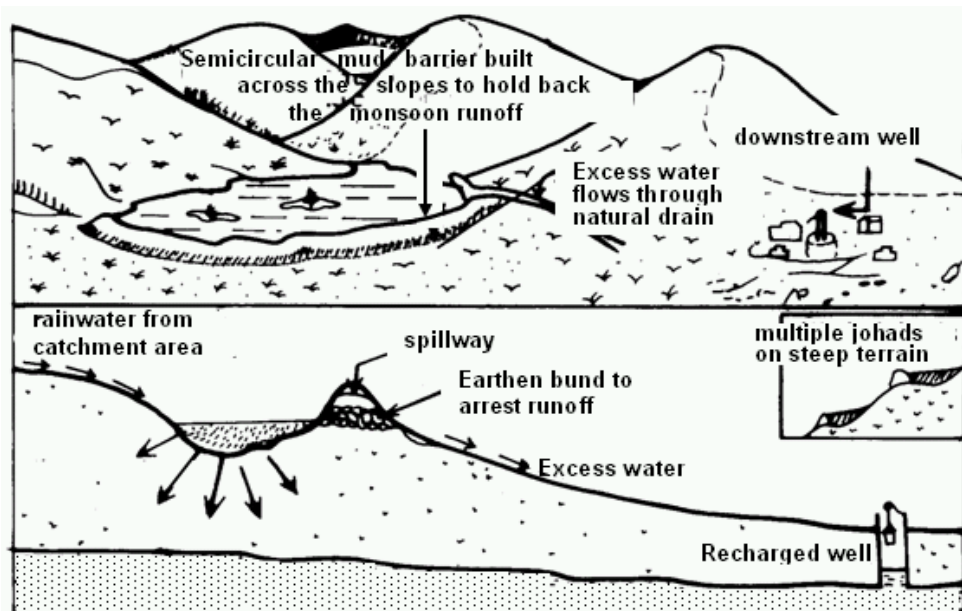
Rainwater harvesting using johads (adapted from Kishore, 2003

The Aravali mountain range (one of the oldest in the world) in western India runs approximately 482 km from northeast to southwest across the State of Rajasthan. Until the 1930s and 1940s, the Aravali range had verdant forest cover. However, due to large-scale logging in later years for emerging need of timber led to rampant deforestation. This further led to surface runoff increased every year, resulting in considerable depletion of groundwater recharge. With government taking control of more common lands and water management, community neglected their johad structures, because johads can only be made by a group, not by individuals. So, one by one, the structures gradually deteriorated and stopped being used.

The complete transfer of water management from community to government created a cycle of neglect and scorn for time-tested traditions and a dependency-syndrome among the village community. The synergy between humankind and nature that was the legacy of centuries of tradition was destroyed in a matter of decades. Drought became a recurring and grim reality in the region (Kishore, 2003).

The Alwar district, nestled among the Aravali hill ranges in northeastern Rajasthan, falls in the semi-arid zone with an average rainfall measuring 620 mm. The temperatures fluctuate from $0^{\circ}C$ in winters to $49^{\circ}C$ in summers. The region was hard hit by one of the worst droughts in 1985-86. The water table receded below critical levels and rivers and wells dried up. Crop failure became common, the lack of vegetation led to soil degradation and monsoon run off caused soil erosion. The deforestation of Alwar set off a slow-motion chain reaction in which the ruin of one resource led to the ruin of others, and the impoverishment of nature led to the impoverishment of the people.

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In place of johads, the villagers turned to modern technology to keep the water flowing. With government aid in the 1950s, they began drilling "tube wells"– deep wells that brought up the water with diesel-powered pumps. But the new wells ensnared them in a vicious cycle. When the water table dropped, they drilled even deeper; and the deeper they drilled, the more the water dropped. Eventually, the underground water dropped deeper than people could drill, wells began to go dry, and even streams and rivers were drying up. The advent of tube wells and the consequent spiral of deeper wells and receding underground water was only the first of a series of interconnected and mutually reinforcing vicious cycles that drove depletion of the aquifer. In another vicious cycle, trees and other plants that depended on underground water died because the water was beyond the reach of their roots.

The Tarun Bharat Sangh (TBS), an NGO, followed the Gandhian philosophy of helping the poor to help themselves. Led by Rajendra Singh, the NGO worked to revive one of the ancient Johads by excavating it to a depth of 15 feet. Then Singh and his colleagues set down their shovels and awaited the monsoons. Rain fell on Rajasthan. As luck would have it, the monsoon of 1986 was the region's first significant precipitation in four years. By the end of the season, the pond was full. And something unexpected happened. A neighborhood well, one that had long been exhausted, began flowing again. Gopalpura had created its ripple effect. The rebirth of rainwater harvesting set loose a cascade of constructive forces, in Gopalpura and beyond. The effects ping-ponged from ecosystem to social system and back, and the momentum got stronger and stronger, as both systems began to heal themselves.

The first wave of effects swept through Gopalpura itself. Successful restoration of the first johad inspired villagers to take on a bigger job: a crumbling irrigation dam. TBS helped with technical advice and the villagers contributed 10,000 person-days of labor. By the next monsoon season, the dam was reconstructed. One achievement kept leading to another. By 1996, Gopalpurans had built nine johads, covering 2,381 acres and holding 162 million gallons of water. Underground water had risen from an average level of 45 feet below the surface to only 22 feet, and all the wells had water. The ascending aquifer trickled up through the village economy. Well water was once again available just a few steps from home. Moist subsoil allowed crops to thrive with less irrigation. Because well levels were higher, less fuel was needed to pump water to the surface. The expense of diesel fuel dropped 75 percent. The area of wheat fields jumped from 33 to 108 hectares, and some farmers diversified into sugarcane, potatoes and onions. Many of their fields could now produce two crops, one in the rainy season and an irrigated crop in the dry season. As people ate and drank better, so did their livestock. There were more leftover leaves and stems to serve as fodder for sheep, goats and dairy cows.

As their quality of life improved, Gopalpura's residents realized that their social order depended on the natural one. They had restored one resource: water. They were ready to bring back another: trees. They revived their traditional gram sabha community council, with participation from every family, and decided to reforest 10 hectares along the edge of the village. The trees would help protect the johads, by cutting down on soil erosion. To symbolize the villagers' commitment to their newly-planted village forest, TBS

adapted an old religious ritual. The rakhi was a brightly-woven bracelet, worn by family members and friends as a promise of mutual protection. As villagers planted trees, they performed ceremonies in which they tied rakhis around the trunks. "The father of water is the tree," says Singh, "and the mother of water is the forest. So if your father and mother are not healthy, the children will not be healthy either."

As village society reassembled, so did its basic unit: the family. Young men came home from distant cities to work in the fields year-round. Their wives, freed from long walks for water and firewood, had more time for housekeeping and child care. Their daughters, no longer needed for hours of chores, had time to go to school.

Multiply Gopalpura by 750 villages, and one can imagine the power of the ripple effect. As visitors carried the news home, other towns constructed their own johads. The practice spread further as jal yodhas, or "water warriors," went on walking tours, called padyatras. By 2005, TBS counted 5,000 structures in 750 villages, covering 3,000 square miles over five districts. Alwar's forest had spread 33 percent in fifteen years. A survey of 970 wells in 120 villages found that all were flowing – including 800 that had been dry just six years before.

The approach followed by TBS is to discuss the problem of groundwater depletion, erosion, and deforestation, and put forward a proposal for the construction of one or more johads. If the village leadership is interested, TBS and the village draw up a contract outlining the commitments of both parties. After the contract is signed, TBS and the village work out a detailed design for the johad system, and construction begins with a local person overseeing the construction. TBS has so far facilitated the construction of close to 10,000 johad systems and other water collecting and conserving structures in approximately 1,200 villages and 19 districts of Rajasthan during the past 28 years. The rediscovery of traditional rainwater collection technology has been picked up by many other organizations throughout the country. Most organizations in the National 'Water Community (*Jal Biradri*) also advocate rainwater collection.

Today, the water warriors of Rajasthan are challenging the government on a national scale to stop commercialization of water and centralize supply-management of water through the Water Community.

Role and Impact of Education
The revival of the system of *johads* through a process of strong and effective educational intervention involving awareness, demonstration and community engagement led to a raft of benefits to the community through revitalizing the ecosystem of the region and strengthening of their skills at managing their resources sustainably. The community understood how collective initiative and traditional practices could lead to sustainable prosperity and economic security for all.

Further, the revival of the johads had a visible and measurable impact on the socio-economic scenario of the region. Studies have shown that an investment of Rs. 100 per capita on a *Johad* raises the economic production in a village by as much as Rs. 400 per capita per annum (Singh, 2007).

Aquifers have been recharged (Table 1) and water supply is now ensured for the entire year to meet the needs of both people and livestock. Livestock rearing being the lifeline of local communities, increased water and fodder availability has brought about an improvement in their economic status. Besides satisfying primary needs –drinking and domestic uses – it has increased food production, helped in conserving soil, increased biomass productivity, and increased the longevity of the five seasonal rivers – the Arvari, Ruparel, Sarsa, Bhagani-Teldeh and Jahajwali Nadi.

Table 1. Rise in groundwater level in Village Buja

No.	Total depth of well (m)	Depth of water level in 1985 before construction of *Johad* (m)	Depth of water level in 1994 after construction of *Johad* (m)
1	24.68	Dry	11.12
2	22.25	Dry	10.98
3	20.4	19.4	8.05
4	17.0	15.7 (mostly dry)	8.8
5	24.68	21.68	4.57
6	21.0	15.0	5.76
7	13.10	8.5	2.44
8	25.30	19.3	7.63
9	24.50	19.0	7.75
10	20.25	Dry	12.63

Source: AFPRO (1994)

Case Study 9
Decentralized Water Purification at Village Level

Rationale: This case study highlights the need for educational intervention without which new technologies fail simply because the end users are unaware of their utility and the conditions that are required to make them work optimally or have socio-cultural issues with these technologies that can easily be resolved through transparent and participative engagement.

Description
Khoda village in Sanand block, about 70 km from Ahmedabad has a population of about 1768 people. Villagers complained of health problems such as stiffness in joints, and kidney and gall stones; and attributed these to hard water. There was mixed opinion within the village. Some people stopped drinking

water from the borewells and started getting water from nearby village. Some also started buying bottled water from towns nearby. The issue came up since the area became known due to the TATA automobile factory located there which employed a large number of workers. Tests revealed that the water had a very high level of total dissolved solids (TDS).

As part of its social initiatives in and around the plant area, the Sumant Moolgaonkar Development Foundation (SMDF is Corporate Social Responsibility (CSR) division of TATA Group of Industries) with the help of Water and Sanitation Management Organization (WASMO is a special purpose vehicle established by Government of Gujarat in 2002 to facilitate water and sanitation projects in Gujarat. It is an independent and autonomous organization), came forward to address this issue. It was found that while the Government of Gujarat Village

Water Supply Scheme provided piped water connection to households, it was not clear if the quality was good enough to drink given the high TDS levels. WASMO facilitated discussions with stakeholders about the access to and quality of the drinking water supply as well as its impact on health and work.

A Reverse Osmosis Plant was subsequently initiated in Khoda in 2010 and was implemented in two phases, and followed up with continued post implementation support. The first phase involved community mobilization. This included meetings with the gram sabha, panchayat and women's groups. A range of information sharing and communication activities were undertaken to create awareness among villagers about the importance of water quality and its impact on health and work. This sharing of knowledge created an enabling environment which helped in bringing behavioral change while getting the community actively involved in the project.

Participation of women is crucial when it comes to water management. As in many developing economies, in Gujarat too, women and girls are responsible for fetching water to meet the household requirements. Women know the location, reliability and quality of local water resources. They collect water, store it and control its use and recycle it to carry out daily domestic chores. Women are also responsible for household sanitation, hygiene and health. Focus group discussions were conducted with women's groups. Despite having tap water connections at home, women still came to the village pond to wash clothes and clean utensils. During group discussions conducted by the NGOs, the women revealed that they preferred to attend to these chores collectively as the village pond served as a point for socializing thereby lightening their workload. They felt that they would like to continue to work collectively and would like to have a washing area with a piped connection so they could avoid polluting the pond. This public facility was then constructed through the Gram Panchayat Fund.

The second phase involved physical (hardware) installation of RO plant at the site. Once the villagers and Panchayat came on board, a room of 12 x 10 ft was constructed to house the RO plant. The villagers collected funds to build this room as part of their contribution to the project. With the technical help of the

Indian ION Exchange company, the RO plant was installed by WASMO and SMDF. The operation and maintenance of the RO plant is being looked after villagers on a rotational basis.

Post implementation support involved training and capacity building of village youth to operate the facility. The training was provided on operation and maintenance, servicing of the plant as well necessary skills in book-keeping, maintaining record and finance. The Gram panchayat appoints a villager to operate the unit which operates for two hours a day. Men and women from villages come with their 20 litre canisters to get RO treated water for a very low charge. Several recharge pits have been created so that rainwater as well as waste water from the RO plant can recharge the borewells/groundwater.
(Based on interaction with villagers by Sarita Thakore and Sudeshna Bhojia on 4th and 10th January, 2014)

Role and Impact of Education
The educational interventions by the partner NGOs succeeded in mobilizing the entire village by creating awareness and generating demand for a solution to the drinking water problem. The learning engendered by the consultative process, built transparency and trust with the community, created a sense of community ownership and accountability which resulted in an efficient delivery mechanism. Processes for social mobilization help win the trust of the people and obtain their willing involvement and commitment in the initiative. By offering them an economic share in the project through allowing them to contribute part of the cost, the NGOs created a community stake in the RO project which was critical to its successful completion, maintenance and use by the community.

The educational process empowered the villagers to make informed choices, assume responsibility, manage and resolve water conflicts in a united way. With a capacity of 500 litres per hour, the water purified by RO plants is sufficient for an entire village where each household gets approximately 20 litres of water per day for drinking. The availability of safe drinking water has brought about a significant improvement, especially for girls, who now have more time to continue their education instead of collecting and storing water. Improved awareness around health issues has also led to health outcomes such as reduction in waterborne diseases; better sanitation facilities; improved overall health status and better living standards for the local community.

Case Study 10
JalDoot: Water Purification on Wheels

Rationale: This case is a good example of how innovative technology can be highly successful when the educational and social engineering component is integral to its design. This scalable model is particularly relevant to SD goals in the area of poverty, health and women's empowerment as the outcomes involve better health and livelihoods to remote tribal villages.

JalDoot offers an integrated approach that combines technology that takes pure and safe drinking water on wheels to the doorstep of people living in remote areas.

Using innovative technology and social engineering, a unique entrepreneur model has been developed that empowers women and deliver safe drinking water to the underprivileged. The model also promotes local innovation and generates sustainable employment. With little investment and training Jaldoot is scalable across the country.

JalDoot is a unique three wheeler rickshaw fitted with an Ultra Filtration Membrane-based Multi Stage Water Filtration Unit, which removes microbiological and virus contaminations. This membrane has been developed by the National Chemical Laboratory, Pune.

Rickshaw fitted with Ultra Filtration Membrane based Multi Stage Water Filtration Unit.

What is unique about this project is that the services are operated by women. They drive to the villages and deliver drinking water at the doorstep of the residents at a very low cost of Rs 0.50 per litre. The powerful filtration technique can purify any grade of surface water such as lake, river, dam, open well etc. This frees the family members – almost always the female members - from walking miles to get water every day, and to use their time in earning some additional income for the household.

The women earn a decent amount of Rs 5000 or so per month. They also deliver drinking water free of charge to nearby schools while selling it to hospitals and commercial establishments.

Scitech Park, Pune started implementing the programme "*Sci Tech Jaldoot* " in two villages named Dolhara and Sakhadi in Mokhada Taluka of Palghar District, Maharashtra. This project was supported by ECGC Ltd. Mumbai as a CSR activity. Both the villages are remote tribal villages with approximately 300-350 households and a total population of 1200-1400.These areas receive high rainfall but due to the terrain and soil condition water retention is very poor due to which these villages face acute water scarcity during the summer months when they are mostly dependent on tankers that transport water to the villages. Scitech Park through its Sci tech Jaldoot vehicles delivers clean and safe water for drinking and cooking to the villagers initially to Dolahara and Sakhadi with plans to extend their reach to more remote villages with the same problem. The Scitech Team identified and trained local people to operate and maintain the Scitech Jaldoot vehicles. Social mobilization was taken up very aggressively in order to make people aware of the benefits of Jaldoot water and promote the programme.

The project was piloted in Pune and now extends to Aurangabad and Jalana districts of Maharashtra. It is also being trialed in Odisha, Tripura and Karnataka.

Role and Impact of Education
The roll out of the Jaldoot project creatively addresses gender equality and poverty by educating women to take on work that has traditionally been dominated by men. Taking the Jaldoot to remote areas not only provides a source of livelihood for women but also reduces the burden on women in remote villages who typically spend time and energy on collecting scarce drinking water for household use. Here education involved training and social engineering which has been built into the design of this innovative technology. The Jaldoot through this education and training transitioned into a community activity where its members were benefitted not only as end users of safe drinking water but as facilitators of the technology.

Case Study 11

Consumer Education on Enhancing Energy Efficiency

Rationale: This case study is an example of the powerful role education can play in the energy sector where efficiency in energy use is dependent on informed and judicious consumption decisions by the public. Without education and awareness, consumers cannot become energy-wise.

Description
Sustainable energy is the prime driver and key enabler of sustainable development. The sector holds high significance in terms of development challenges and environmental impacts such as climate change.

However, long-term sustainable energy security for all remains a concern for developed and for developing countries even though the challenges may vary with regard to geography, economic capacities and requirements and other relevant parameters. Thus, energy security offers mainly two contrasting challenges: decarbonization for developed countries and more universal and equitable access to clean energy, including electricity, cooking and transportation fuels for developing countries.

Enhancing energy services along with improving efficiency of energy use will not only keep our energy consumption under control but also reduce the social and environmental impacts associated with energy production and use; and keep costs under control. This requires better choices by energy consumers, changed role of workers in the energy industry, as well as better planning by energy policy makers and implementers. In short meeting the mammoth goal of achieving rapid development while maintaining energy security and controlling impact on global warming needs changes in paradigm implicit to our institutions, reflected in planning as well as day–to–day operation of systems and consumer habits.

Awareness and education at all levels is imperative to achieve this mammoth task of doing a course correction and adapting a to new paradigm. Educational efforts need to reach out to all major actors in the energy sector, that is, consumers, the utilities and other implementation bodies, and policy makers.

Consumers need to be educated on the impact of their actions and provided information which can help them to change their actions. Hardly any consumer is aware of the wide difference in the energy consumption of similar looking appliances that are being sold in the market. Figure 1 shows the large potential saving by choosing a specific model of refrigerator. Less dramatic, but similar story exists for almost all appliances and industrial processes. Education through such means can improve consumer choice and reduce energy consumption in addition to increasing sales of efficient appliances, creating an incentive to produce more efficient appliances.

Water heaters voluntarily removed in Maharashtra village under Akshaya Prakash Scheme. Photo credit: Mr Girish Sant

The Akshaya Prakash Yojana is a Voluntary Load Reduction Scheme in villages and Small Cities run by the Maharashtra State Electricity Distribution Company Ltd. (MSEDCL) under which the MSEDCL offered to substantially reduce the load shedding hours on the conditions that

(a) the citizens/users do not run any power intensive appliances, such as flour mills, water pumps during the evening peak hours and

(b) the community comes together to identify and stop the power theft (hooks — that powered the water heaters and electric hot-plates). As a result, the agricultural pumps got reliable supply at good voltage, overall electricity consumption reduced and MSEDCL could reduce or even remove the load shedding in these villages. The scheme rapidly expanded to nearly 5,000 villages and resulted in saving over 900 MW.

A decade ago, Prayas (a non-government organization) and Bureau of Energy Efficiency (of the Ministry of Power, Govt of India) organized a workshop to promote the efficient lamps i.e. CFLs. In recent years, several states have embarked upon schemes to replace the incandescent bulbs with CFLs. The Uttar Haryana Electricity Company has taken up a massive campaign to replace the regular incandescent bulbs with good quality CFLs. High initial cost and lack of availability of good quality CFLs was a barrier for consumers — both were linked to the small market share of CFLs. Utility intervention has made CFLs available easily and widely, at a low cost. The Haryana campaign includes a publicity campaign, a guarantee on the life of CFLs, a scheme to take back/replace worn out bulbs, and a provision to avail of 3 coupons while paying the electricity bills to buy CFL lamps.

Recently, the Ministry of Power, has proposed solution to the country's energy crisis by upgrading to LED light bulbs. The Indian government has suggested to replace all incandescent and fluorescent bulbs

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throughout capitals with LEDs. LED lights are estimated to save the nation 13% of electricity generating capacity or roughly 34.7 gigawatts of power. It has been estimated that the nationwide LED upgrade project could save the nation $8 billion of electricity annually and provide 50 million people with power.

Thus, education plays a key role especially during evolution of a paradigm. Policy formulation is not a one–time task and hence continued awareness and education is essential. Policies made today would bring about changes over a few years, which have to be assessed — did changes take place, what was effective, and if not, what prevented positive changes from occurring. Policy formulation is an iterative process and educational processes can help at all levels — policy formulation, implementation, evaluation and refocusing.

Case Study 12
Common Healthcare waste Appropriate Management Plant (CHAMP), Gulbarga

Rationale: This case study is highly relevant because of its unique approach to SDGs 3 and11, as well as the seriousness and critical nature of the problem which involves public education and awareness around the management of hazardous waste particularly infectious waste in rural and urban human settlements that lack adequate waste management infrastructure. Education in such a critical and technical management area is fraught with complexity simply because awareness about the dangers of such waste will not lead to positive change in the absence of systemic solutions in terms of support services along with appropriate technology. The CEE-CHAMP facility provides training/demonstration/education and awareness in the management of bio-medical hazardous waste to 437 facilities in the city of Gulbarga as well as in the neighbouring taluks of Sedam and Jewargi of Karnataka.

Description
Indian cities and rural areas generate approximately 600,000 MT of medical waste every day. Hazardous and infectious wastes form a major category of this waste posing a massive challenge in terms of their management and disposal.

Management and disposal of all this waste requires a concerted effort where awareness and education complement any proposed technological solution.

CEE set up a Common Biomedical Waste Treatment Facility in Gulbarga city as part of "Healthcare Establishment Waste Management and Education Programme (HEWMEP)". The CHAMP facility has been operational since May 2005. The CHAMP Gulbarga facility has been collecting, transporting, treating and scientifically disposing the collected waste of Health Care Establishments (HCEs) in Gulbarga City, since ten years, in accordance with the Bio-Medical Waste (Management and Handling) Rules 1998. It

covers 437 health care establishments of Gulbarga city adding up to about 3161 beds. In July 2013, CHAMP extended its service coverage area to two nearby taluks – Sedam and Jewargi – in the same district to cover 40 government Health Care Establishments (HCEs). CEE conducted several orientation programmes for medical and paramedical personnel of Gulbarga city and at taluk levels during this year.

Apart from providing services to the healthcare establishments of Gulbarga city, CEE CHAMP also serves as a demonstration model for students and other visitors, providing knowledge on biomedical waste management and the operation of a common biomedical waste treatment facility. Around 163 students of various colleges from Gulbarga city including MR Medical College, KBN Medical College, HKE'S N Dental College, HKE'S N Homeopathy Medical College and Environmental Science and Zoology Departments of Gulbarga University, visited the state of the art facility of CEE CHAMP.

CEE CHAMP has also signed an agreement with a local organisation in Bidar district, by which the agency would collect waste and transport it to CHAMP facility for scientific treatment and disposal. The training of the staff of the organisation and the local HCEs will be accomplished by trainers from CEE CHAMP to facilitate maximum segregation at site and the effective management of waste.

Role and Impact of Education
In this example, the creation of an educational resource and its demonstrated use and efficacy has been treated as an educational opportunity and a template to create awareness and higher standards of waste management among all sectors of the community. The program provides education through awareness, demonstration and training of target groups that include medical students and staff at relevant organizations which has resulted in a new and informed approach to waste management in the city of Gulbarga and its surrounding areas.

Case Study 13
Rural Knowledge Centre: Creating Institutions and Learning Platforms

Rationale: This case study is significant not only because it involves institutional innovation but also in terms of the complexity of the objectives and its linkages with multiple SD goals 1, 8, 11 and 16. Additionally this case study pertains to a disaster prone area in the context of rehabilitation of a community of approximately 26000 people who survived the earthquake of 2001. The case study thus involves the additional dimension of DRR or Disaster Risk Reduction among its developmental goals.

Description
CEE was approached by the community from Halvad Block of Surendranagar district of Gujarat to assist with rehabilitation following the devastating earthquake of 2001. The area is bounded by the Little Rann of Kutch (LRK) in the north and is part of the arid and semi-arid climatic region of Gujarat. The LRK was

notified as a Wild Ass Sanctuary in the year 1973 in view of its unique ecological status. Along with being last abode of the Asiatic Wild Ass, it supports a variety of flora and fauna, some of which are unique in nature. It is also a biosphere reserve and a proposed UNESCO natural heritage site.

CEE set up the Rural Knowledge Centre (RKC) to initiate long term sustainable development rehabilitation work, through empowering communities, facilitating partnerships and creating local decision-making structures directed towards building community assets. The long-term objectives evolved from the explorations, which yielded the strategic interventions needed to achieve the objectives. Some of these flowed from the educational processes which formed the core of these interventions; others emerged from the broader learnings about conditions in the area.

The Rural Knowledge Centre approach is rooted in the belief that to achieve goal of sustainable rural development, people should be empowered to make informed decision. Here empowerment includes providing holistic support including knowledge, skills, motivation, institutional support and handholding. Thus RKC works on several fronts such as promoting water conservation, combating desertification and land degradation, sustainable agriculture, DRR, capacity building for green livelihood, and creating awareness regarding area's unique biodiversity. This holistic approach is what makes RKC a unique concept, with enormous potential for large scale replication.

RKC's primary function is to share knowledge and information towards empowerment of community for sustainable development by being a networking and information hub. It aims to provide support for developing symbiotic relationships between protected areas and indigenous people, serve as a node for networking and information sharing for the various stakeholders of the Halvad block especially those who are poor and marginalized as well as to support local Institutions, governance structures and Common Interest Groups of the area.

CEE's launched the Rural Knowledge Centre (RKC) intervention in Halvad in 2006. The RKC has a 2.37 acre campus at Halvad with basic amenities and training facilities. It has a pool of print, digital resources and on-site demonstrations. There are more than 1700 plants of about 150+ species, all grown organically. There is also a demonstration plot where organic farming of seasonal crops is demonstrated. Demonstrations of various types of composting, bio-pesticide, drip irrigation, roof harvesting and so on. 80% of electricity comes from solar.

RKC serves 23 villages of Halvad Block, with a total population of about 45,000 engaged mainly in farming, cattle rearing and salt farming. The region represents the essential heartland of Gujarat's semi-arid region – an area that has witnessed dramatic changes in its social and economic landscape as well in the way its natural resources are managed. Some of the major ongoing activities of RKC are
Community programmes focused on

- Building villagers' organizational and technical capacity and empowering them for participatory decision-making in critical matters impinging on their quality of life, livelihoods and the environmental resources on which these are dependent.
- Formation and strengthening of various common interests group such as farmers' field schools and women's groups.
- Skill building and demonstrations for various target groups in the region like government, private and public sector organizations, educational institutions, grass root level workers, NGOs, and communities.
- Providing democratic space to the vulnerable and marginalized communities to share their concerns and seek for solutions. Through RKC communities have access to specialized knowledge and find assistance to make contact with government agencies, voluntary bodies and individuals in the development field. It is a node for networking for sustainable rural development.
- Working specifically with women towards enhancing their understanding of natural resource management, promote their role in household, economic and community level decision making for sustainable development and achieve MDG goals.

School Programmes
- Introducing innovative methods of school education to make learning a joyful experience for children.
- To make education relevant to the local realities and needs.
- Making the school a vibrant centre of village life.
- Enlisting the participation of teachers, and orienting and training them.
- To bring locale-specificity to formal school education.
- Introducing teaching and learning aids to add value to textbook and classroom transaction.

Natural Resource Management Programmes
- Demonstration on biodiversity conservation, water harvesting, renewable energies on campus and in villages through farmers' field schools and introducing and promoting time tested sustainable NRM practices such as composting, use of bio-pesticides, drip irrigation, rainwater harvesting in the area.
- Create awareness regarding importance of the globally important and highly threatened ecosystem of the area and its biodiversity among children and local community in general.
- Focus work with Salt pan workers – for poverty reduction, nutrition, energy conservation in salt farming operations so as reduce cost and GHG emissions both.
- Revive water bodies in the area and promote plantation of local specific appropriate species on private and common lands.

Achievements

- Very active and progressive 15 farmers' school with 225 members.
- Sustainable farming on 1500 acres of land.
- Soil moisture conservation practices being followed such as composting, green manure, drip irrigation.
- Revival of 23 village water bodies for domestic and drinking water purposes. These water bodies are also serving as precious drinking water source for wild life such as the Wild Ass, Bluebell, and Chinkara. Migratory and resident birds like pelican, painted stork, spoon bill, pond heron, crane and many species of duck have been seen around them.
- Roof rain water harvesting-200 units installed.
- Kitchen gardens for additional income and nutrition security, 3000 kitchen Garden Kits have been distributed.
- Extremely active and empowered Federation of 27 SHGs and about 400 members known as Zalawad Mahila Mandal, works towards promotion of green livelihood and nutrition security.
- Novel concept such as agriculture tool bank – support small and marginal farmers in enhancing productivity of their land.
- Developing Green campuses on 40 schools of the area and running eco-clubs in each of them.
- Plantation of 32000 saplings of local species with about 80% survival rate in last 3 years.

Outcomes and Learnings

As envisioned RKC has become a focal point for communities knowledge needs. RKC has turned out to be a 'friend, philosopher and guide'. It has created a desire for knowledge in the area. No longer is it solely RKC's role to organize rallies or awareness programmes to reach people. Now the members of the local community demand more from the RKC and come to find out about various aspects related to farming, renewable energy, water harvesting or government programmes testifying to the strong sense of connectedness between the community and the RKC.

One of the important learnings of the RKC initiative was the importance of building a rapport and establishing credibility among the people of the area through transparency in all the procedures adopted and followed. The RKC's insistence on enlisting the active partnership of the community and on ensuring that they take ultimate ownership of each initiative went a long way in achieving these ends. The special efforts made to equip them with functional skills instilled in them a confidence which became a major asset in the programme.

Learnings within the CEE team were also very enriching. The interdisciplinary nature of the team and continual interactions between its members led to major cross-learnings.

The Rural Knowledge Centre is a powerful approach to creating knowledge based societies that can take informed decision to achieve goals of sustainable rural development. But RKC's reach is not limited to only rural communities. It has a very long term and large scale impact as it also provides a very useful tool to orient, inform and sensitize urban agencies who in one way or other impact rural development. For

example RKC serves as a training centre of new development professionals or even students and educators from the international community who want to learn about the concerns of rural India and the various approaches to rural development. RKC provides a great 'outdoor education' opportunity for educators and students. A number of schools and colleges from the region visit the RKC on educational tours.

The Rural Knowledge Centre has been recognized an excellent model for knowledge dissemination system even by Ministry of Environment and Forests, GoI as part of its 4th national report on Desertification submitted to UNCCD (United Nations Convention on Combating Desertification). The proposed intervention is also in line with the 10-year strategic plan and framework of UNCCD 2008-2018 and its objectives and activities will help to achieve the strategic and operational objective of the UNCCD's strategic plan. (Source: Ramesh Savalia and Janki Shah, CEE, Ahmedabad)

Role and Impact of Education
This case study involved the development of a dedicated education and capacity building institution which was uniquely and specifically dedicated to the requirements of this particular community. Designed as a one stop shop, the RKC serves as a conduit of information, technical training, capacity building, non-formal education, mentoring, guidance and support services for the community. Here education is conceptual and perceptual as well as practical and demand driven in nature. Demonstration and hand holding are seen as an integral part of capacity building and special efforts are made to encourage innovation and entrepreneurship among the target community. As a result of the training provided by RKCs, new hubs have been formed within the community that acts as multipliers in providing capacity building and support services to more people.

Case Study 14
Participatory Budgeting and Representation in Governance

Rationale: This case study provides education and capacity building in a critical area which determines the effectiveness of self governance namely resource allocation and monitoring through budgeting. This case study addresses SD goals 11 and 16 and is of high relevance to self determination, democracy and participative decision making which are ESD priorities.

Description
Participatory Budgeting programmes are innovative governance processes. They provide citizens with the opportunity to give their inputs in resource allocation and to monitor public spending. Social and political exclusion can be better addressed as low income and traditionally excluded citizens or groups get the opportunity to participate in decision-making.

The basic pattern of participatory budget processes is that community groups identify spending priorities and submit these to their local civic offices / representatives who transform community priorities into concrete project proposals; facilitators provide technical assistance in project proposal development; once local lists of projects are ready, citizens prioritize these and vote on which projects to fund; the public authority then implements the projects.

Participatory Budgeting has been tried in a few Indian cities, especially in States of Karnataka and Kerala. In Bangalore, Janaagraha facilitated a participatory budget process in 2002-2003 across 10 wards. The experiences gained from this exercise, as well as the materials produced – a book on participatory planning, a video on surveying neighbourhoods, survey forms to record citizens requests for works, etc – are now helping participatory planning and budgeting processes in cities such as Hubli-Dharwad and Pune.

Participatory Budgeting and Representation in Governance: A Case of Pune City, India
The Pune Municipal Corporation (PMC) initiated participatory budgeting in 2005. Meetings of citizens and civic officials were organized through local agencies such as the National Society for Clean Cities and Nagrik Chetna Manch. A few hundred citizens participated and submitted requests for projects. The experience helped lay a base for citizen engagement in ward level budget processes of the municipality. In 2006-07, a more detailed and formalized process was followed, with facilitation support provided by Janwani and Centre for Environment Education (CEE).

Citizen engagement in the slums was done through the Urban Community Development Dept (UCD) and the Community Development Society (CDS) structure promoted under the Urban Self Employment and Wage Employment schemes. Community volunteers were trained to conduct the budgeting meetings with members of the self-help groups and neighbourhood groups.

For citizen engagement through the ward offices, CEE and Janwani worked out a more elaborate process to outreach. Fourteen students from the Economics Department of University of Pune were selected and trained as facilitators. CEE's facilitation role was part of its work as the Secretariat of the United Nations University Institute of Advanced Studies Regional Centre of Expertise on Sustainable Urban Development.

The main tasks for citizens were to survey and identify works for their neighbourhoods, submit these in the specified format and to attend a prioritization meeting. At the prioritization meetings, citizens were grouped by electoral ward and they sorted through the lists of requests to arrive at the final lists within the allocated ward budget.

Community Meeting at Bhawani Peth
The meeting was held under a large peepal tree in a courtyard in a slum neighbourhood. Over a hundred women attended. The issues they discussed included:

a) inconvenient timing of waste collection as it is water filling time; the consensus was that this was a management issue, not of infrastructure
b) repair of drains and manholes
c) lighting needed in the common meeting space

PMC 's main tasks were their own preparedness, publicity about the process, fine-tuning the works in conjunction with the citizens who submitted the ideas, costing the suggested works, holding prioritization meetings and preparing the final lists.

The sequence of activities was as follows:

1. Preparatory Meeting at PMC- Head of the PMC Citizen Facilitation Centre, Zonal Commissioners, Ward Officers and Junior Engineers
2. Publicity through the press, e-groups, phone calls to citizens groups and housing society representatives
3. Citizens' Meetings at 4 Zonal Offices to explain process and timelines
4. Classification and Costing of Works at Ward Offices and preparation of electoral ward-wise lists
5. Prioritization Meetings
6. Finalized lists of Citizens Works

Awareness Material: In 2010, Janwani and CEE developed a story-format booklet in Marathi to help enhance understanding about participatory budgeting among the PMC officials as well as the general public. The booklet titled ' Jan Je Vancheel' (Marath for 'What the people want') is a story of a retired government officer, Nivant Anna, who is initially indifferent but later gets involved in addressing various civic issues. The booklet aims to motivate citizens to be involved in civic issues and provides information about the Right to Information Act and participatory budget.

CEE initiated work on a 'menu card' of items that could be requested/suggested through PB. The PB menu card booklet contains photographs of different designs of these items, such as benches , tree-guards, footpaths, bus stops, street vending platforms, waste sorting sheds, etc. with typical costs. This menu card was provided to volunteers and introduced in orientation events with a view to assist citizens in deciding about what they would like in their neighbourhood.

Changing Governance Patterns: Participatory budgeting (PB) processes can help governance become more transparent and accountable. In Pune, Municipal Commissioner Nitin Kareer stressed that the PB process is departure from the 'you ask, we give' mentality. Describing this as a method of making democracy more effective, the Municipal Commissioner said that the next step would be for citizens to

locally decide how their area is developed, including inputs into the development plan.

Number of projects suggested through PB included in annual municipal budget (2007-08 to 2013-14)
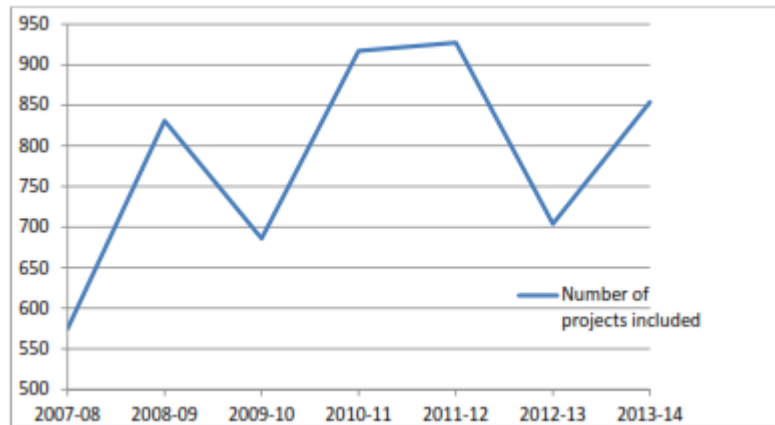
https://www.academia.edu/5217974/Participatory_Budgeting_in_Pune_A_critical_review

Pune Mayor Rajalaxmi Bhosale expressed similar sentiments when after the Pune participatory budgeting exercise she said "This will help consolidate the relationship between the municipality and the citizens. The corporators will be under constant scrutiny from the citizens."

Having attended a prioritization meeting, a citizen in Pune said, "The projects have been listed along with the name of the recommender. It is the responsibility of the concerned citizen to keep an eye on the progress of the work. The corporation also has the responsibility of providing details about the development of the work and clarifying doubts of the citizens."

In Pune, as the city prepares for another round of participatory budgeting, several citizens, and the new municipal commissioner too, are asking for an assessment of last years' process and how many projects have been or are being implemented. There is recognition that some project ideas are mundane (fix a pavement), and that the fact that citizens have to say it is a telling comment on how these very aspects are ignored in conventional budgeting processes. There are the not-so-usual ideas as well – sorting sheds, composting units, benches, hawking zone platforms, etc. There is also recognition that there is a long way to go to streamline and encourage this fairly new process.

Outcomes: The process and activities suggest that objectives of PB are already being achieved in Pune and that the process is still being continued and PMC taking onus as well.

Some of the major learnings are that the process is quite simple and a substantial quantum of funds including for suggestions from the poor is allocated has made the process more acceptable across various strata of people.

Some gaps identified are there is not enough transparency when it comes to allocated budget and the real expenditure; inclusiveness and institutional arrangements.

PB outlay and expenditure
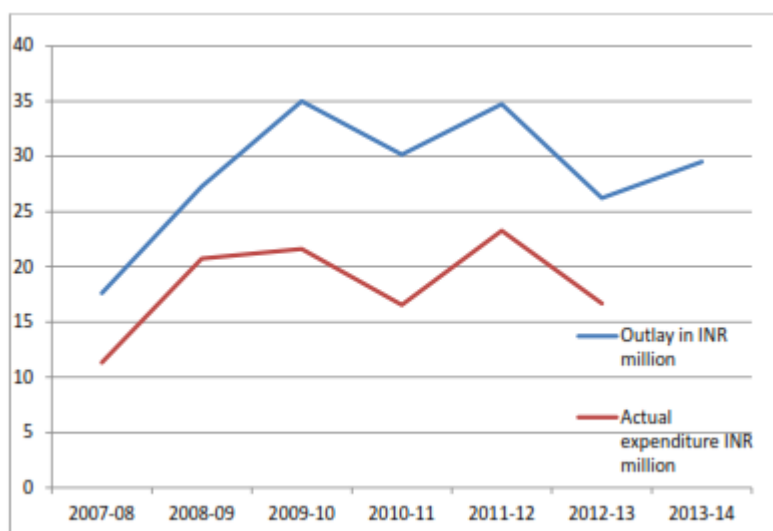
Utilization of funds allocated and expenditure

Budget for the Year	Outlay in INR million	Actual expenditure INR million	% usage of funds
2007-08	17.62	11.32	64%
2008-09	27.27	20.75	76%
2009-10	35	21.62	62%
2010-11	30.16	16.55	55%
2011-12	34.73	23.28	67%
2012-13	26.24	16.67	64%
2013-14	29.52	-	

A recent review of PB processes highlights issue of transparency in terms of suggestion made for inclusion of projects and budget, why they are not considered for inclusion is not made clear or communicated, the processes helping local ward Corporators to prioritize their projects and siphon public funds. Further

research may be needed to assess extent of participation, benefits, and institutionalization of these processes.

Role and Impact of Education

The education and training provided in this case study pertains to a significant and felt requirement involving technical capabilities in budgeting and accounting which are usually in short supply. Budgeting being a key technical requirement for planning and allocation as well as monitoring of resource allocation and use, education and capacity building served as part of the preparation for citizen participation in self-government resulting in marked improvement in citizen involvement and engagement in resource allocation and monitoring. Increased requests for transparency can be considered a direct outcome of the impact of the educational program and new awareness about why and where this transparency is needed.

Discussion and Conclusion

Across the case studies it is clear that Education can be loosely termed as a process of change sparked by the recognition of the need for individual action and effort. Educational interventions may involve direct teaching and leadership, guidance, demonstration but are immediately effective in largely informal project situations which have an action template. In many of the instances, education is seen as a process of awakening accountability through understanding the relationship between cause and effect. Often, the process of awakening accountability is hindered through social and cultural inhibition in what has been termed largely collectivistic societies (Hofstede 1991). Another area where education and communication initiatives undermine themselves is when new needs that arise due to awakening accountability and engagement are not envisaged or provided for. This often makes awakened individuals highly vulnerable to threat or punishment arising from collective social judgment. Not only is this an individual tragedy but often this serves a highly deterrent function by de-educating or de-activating others who may have been otherwise inspired by the example. Education must therefore focus on not only nurturing awakening processes but on anticipating and providing ongoing support to individuals or groups, who are already vulnerable, during their transformational phase. This calls for continued presence or handholding by educators and trainers in order to allow for consolidation of learning processes and confidence levels that complete the capacity building process. Thus we see from nearly all the case studies, that strong and ongoing institutional support is a cornerstone of non-formal and informal education which is possible only when these are dedicated and tailored to the requirements of the community. Learning thus takes place not only within the community but also within the educational institutions and the educators as they fine tune their approaches and curriculum based directly upon their experience with the community.

The importance of engineering and demonstration cannot be underestimated in education. Most of the cases reviewed here have a practical component that aims to successfully solve an identified problem. Problem solving thus constitutes a powerful rationale for engagement and learning in nearly all the cases reviewed here. ESD thus seeks to transform and resolve issues through democratic engagement where skills and resources are pooled and people learn from each other. Often the creation of a facility that directly addresses the problem at hand in an effective way is seen to constitute a live educational resource around which learning can be successfully structured.

These case studies help identify effective learning methodologies that can drive change towards sustainability and that are sustainable in themselves. They can be successfully used in formal, non-formal and informal settings and across a range of sectors. The issue that is hard to resolve relates more to the time and cost involved in documenting and measuring the impact of these educational initiatives. Measurement is expensive and time consuming and there needs to be a time lag between the unfolding of the initiative into full bloom and the compilation and analysis of data on measurable indicators. Yet the impact is visible and evident from the processes and new pathways of interaction that have been established in every one of these cases.

The paper has argued that education be seen as a driver of change towards sustainable development alongside policy, technology, introduction of new systems, financial mechanisms and better implementation and monitoring. In some cases, education is an integral part of the implementation of projects and programmes. In others, it enhances the effectiveness of other instruments and makes them more sustainable or more cost effective. It is ironic that while the corporate world sees value in communications in the form of advertisements, brand building, corporate training and networking as essential and accountable components of their business strategies, much of the development sector still sees education and communication as a peripheral and marginal component of the main strategy.

It is evident from some of the cases in this paper, such as those concerning health issues, that education is recognized as a key component. However in many others instances, education is yet to be explicitly recognized as an integral component of project design. Part of the reason for this is the low priority and resourcing allocated to developing and collecting adequate evidence that could convincingly testify to the effectiveness and impact of communication, education and training towards achieving particular sustainable development goals. In the business sector, the increase or decrease in sales of goods and services is an indisputable method of measurement. For education to be recognized and accorded the priority it deserves, convincing methods of recording its complex yet powerful impact, both qualitatively and quantitatively, are urgently needed.

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