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Environmental health: Lead exposure and its impacts on children

Lead can damage brain and nervous system and lead exposure can cause learning disabilities, intellectual retardation, hearing loss, speech, language, difficulty in concentrating and staying focused and propensity to violence and other serious health effects in children

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Lead pollution is one of the most important problems of environmental and occupational origin and is widely regarded as a risk to health. Lead accumulates in the blood, bones and soft tissues and affects the kidneys, liver, nervous system and blood forming organs. The residence times of lead in the body are estimated at 35 days in blood, 40 days in soft tissues, 3-4 years in trabecular bone and 16-20 years in cortical bone.

Several studies indicated that children are especially sensitive to lead because of their greater exposure and as they absorb, retain and show greater damage for a given body burden. Special concern of lead poisoning has been the accumulation of experimental and epidemiological evidence suggesting that lead is a neurotoxin and it impairs brain development in children, even at levels that were considered safe. There is enough evidence to suggest that in many cases, behavioral and developmental problems in children may be linked to exposure to chemicals like lead in the environment. Lead can damage the brain and nervous system and even a low level of lead exposure can cause learning disabilities, intellectual retardation, hearing loss, speech, language, difficulty in concentrating and staying focused and propensity to violence and other serious health effects in children.

Researchers have found that even children with safe blood lead levels (BPbL = 10 ugm/dL or less) had significant brain damage. A recent study has indicated that specially, at five years of age, the children experienced a 5.5 point drop in IQ for every jump of 10 ug/dL in BPbL. The 73% of the children having even very low BPbLs. showed IQ drop. It was noted that as BPbLs increased from one to 10ug/dL, a child's IQ fell by an average of 7.4 points, a far more decline than was seen with higher BPbLs .In developing countries like Pakistan, children with dietary deficiencies are even more susceptible to lead poisoning. According to 1998 population census, 43.19% (55,042,917 children) of Pakistan population comprises children below the age of 15 years. They face high risk due to lead exposure, most likely due to the use of leaded petrol and increase in traffic in the country.

In Pakistan, like many developing countries, the increasing prosperity and population growths are resulting in accelerated growth in vehicle population and vehicle kilometers traveled. The road length, which was about 94,000 kilometers in 1980-81, had increased to 232,000 in 1997-98, indicating an overall increase of 147%. The number of vehicles have jumped from 0.8 million to about 4.0 million within 20 years showing an overall increase of

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In Retrospect

The purpose of the *SDPI Research & News Bulletin* is to communicate to the development community, private sector, government agencies and concerned citizens, SDPI's research and other activities in the area of sustainable development. It also provides information on major national and international events and issues relating to the environment and development.

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more than 400 %. The average compound growth of vehicles is about 11%. The number of registered motor vehicles mostly employing leaded petrol has increased from 714,940 in 1990 to 1,167,635 in 1998. Vehicle population growth rate being the highest (27.7%) is in Islamabad.

The transport sector is the second largest energy sector after the industry, stimulated by increasing use of road transport at the expense of railway system. Projected fuel consumption for transport sector has been estimated at 40,000 tons of oil equivalent (TOE) in 2050. The consumption of petrol has increased from 828,670 metric tons (1990) to 1,189,042 (1998). According to 1998-99 estimates, 98.47% of total petrol consumption is in the transport sector. Lead compounds are added in petrol to increase the efficiency of car engines and to prolong engine life by reducing knock. In Pakistan, prior to July 2001, the lead content in petrol (Premier Plus) was 0.35 gram/liter, very high compared to maximum lead contents of 0.00 – 0.15 gram per liter in USA and many European countries. Regular, Super Premier and HOBC were reported to have lead content of 0.42, 0.63 and 0.84 gm/liter, respectively

The high content of lead in petrol is a serious issue, as the end product of it is the release of lead into the environment. A few studies have been reported on lead concentrations in ambient air and dust-fall on some sites in Peshawar, Rawalpindi, Islamabad, Lahore and Karachi. The reported lead levels in air (micrograms/cubic centimeter; ug/$m^{3)}$ were found in Karachi (1980 – 81) 0.13 – 0.24; Peshawar (1994 – 95) 0.21 – 0.79 and Lahore (1993 – 94) 0.15 – 8.36. In 1998, a study with 24 hours monitoring on 14 locations in Rawalpindi and Islamabad was carried out to examine the concentration levels of trace constituents in suspended particulate matter (SPM) and to assess the ambient air quality in the twin city. At nine monitoring locations, lead content in total SPM was found to be in the range 0.25 – 0.98 ug/m3. In the remaining five monitoring locations, with excessive traffic or industrial activity, lead content in SPM was found to be in the range 1.03 – 4.80ug/$m^{3.}$

These results indicate a very alarming increase and high levels of lead in the ambient air at the sites and time of monitoring. The World Health Organisation/ United States Environmental Protection Agency (WHO/USAEPA) guidelines/ standards for lead concentration in ambient air are 0.5 – 1.0 ug/cm^3 (annual averages) and 1.5 ug/cm^3 (quarterly averages), respectively. However, an accurate assessment of ambient air quality of a site/area is difficult without reliable information and comprehensive data on environmental parameters. For a true comparison with WHO or other guidelines values a continuous monitoring and measurements of air pollutants is essential requirement and needs to be addressed at the earliest by Pakistan's Environmental Protection Agency (Pak EPA).

There are not many studies carried out in the country with specific research and work done on health or other impacts related to air pollutants, including lead. A study carried out in 1990 on 232 students (boys and girls of ages between 3 – 18 years) of two schools in Karachi, indicated mean BPbLs for school children as 38.2 +/- 7 ug/dl, (range 10.4 – 52.2 ug/dl) which was considerably higher than the acceptable BPbLs of 10 ug/dl. Ninety-two percent of the children population studied had BPbLs higher than 25ug/dl, which can cause irreversible mental impairment. Nearly half of the children had BPbLs above 40 ug/dl and none had level below 20ug/dl. Five children had the alarming BPbLs of 70ug/dl. No significant differences in BPbLs were observed, between the two groups or between the males and females in either of the two groups, the length of distance traveled by children and the traffic density of children's areas of residence.

In another study carried out in 1994, five hundred school students (374 boys & 126 girls of ages 11 – 16 years) were selected from three schools in Peshawar and their BPbLs were examined. Mean BPbLs of male & female students were found to be 21.2 +/- 8.15 and 16.8 +/- 4.81 ug/dl, respectively., indicating BPbLs among males to be significantly higher than females. 13% of male students showed BPbLs in

the range 31 – 50 ug/dl with no female student's BPbL within this range. In contrast to Karachi, where 98% of the studied children population had BPbLs over 20 ug/dl, in Peshawar 32.6% had BPbLs over this limit, which may be due to much higher traffic activity in Karachi compared to Peshawar.

Studies carried out on BPbLs of 400 school going children in Islamabad and Chakshahzad (about 10 kilometers from Islamabad) also indicated children's BPbLs lower than BPbLs observed for the studied children population in Karachi. BPbLs of 230 school students (girls 129 and boys 101 with ages between 5 – 14) from Islamabad were found to be in the range 13 – 32 ug/dl with overall mean BPbL of 22.8 +/- 3.3 ug/dl, in the studied children population. However, unlike Peshawar, no significant BPbLs differences were observed between males and females Children. The BPbLs of 170 school students (88 boys and 82 girls of ages 13 – 19 years) from 20 villages around Chakshazad were found to be in the range 0.2 – 8.6 with overall mean BPbL of 2.38 ug/dl. However, like Peshawar, in Chakshahzad also mean BPbL for males (3.22 ug/dl) was found to be higher than mean BPbL for females (1.49 ug/dl). Low levels in females may be due to their less exposure to the outdoor environment because of the cultural reasons. BPbLs of the studied population in Chakshazad are not only lower than Karachi but are also significantly lower than Peshawar and Islamabad. Chakshahzad is a rural site having comparatively much lower traffic activity, resulting in lower vehicle exhaust and relatively very low lead levels in and around the area. BPbLs higher than 10 ug/dl among the children of Karachi, Peshawar and Islamabad are alarming and children in these areas face high risk due to lead exposure, which may very likely cause many health problems.

Air pollution is one of those complex environmental problems where control through reduction at source is considered most desirable and the only way to prevent the health and other damaging impacts. Once emitted into the atmosphere, unlike other matrix/media, the recycling or re-use of the emitted products from air is almost impossible. To combat air pollution in the country, the government of Pakistan has formulated acts and policies. Pakistan Environmental Protection Act 1997 (PEPA-97) covers air, water, soil and noise pollution. It also includes hazardous waste disposal and motor vehicular pollution. The PEPA.97 under section 11, sub-section (1) strictly prohibits discharge or emission of any air pollutant in an amount, concentration or level of which is in excess of the National Environmental Quality Standards (NEQS). The PEPA-97 under section 15, subsections 1 to 3 describes the regulations of motor vehicles.

Pakistan Environmental Protection Council (PEPC) last year approved a National Environmental Protection Action Plan (NEAP) with "Clean Air" as one of the four priority areas of immediate concern. Components of the NEAP clean air program include control of vehicular pollution, industrial emission and indoor air pollution. As part of the vehicular pollution control program, 2,65,000 vehicles (23.7%) have so far been switched over to compressed natural gas (CNG) and over 300 CNG stations set up in the country. Efforts are also being made to promote use of CNG in auto rickshaws (three wheelers) through motivation and incentive schemes.

Under the Clean Fuel Action Plan (CFAP), a phase-wise lead reduction program to provide low and un-leaded petrol in the country was approved in 1999 by PEPC. The main features of the program were:

(a) October 2000 - reduction of lead content to 0.35 gm/L
(b) Introduction of un-leaded petrol in major cities and highways
(c) Reduce lead content to 0.25 gm/L
(d) Reduce lead content to 0.15 gm/L
(e) Introduce un-leaded petrol throughout the country
(f) 2005 – no more leaded petrol in the country.

It has been reported that Vitamin C, if taken in regular doses, have potential for reducing accumulated lead from human body, as indicated by some recent studies carried out in Malaysia and Pakistan. Children (7 – 12 years of age) under study at Karachi were given a 500 mg vitamin C tablet orally after dinner for 24 days. The mean lead concentration in hair, before giving Vitamin C was 12.7 ± 6.6 ug/gm which after treatment with Vitamin C was reduced to 3.9 ± 3.5 ug./gm. The lead concentration of urine samples of the same children were found to be about 45 times higher than the concentration after vitamin C treatment.

Pakistan achieved "No More Leaded Petrol" target much ahead of the target time. Since July 2001, three out of the total four refineries in the country i.e. Pak – Arab (PARCO), National (NRL) and Pakistan Refinery (PRL) started producing lead-free petrol and the fourth refinery, Attock Refinery (ARL) started production of lead-free petrol in June, 2002. This is expected to subside environmental lead pollution to some extent. However, there is a need to periodically check the quality of petrol supplied to the users for maintaining its

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The Agreement on Agriculture (AOA): Pakistan's Experience

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Agriculture plays an important role in Pakistan's economy, accounting for over 26 percent of GDP and almost half of the country's labour force. The Agriculture growth rate has been at an average of 3.5 percent per annum since 1991-92 with wild fluctuations –rising by 11.7% percent and falling by 5.3 percent. The downward fluctuation in agricultural growth leads to uncertainty in terms of production and adds to the ever-increasing food import bill.

According to FAO projections, food demand in Pakistan would rise substantially by the year 2010, as the share of imports in domestic consumption is likely to go up further. Total cropped area in Pakistan (total area cultivated plus area sown more than once) declined slightly over last decade, whereas cultivable waste land was increased in that period. These trends indicate an increased investment in sustainable agricultural research and development, without which our food imports cannot go down. To do the needful, we need to adapt pro-poor as well as pro-farmer agricultural policies. It is to be taken care of that the trade liberalization regime is largely affecting national policies and the policymaking process due to the increased influence of multilateral and international regimes and processes such as WTO, IMF, World Bank and OECD negotiating mechanisms in the name of trade liberlisation. Pakistan, being a developing country enjoys certain flexibilities and concessions for implementing WTO agreements including the Agreement on Agriculture (AoA). Although, it is widely reported that these concessions and flexibilities are inadequate and insufficient, yet we are not able to avail whatever is offered to us due to our commitments with IFIs such as ADB, and IMF.

The AoA is of particular importance to Pakistan in terms of economic and food security. In theory, the AoA speaks of increasing trade in agricultural products through progressive liberalisation. The agreement stipulates that members must undertake specific binding and reduction commitments in the areas of:

- Market access (increased market access through the reduction of the import duties or tariffs);
- Domestic support (reduced domestic support through reduction in trade distorting production subsidies);
- Export subsidies.

In the area of market access, Pakistan offered "ceiling bindings" on agricultural imports during Uruguay Round (UR). Hence Islamabad was not required to reduce the tariffs during the UR implementation period (till 2005). However, the structure of border protection has undergone significant change over time towards greater liberalisation, involving both the dismantling of various non-tariff barriers (NTBs) and the reduction of ordinary tariffs. The NTBs included outright import bans, special dispensation and licensing, quotas, negative lists and certain monopolies. Import surcharges were removed in 1992-93. Licensing fees and the *Iqra* surcharge were abolished during 1994-95. Import quotas have been progressively eliminated since 1987. A number of items on the negative and restrictive list have also been fallen considerably. A reduction in the maximum applied rate of ordinary tariffs followed these measures. The import regime seems to be fairly liberal in recent years with applied tariffs mostly much below the WTO-bound rates. This has led to an influx of subsidized imported foodstuff in Pakistan.

As for as the domestic support is concerned, Pakistan had "market price support programs" for 11 crops during 1986-88 (Base Period for AoA). The base period aggregate measurement of support (AMS) was zero from the AoA viewpoint for these 11 crops bar sugarcane, which itself was within the permissible level (*de minimis* level). Similarly the non-product specific AMS in the form of fertilizer subsidy, electrical subsidy, and credit subsidy were also within the *de minimis* level. Being a developing country, Pakistan was allowed to give special and differential treatment (SDT) subsidies that amounted to Rs. 2085 million in 1986-88 on fertilizer, credit and tubewell electricity. These subsidies were for the farmers with landholding of less than five hectares. However, Pakistan stopped availing the benefit of SDT provisions and eliminated these subsidies in 1997-98. Pakistan still can utilize domestic support provision under AoA.

Prior to the establishment of WTO, Pakistan occasionally provided direct export subsidies. Exports of rice and cotton were subsidized when the export trade was a monopoly of the public sector, but the subsidy was abolished when the private sector was permitted to trade in these products. Thus there was no export subsidy on agricultural products in the base period for AoA and accordingly Pakistan cannot resort to them in fu-

ture. However, it is entitled to provide subsidies to reduce the costs of marketing exports and internal transport as well as freight charges on exports shipment.

Apparently, it seems that AoA is not affecting the agricultural sector in Pakistan. However, one needs to analyse this situation in broader multilateral trading system, where the players and economies are highly unequal. While we are unable to give domestic support or subsidies to our farmers either due to the lack of resources or under the bindings of various loans that we are getting from various international financial institutes for "structural adjustment" and/or "structural reforms" programs, a number of developed countries have devised a "legal" way out to soften their reduction commitments under AoA. Many studies reveal that level of protectionism in agricultural trade has gone higher in the developed world despite the fact that their reduction commitments are (apparently) high.

According to the OECD, developed countries spent US $ 360 billion on agriculture in 1999 (about seven times more than what they had given to the poor countries in international development assistance). Likewise, U.S. subsidies to cotton growers totaled $3.9 billion in 2002, three times the U.S. foreign aid to Africa. This depressed world cotton prices, cut the income of the poor farmers in West Africa, Central and South Asia, and the poor countries around the world. Removal of U.S. subsidies on this one crop alone could increase revenues from cotton by about $250 million in West and Central Africa. Thus the Agreement on Agriculture is creating inequalities between countries that could give substantial support and protection to their agricultural sector (the developed countries) -and those, which could not provide such protection to their agriculture sector (under developed). This is a vicious circle where developed countries are protecting their farms with huge subsidies and grants and later on the produce is dumped in the developing countries. When it comes to import from developing world, the developed countries have hundred and one excuses such as sanitary and phyto-sanitary measures and environmental standards.

International Monetary Fund (IMF), the World Bank, and Asian Development Bank (ADB) by influencing the policy-making processes in the developing countries are widening these inequalities. Over decades, the IMF/World Bank loan conditions have forced developing countries to lower their trade barriers, cut subsidies for their domestic food producers, and eliminate government programs aimed to enhance rural agriculture. It was the loan conditionality of the ADB's Agricultural Structural Reform Loan that forced Pakistan to take "U" turn from its "Development Box" stance it took at the WTO Ministerial Conference at Doha just two months after the Conference. So far, the deeds of International Financial Institutions (IFIs) were considered independent from those of the WTO. However, on 13th May WTO Director General Supachai Panitchpakdi, IMF Managing Director Horst Köhler and World Bank President James Wolfensohn met during the WTO General Council meeting on coherence. The theme of the meeting was to bring coherence in the plans and strategies of world economic agencies. In other words what Bretton Woods institutes were doing from back channels would be openly done now in the name of coherence.

Agreement on Agriculture is creating inequalities between countries that could give substantial support and protection to their agricultural sector (the developed countries) and those, which could not provide such protection to their agriculture sector (under developed). This is a vicious circle where developed countries are protecting their farmers with huge subsidies and grants and later on the produce is dumped in the developing countries.

Pakistan in this situation needs to remain over cautious. So far our negotiators in WTO Geneva have done a wonderful job. However, at home front there is a room for further improvement. The civil servants are being sent abroad (mostly Switzerland and the United Statees) for WTO training courses. However, most of them are posted in other departments when they start to know about their subject. Why not to form a WTO cadre in our civil service structure so that the civil servants may concentrate on WTO issues with full concentration. There is also a sheer need to involve academia and private sector (including various chambers of commerce) in WTO capacity building efforts. Moreover, arranging seminars and workshops in five star hotels is not the only way of building capacity. Various developing agencies and various ministries should also sponsor empirical research on the challenges and opportunities that WTO presents. This is the time to act and not resort to rhetoric.

Corporate Agriculture Farming: Damaging interests of small farmers

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The policy package for Corporate Agriculture Farming (CAF) approved by the Musharraf cabinet has been a matter of great controversy within the government circles, civil society organizations and small farmers' groups. It claims that the policy would bring foreign investors, latest machinery and new methods of cultivation in the country. This would increase agricultural production and improve its quality.

The CAF sector would enjoy the status of an industry with sufficient credit facilities available with the banks for corporate entities. There would be no upper ceiling on land holding and a legal cover would be given to investors by amending Land Reform Act 1977 Section 7 of MLR 115 and Section 8 of MLR 64. State land would either be sold or leased to potential investors for 50 years, extendable to another similar period. Import of agricultural machinery for CAF would be exempted from customs duty. The duty on transfer of land to corporate agriculture companies would also be exempted. Land Reforms Act 1977 would have to be amended by including definition of Corporate Agriculture Farming in Article 2 as well as to incorporate the verdict by Shariat Appellate Bench of the Supreme Court in 1991 which allows the state to acquire any land any where in the country. While CAF policy is one step ahead from that of the verdict. It has been designed for the convenience of investors, while ignoring landless poor farmers.

CAF is a model for wealthy countries that pursue industrialised agriculture. It denies the interest and needs of billions of small vulnerable farmers who do not live in that world. After World War II, developed countries provided huge subsidies to their agriculture sector to overcome the food shortage. But the situation in Pakistan is very different. Agriculture sector is still under developed. The withdrawal of subsidies and domestic support and imposition of GST on fertilizers and increase in power tariffs are already pushing the farmers towards wall. Now the CAF policy would further aggravate their vulnerability and problems. The policy provides more privileges to corporate investors in the name of attracting foreign investment.

More than 45% people in Pakistan generate income from agriculture sector and 93% of them are small farmers, having very meager resources to afford hi-tech machinery for cultivation. The corporate farming investors equipped with latest machinery and capital would leave the small farmers far behind them. Similarly, corporate firms would be more interested in cash crops instead of food crops. Therefore, they might promote monoculture-cropping system, which could be a direct risk to our food security. The local resources would then no more be in the hands of small farmers and their food security would be at stake, as their production would not remain competitive in the market. The farmers would either get jobs without labour laws or migrate to cities for job thus burdening the civic planning and management. This would ultimately increase levels of poverty.

The supporters of CAF claim that there would be an increase in production and economic activity. Pakistan recorded bumper wheat production during last two years, but many people and cattle died from hunger. It shows that our food distribution mechanism needs to be addressed seriously. That is why the poverty genie is out of bottle instead of the policies and assistance provided by the International Financing Institutions (IFIs).

CAF is capital oriented and not labour conducive. The import of agricultural implements would damage the local implements manufacturing industry in Mian Channu and Okara, both in Punjab. The local agricultural implements manufacturing industry should be promoted and protected by not allowing exemption on duty on import of implements to corporate companies.

The focus of agricultural corporate sector is on the state land in Pakistan. Although Supreme Court's verdict gives the state a right to acquire land, but it does not mean that the land would be sold or leased to foreign companies. The local communities, the besieged tenants, the landless poor, the vulnerable downtrodden should be given the cultivable wasteland owned by the government. It would bring them out of the poverty trap and provide them better livelihoods.

Implementation of CAF policy would result into massive eviction of indigenous communities living in Balochistan, Cholistan, Thal and certain other areas. They are already drought ridden and their vulnerability would be increased further when they would be pressurized to evacuate from the land for the corporate masters. The displaced communities due to building of mega-projects were still unable to resettle. The harassment of tenants in Punjab was another glaring example of corporatization of agriculture sector. They have been tilling the land for the last hundred years. Now they are being besieged, harassed and killed by the government agencies to evict the land.

The cultivable wasteland in Cholistan (Bahawalpur and Rahimyarkhan,) is 6.6 million acres with 1.2 million inhabitants. Since 1978, only 350000 acres were allotted to its 30000 applicants while 5784 applications are still pending. All the people who were allotted the lands are now in better economic conditions as compared to the majority of the poor landless Rohailas (inhabitants). The allotment of the land is banned regardless of the promises and commitments made by the successive governments to allot the land to the landless Rohailas. It seems that the government wants to bring these Rohailas and people in other parts of the country to the same fate as of tenants in Pirowal and Okara.

After land, water is another important issue that should be seen in the CAF perspective. FAO is focusing on "Water: a Source of Food Security" and says "the world can find enough water to produce the food needed for future generations, if we manage water wisely, now!" Agriculture consumes 70 percent of the freshwater harnessing. And by the year 2030, the world would require 60% more food, 80% of which would be agriculture based produced through irrigation of water.

In Pakistan, rapid depletion of water and its distribution among the provinces has already been a very contentious issue. Indus River System Authority (IRSA) is unable to cater to the water needs of corporate farms to be established on the cultivable wastelands as this system could hardly meet the requirements of the provinces. To meet water requirement, if corporate farms would harvest water from underground sources, the water table would further go down.

Pakistan is a signatory to United Nation Convention to Combat Desertification (UNCCD). A report submitted in April 2002 by the government to UNCCD secretariat says the state owned lands would be distributed among the poor to reduce poverty. Similarly, in the Poverty Reduction Strategy Paper, government clearly says the state owned land would be distributed among the poor to bring them out of vicious circle of poverty.

It is necessary for us to look into the realities on ground. CAF was developed in the developed countries by allowing huge subsidies by the government to agriculture sector, while we are introducing the policy in the perspective of trade liberalization under which our farmers would have to compete with the corporate sector without subsidies and protections. This would badly affect our farming and subsistence agriculture thus plunging the poor into deep poverty trap. To evolve a national consensus on the CAF policy of Musharraf government, the parliament should discuss pros and cons of this policy to save our farmers and agriculture from the clutches of the multinational corporations in the name of corporate agriculture farming.

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Environmental health: Lead exposure and its impacts on children

quality and also in view of petrol smuggled into country, which may be containing lead.

It has been reported that Vitamin C, if taken in regular doses, have potential for reducing accumulated lead from human body, as indicated by some recent studies carried out in Malaysia and Pakistan. Children (7 – 12 years of age) under study at Karachi were given a 500 mg vitamin C tablet orally after dinner for 24 days. The mean lead concentration in hair, before giving Vitamin C was 12.7 ± 6.6 ug/gm which after treatment with Vitamin C was reduced to 3.9 ± 3.5 ug./gm. The lead concentration of urine samples of the same children were found to be about 45 times higher than the concentration after vitamin C treatment. Similar studies (August 2000 – January 2002) carried out in Ranau, Sabah in Malaysia also indicated 24 – 54% reduction in lead concentration of children hair after vitamin C treatment.

Phasing out lead from Gasoline gives substantial economical benefits to the country. A study carried out in USA estimated economic benefit = US $ 17.2 billion per annum by reducing US population's BPbL by 1ug/dl. With the supply of unleaded petrol, problems of lead poisoning due to lead in the environment have not been completely solved. There are other sources of lead exposure, which include old lead pipelines or lead-based solders in water supply systems, old houses/buildings with lead-based paints and lead-based ceramics. There is a dire need to give high priority to further develop and implement policies and measures that facilitate at the earliest a complete lead phase out program in the country.

Market access and organic farming

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Either there are no buyers in the market, or God has bestowed upon us his bounties that still we hold stock of wheat from previous years. This year again, there is a bumper harvest, where will it go? Not only the wheat stocks but also bulk of cotton and heaps of rice are in godowns. We have to find out reasons as to why we could not off load our stocks despite concessions like low tariffs, binding for every country to import some of the agricultural products for domestic consumption from other countries under the Agreement on Agriculture (AoA) and an edge of being a preferential and differential country status, acknowledging our role in the war against terrorism. High cost of production has been identified as the main reason for less export of agriculture stocks. Higher the cost of production the lower will be the demand in either national or international markets. The higher cost of production makes goods non-competitive in terms of both the price and the quality in the market and hence forces decline in export targets. Another reason, which makes Pakistani agriculture produce non-competitive, is the subsidies provided by the developed world to their farmers.

Though the green revolution of 1960s almost doubled our agriculture production, luring farmers to sow hybrid seeds, use chemical fertilizers and pesticides that increased the cost of inputs. The use of chemical fertilizers, pesticides and hybrid seed later proved to be harmful to both farmers and the consumers of the agricultural products. These inputs damaged the environment and under burdened the economies of small farmers. The green revolution literally made farming communities non-competitive even at local market level. Health hazards, linked to use of pesticides and chemical fertilizers, have now proved beyond doubt. The environmentalists oppose use of such hazardous inputs rather the pro-environment agricultural experts are now professing organic/traditional farming.

If we go by the supporters of the green revolution, we would be right to ask from them as for whom they want to grow more with hybrid seeds using toxic chemical fertilizers and pesticide otherwise hazardous for human beings when the growers and consumers would not be the beneficiaries rather sufferers of high production cost, the prices of commodities and health hazards linked to these produces.

Now people are talking of one step ahead of green revolution. There is a new concept of Integrated Resource Management, which is generally termed as Blue Revolution. And for us, since the last one-decade, we have reached a point where increased inputs have a little impact on production, that is almost stagnant now. According to law of diminishing returns become effective, when increase in inputs instead of increase in returns, results in decrease in output. When we look into the theory of returns to scale, its one aspect is 'constant returns' to scale, which denotes a case where a change in all inputs leads to a proportional change in output. The other is 'increasing returns to scale' that arises when an increase in all inputs leads to a more than proportional increase in the level of output. And the last is 'decreasing returns to scale' that occurs when a balanced increase of all inputs leads to a less than proportional increase in total output. The last one seems more likely happening in our case.

Most of our farmers have small land holdings, they are not able to bear such huge expenses on inputs, and generally expenditure on inputs are much more than what they got in return. So it's high time for us to search out some alternates, the best alternate, so for is the organic farming. One can find out hundred of success stories, in EU, USA, Germany and in many other developed countries, where organic farming has gained roots. Even in our case, there are many people practising organic farming, even in irrigated areas. This writer visited a farm at Shireen Maafi, District Okara,

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Child Labor: Break the vicious circle of poverty and illiteracy

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Every morning, 15 year-old Serab Gul leaves his home for one and half-hour ride, changing two public transport vehicle on the way, to Islamabad. However, unlike other boys of his age, who travel from the outskirts of the city to go to school, Serab's journey ends at the car parking area of the Banking and Commercial complex at Islamabad's Diplomatic Enclave. The bag on his shoulder does not contain books, but boxes of caustic, and often abrasive detergent powder and a brush. He comes here to wash cars for which he earns about one hundred rupees for a single day's job.

Serab Gul left school after his father, a laborer himself, lost his eyesight after developing some unknown illness. At the age of 13, Serab found himself in the role of sole bread earner in his family. He lives in rented house in rural areas of the capital city, with no gas or electricity facilities. Serab's mother died, last year, after developing renal failure. She was put to dialysis; however, she could not survive, as the treatment was too costly for a family that depended on Serab's meager income.

Serab's story is very much linked to an interesting debate that has been continuing on the subject of child labor in Pakistan since past many years. Interesting point, however, is that this brainstorming, academic debate notwithstanding, the plague of child labor is on its march consistently in the nook and corner of the country. Civil society groups, media and the government could only watch it spreading like a contiguous disease. Sounds, they only can do the job of pointing a finger to the way this nuisance is heading.

Equally awkward facet of this saga is that even the children working in garages, teashops, parking lots or pulling donkey carts don't know that in the cool, murky halls of one or other hotel, their plight and life are being debated. All the papers, words and edicts, that the enlighten elitist and middle class had been churning out in one or other inspired event have no impact on their living, thus rendering this debate a futile exercise, no more than a wishful thinking of our elitists who talk on the issue like making a case for the eradication of reed from the front lawn.

Globally speaking, there is no single cause of child labor nor any single model adequately explain complex phenomenon of child labor. Nevertheless, some of the factors affecting child labor are identified as low income, indebting of family (part of repaying the debt involves a child becoming an indentured labor to the creditor party), big family size and fertility (household with more children end up providing less education for each child and may need to send children to work to help earn income to meet needs), household structure and migration, difficulty in easy access to qualitative schooling, and demand within a given society for child labor. However, according to a study the most common cause behind child labor in Pakistan remains of death or illness of adult member of the family.

During past few decades, there has been an upsurge in child rights movement. Back in 1998 Global March against child labor passed through more than eighty countries, which led to the adoption of a new convention (C-182) by the ILO Labor Assembly Against worst form of child labor in June 1999, which also covers, bonded labor, sale of children and child prostitution. The ILO's Convention 182 concerning the prohibition and immediate Action for Elimination of the worst form of child labor concedes to the fact that effective elimination of the worst form of the child labor equires immediate and comprehensive action, taking into account the importance of free basic education and the need to address the needs of their families. The convention recognizes that child labor to a great extent is caused by poverty and that the long-term solution lies in sustained economic growth leading to social progress, in particular poverty alleviation and universal education. According to Article 1 of C-182, "Each state party, which ratifies this convention shall take immediate and effective measures to secure the prohibition and elimination of the worst form of child labor as a matter of urgency. ILO, through International Program on the Elimination of Child labor (IPEC) is helping Pakistan to remove child labor and rehabilitate child worker.

Under Pakistan's law, 14 years is generally considered as an age under which children should not work. However h-

ternational Labor Organization marks 18 years as the age, under which children should not be permitted to work in any of the conditions. In 2001 Pakistan ratified ILO's Convention 182, which is binding for the signatory nation to commit itself to not allow children under the age of 18 to work in the hazardous working conditions or in worst form of child labor. According to ILO, around the world, some 246 million children between 5 and 17 years are working instead of attending school.

There are many who argue that effective enforcement of laws regarding child labor (prevalence fines and punishment) were to deter violation of law. Others view social mobilization as a way forward to eliminate child labor. They insist that child right could only be assured in a true democratic system, where there is rule of law and respect for fundamental human rights. Today's child laborers can never become tomorrow's healthy and productive citizens as their child-hood is robbed of by the rigors of life they had to face at a tender age.

Only survey that we have for exacting the number of child workers in Pakistan was conducted by the Federal Bureau of Statistics with ILO's assistance, in 1996, showing number of child labor in the country as 3.3 million. The survey showed that two third of total child workers are boys while one third are girls. The Federal Bureau of Statistics is planning to carry out on its own another child labor survey in 2003-04. Unofficial sources place the numbers of child workers around 8 million. An official of ILO in Islamabad opined that government's initiative of Education For All (EFA) is a key macro policy measure to address the issue. According to him, inclusion of child labor as an indicator of poverty in Pakistan Poverty Reduction Strategy Paper is enough to show the commitment at the part of government to tackle the menace of child labor.

There are official pledges to make education free and compulsory for all by the year 2015 under the slogan of EFA. A recent meeting of the ministers of Education from South Asian Countries in their joint statement (Islamabad Declaration) made known that they recognize education as the most critical lever for alleviating poverty. We are no shorts of people who think that free, compulsory and meaningful education for all children, especially girl children and rural children, is a viable strategy to curb child labor.

In a recent workshop in the capital city, head of USAID Pakistan enlightened the audience that education is the only solution to the problems Pakistan is facing today. However, what we see as a ground reality that education has become a luxury that only well off could afford. A recent study conducted by planning section of Department of Schools and Literacy, government of NWFP suggests that poverty remains to be one of major cause of keeping children away from the schools.

There are many who argue that effective enforcement of laws regarding child labor (prevalence fines and punishment) were to deter violation of law. Others view social mobilization as a way forward to eliminate child labor. They insist that child right could only be assured in a true democratic system, where there is rule of law and respect for fundamental human rights. "Today's child laborers can never become tomorrow's healthy and productive citizens as their child-hood is robbed of by the rigors of life they had to face at a tender age," one Indian speaker, who has campaigned against child labor across the glob, was heard saying in a seminar on child labor in Islamabad.

It is widely understood that children are preferred, as workers because they are cheaper source of labor and that they cannot form trade union, thus cannot go to strike or sue their employer for the breach of their labor rights. Noted social scientist Kaiser Bengali says only pragmatic approach towards the issue would to regulate nature of the job for the young workers rather than going for out-rightly outlawing it, as many campaigners on child labor press for. He suggests that fixing the work schedule, thus lessening of the working hours combined with compulsory education in spare time is only practical solution available to us to tackle the issue.

So, the debates go on that what compels children to put their books and playing tools aside and embark upon a journey that robs them of the tenderness of carefree life? Are they free to choose or is it socio-economic compulsion and poor-unfriendly governing system that compel them to embark upon new course of life having stigma of child labor. Many people think that it is lack of access to easy and free education that ultimately results into the child labor. Likewise, there are no less people who think that it is poverty that keeps children away from school.

"Child labor is caused by poverty and vice versa," says Anees Jeelani, leading child rights activist. He suggests that strategy to eliminate child labor involve poverty alleviation measures, making education free and compulsory up to the secondary school level, implementing child labor laws up to the informal sectors, particularly rural areas. The civil society groups are yet to figure out what entry point would be to tackle the issue. We have to break the vicious cycle of poverty and illiteracy to end child labor.

Ring project report

Knowledge production face to face with sustainable development

Nadia Maleeha and Ayesha Khurshid

This report aims at unraveling some of the factors that drive knowledge production face to face with sustainable development (SD) in the context of Pakistan. It addresses the questions such as: how research agendas are determined, what gives rise to the need for a particular kind of research to be undertaken, how then the research is used and who benefits from it?

Sample selection is important since it is central to the drawing of the results. The interviewees were chosen carefully, keeping in mind the diverse roles of various organizations in the whole process of knowledge production, especially in the Pakistani context. We chose to interview representatives from four organizations/ institutions including Planning Commission of Pakistan; World Bank; National Rural Support Program (NRSP), and Pakistan Institute of Development Economics (PIDE).

Main findings

Before discussing the major themes that the survey has brought into light, a couple of points need special consideration. The most important among them is the vague categorization of institutions as 'users, donors or research institutes'. None of the organizations in the study could categorically be placed in one group per se. In fact a few of them shared the characteristics pertaining to all the three categories to a certain extent. This multiplicity of identities plays a key role in explaining the processes that determine knowledge production and dissemination. This would become conspicuous as we discuss the emerging themes. The second aspect is the broad overarching agendas of the organizations. Broad in this context implies lack of focus, vagueness and ambiguity. This would become more obvious as we discuss the following salient themes.

A. Research Criteria

The questionnaire data indicates that users base their demands on national and local agendas and donors/ sponsors provide funding on more or less the same issues. The research institutes then take these up and things seem to be quite orderly. However, this is where one should contemplate on the issue pointed out in the beginning, that is, of the hazy categorization and multiple identities of the participating organizations. Since in a couple of cases, the same organization happens to be the user and the researcher, there is an ostensible alignment between them. This should not be taken to represent the whole scenario prevalent in this context since it would lead to biased conclusions.

Careful sample selection for interviews plays crucial role in drawing conclusive results and categorical images with their complexities. An interviewee from the World Bank asserted that the projects are taken up entirely on the client's initiative (Government of Pakistan). Whereas an interviewee from the Planning Commission of Pakistan thought otherwise arguing that the government would only propose those projects that could bring in money, which implicitly would be donor-driven. In fact, client-driven agenda is a donor-driven one.

B. Selecting Research Institutes and transmitting agendas

There are a handful of development sector institutions carrying out research in Pakistan. They have carved a niche for themselves in this arena. The criteria for selection are the credibility and sound research background of the institution. Moreover, relationship of a research institute with funding and user agencies seems to be very important and useful. Quality of research and public relations are equally important in the selection of a research institute to provide knowledge on Sustainable Development.

C. Use of research

Research organizations do give importance to independent research, but impact of the usefulness of that research is hardly portrayed. They have no strict and sophisticated designs for impact assessment. They do publish studies and conduct seminars, but dissemination and flow of information seem restricted and limited only to a certain class of people. NRSP is such an organization that conducts research for internal consumption. It reflects in the annual report with a focus on programme content rather qualitative research.

D. Networking

Efforts were made to have formal networking among various research organizations. But the extent and

benefits and tangible advantages of the networking could not be defined. This led to certain informal networking among various organizations. Although, breadth of vision and regional outlook have been mentioned as important benefits arising out of these networks, but there still appears to be a lot of room for using these alliances as a means to improving the quality of ongoing research and initiating fresh work.

Secondly, another major issue is networking among research institutes and users other than the government. Most of the research being conducted in Pakistan is policy research, which sometimes tends to preclude perspectives that are coming from the lower strata of society. Sometimes due to donor pressures for quick delivery of information knowledge production exercise tends not to be comprehensive and inclusive of multiple sources of data. This focus on quick research conducted by consultants from mostly the upper and middle class is not conducive to networking with people beyond the government circles or select Research Institutes.

We need to underscore the importance of disseminating knowledge to those who are the ultimate recipients. Language, in this context, plays a major role. Most of the research is conducted in English, which limits the scope of dispersion of knowledge, particularly to those who matter the most. These obstacles need to be reckoned with, to facilitate the propagation of knowledge.

The government serves more like a link between the suppliers and the ultimate users of research. Hence, there is a dire need, for stronger networking among the suppliers and the immediate users of the research. These can be community organizations working directly with the people. We need to underscore the importance of disseminating knowledge to those who are the ultimate recipients. Language, in this context, plays a major role. Most of the research is conducted in English, which limits the scope of dispersion of knowledge, particularly to those who matter the most. These obstacles need to be reckoned with, to facilitate the propagation of knowledge.

E. Problems with Research institutes and research

According to the funding bodies, lack of networking amongst research organizations and lack of networking with other segments of society is a major problem for the research organizations. Another problem is that of better quality data. Unfortunately, it is quite vague as to what 'better quality data' implies. It could be attributable to a number of factors like lack of qualified personnel or lack of funding for particular agendas.

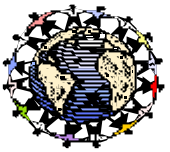
An important point is that there is a need for 'pro-active' research as mentioned by the government. It was argued that an institution like SDPI was brought into being, specifically keeping the requirement of 'pro-active' research in mind. This again is a contradiction in terms, since the government barely ever releases funds for 'pro-active' research or demands such a research project to be conducted in any case. This further intensifies the funding issue. It is due to lack of funds that 'pro-active' research is not being conducted, which brings us back to the initial argument of 'donor driven' research agendas. Since the primary motive of starting a research project, as far as the government is concerned, happens to be whatever is palatable to the donors, therefore laying the blame on lack of pro-active research appears to be an empty argument.

What has served, as another grave setback to the process of knowledge production, is the brain drain. Research Institutes do not get funding due to lack of qualified personnel and vice versa. Apparently we are stuck in a CATCH 22 situation where both of these factors are reinforcing each other, creating serious hurdles in the smooth functioning of this process.

Conclusion

Knowledge production with respect to Sustainable Development is not as smooth a process, as it appears to be, specifically in the context of Pakistan. The government, is simply 'not interested in knowledge production' as one participant pointed out, either in its own right or as put forward by the people's needs. The drive for selecting a particular research theme is the amount of funds that it can generate, which ultimately results in following the donors' agenda. For research institutes, lack of funding has been termed as a major obstacle in carrying out more research. This further underscores the influence exerted by donors in the whole process of knowledge production.

The major donors not only control the funds, they are more involved in the direction of the knowledge production exercise. What the donors, might perceive as better accountability, might turn Pakistani researchers into being mere managers of knowledge rather than knowledge producers.



Regional seminar on Policies for the Protection of Farmers' Rights: Evolving *sui generis* Options for the Hindu-Kush Himalayas

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South Asia Watch on Trade, Economic and Environment (SAWTEE) together with International Centre for Integrated Mountain Development (ICIMOD), organised a three-day regional seminar on "Policies for the Protection of Farmers' Rights in Mountain Regions: Evolving sui generis Options for the Hindu-Kush Himalayas (HKH)" in Kathmandu, Nepal from 24-26 March 2003. The objectives of the seminar were to:

- Help policy makers and civil society actors understand the contemporary debate on intellectual property protection and rights of the poor, marginalised and vulnerable farmers of the region in general and mountain farmers in particular.
- Explore various options available under the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement of the World Trade Organisation (WTO) to prepare a balanced legislation that would protect the rights of commercial breeders without impairing the rights of farmers to save, exchange, re-use and sell seeds.
- Explore and evolve specific policy options, which would contribute to safeguarding the rights of mountain farmers.
- Provide trade negotiators with skills and knowledge necessary to negotiate during the on-going review of TRIPS Agreement.

More than 80 delegates from eleven countries attended the seminar. At the end of the seminar, the participants adopted a resolution on farmers' rights, which is expected to help the policymakers in devising an effective mechanism for the protection of farmers' rights.

Resolution adopted at the Seminar

In the context of agriculture related international agreements including TRIPS, the United Nations (UN) Convention on Biological Diversity (CBD), International Treaty on Plant Genetic Resources for Food and Agriculture (IT-PGRFA), and emerging awakening of the farmers on their rights, this seminar addressed by experts on farmers' rights, representatives of governments, civil society, media and academia from South Asia, East Asia, and Europe calls upon the governments and the international agencies to evolve a mechanism that respects the centuries old traditional practices of farmers of sharing plant genetic resources.

This seminar urges the governments of the HKH and South Asia regions to enact the legislation that ensure protection of local knowledge of farming communities and plant varieties including the ones developed by farmers, following an effective sui generis system wherein:

Law making process should be transparent and participatory, involving all stakeholders such as governments, civil society, and farmers' rights groups.
Issues of food security, food sovereignty and livelihood security should be addressed properly.
Research, development policies and actions must take care of the livelihood interests of the least developed areas and the marginalised mountain farming communities.
Improved access to inputs including sustainable technology, which must not endanger health safety and environment, should be ensured.

The seminar calls upon the governments to stop increasing corporatisation of basic resources such as land, water, biomass and forests so as to guarantee an enabling environment for small and marginalised farmers with special emphasis on gender issues in rural livelihood context. The seminar rejects patents on life forms and emphasises that bio-piracy should be stopped effectively. Legislation for this purpose must be enacted at local, provincial and federal levels, paying due attention to the vulnerability and threat of marginalisation faced by mountain farmers.

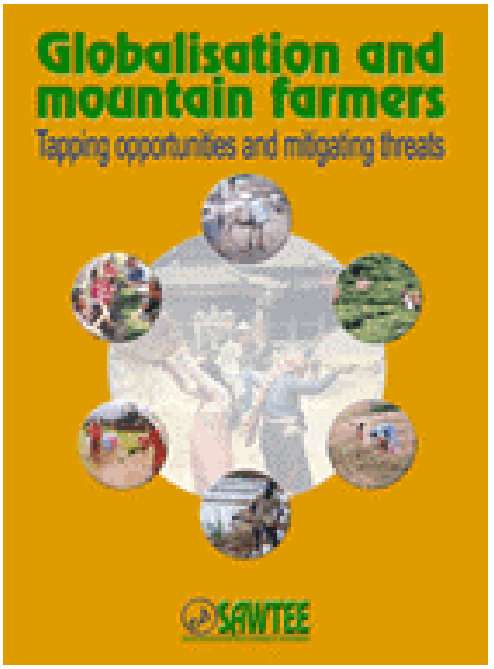
The farmers' rights that need to be addressed while drafting the sui generis legislation with their multi-dimensional aspects should include:

- The right of farmers to protect their traditional knowledge associated with plant genetic resources from being misappropriated.

- The rights of farmers over plant varieties and local knowledge over and above the corporate breeders' rights.
- The traditional rights of farmers to save, use, sow, re-sow, exchange, sell and improve farm saved seed of all plant varieties.
- The right to compensation from the right holders of plant varieties for under performance and loss from misleading claims.
- The right of farmers to receive equitable benefit sharing, both monetary and non-monetary, for the use of plant genetic resources created and conserved by them for the development of new commercial varieties, with due regards being given to the economic valuation of the plant and seed varieties developed by them during the process of evolution since centuries.
- The right of farmers to be informed of the market opportunities so that they could better assess the marketing options for their produce.
- The right of farmers to get protected against bio-piracy and theft of their traditional knowledge.
- The right of farmers to be aware of national and international agreements affecting their livelihoods directly or indirectly.

Globalisation and Mountain Farmers: Tapping Opportunities and Mitigating Threats March 2003:

South Asia Watch on Trade, Economic and Environment (SAWTEE) has published a volume of the compilation of the research studies that were undertaken by its five partners: Bangladesh Environmental Lawyers Association (BELA) in Bangladesh; Consumers Unity and Trust Society (CUTS) in India; Pro Public in Nepal; Sustainable Development Policy Institute (SDPI) in Pakistan; and Law and Society Trust (LST) in Sri Lanka. The volume titled "Globalisation and mountain farmers: Tapping opportunities and mitigating threats" has six chapters that deal with the country case studies covering various issues of farmers' rights in the mountain regions of South Asia. The volume, edited by Shafqat Munir and Kamalesh Adhikari, has been published under the farmers' rights programme that SAWTEE is currently implementing in mountain regions of Hindu-Kush Himalaya and Sri Lanka. Dr. Yubaraj Khatiwada, Member, National Planning Commission (NPC) Nepal released the volume during the regional seminar on farmers' rights held in Kathmandu from 24-26 March 2003.



Training of SMART-1 Provincial Module for EPAs of NWFP, Sindh and Balochistan

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A team from the Sustainable Development Policy Institute (SDPI) went to the Environment Protection Agencies (EPAs) in Peshawar, Karachi and Quetta during April 14-19 to help them install the Self Monitoring and Reporting Tools (SMART-1) Provincial Module and to train their officials on the working of the module. The SMART Provincial Module/software (on CD) was also handed over to the focal persons appointed for respective EPAs. The directors general of EPA Sindh and Balochistan took keen interest in the training program.

The training was initiated by introducing the SMART program along with background information, as a task taken up by the SDPI in its technology transfer project on the request of Pak EPA. The participants were provided with a detailed briefing on the in-flow and out-flow of data pertaining to industrial releases, both in the forms of liquid effluents and gaseous emissions. A dummy set of SMART Industrial Module was installed for their better understanding and future reference. The soft copies of User Instruction Manual for Industrial Module and relevant presentations on the SMART Industrial and Provincial Modules were provided on a CD.

The participants were given a detailed and comprehen-

sive training on the effective use of the SMART-1 Provincial Module, which included:

- Appending industrial data in the Provincial program.
- Monitoring information pertaining to industries and their respective types.
- Producing/generating various reports on priority parameters both on the basis of Individual Plant and Plant Types wise.
- Viewing/printing the list of defaulters such as: Delinquents: Current: those who have not submitted the reports in the recent months. Consecutive: those who have not been reporting consecutively for more than three 3-4 reporting periods. Defaulters: those who are not complying with NEQS.
- Generating notices/letters to the defaulters in the SMART Program
- Generating EPA reports for Federal EPA

The SMART Industrial data reports may be viewed both in text, as well as, in graphical formats. With respect to issuing notifications to the defaulters, the participants in general, whereas the focal persons, in particular, were explained on how to generate customised notices from the system/program. This way, they would be able to alter/edit the notices/letters according to their needs in future.

At the end, again the participants, in general, but the focal persons, in particular, were told about the importance of taking regular back-ups of their data files. They were also told on how to save the data files received from Industries as well as the EPA reports in proper chronological order in the PCs.

At the end of the training programme, SDPI was presented with a letter of acknowledgment by the focal persons of each provincial EPA for the services provided, vis-à-vis the delivery of successful training program and handing over of SMART-1 Provincial database.

Continued from page 8

Market access and organic farming

where every thing is produced organically. Owner of the farm has established a plant for preparing organic fertilizer from dung. And in his opinion, biogas obtained during the process is a by-product, while slurry obtained from the dung is actual product. There is a high demand of organic produce all over the world, and it fetches a good price, almost two times greater than ordinary produce.

God has gifted us with variable ecosystems. Without taking much trouble, we can introduce organic agriculture in Barani areas, where soils have no taste of chemicals. In these areas people still grow traditional seeds. The only thing needed is government support. If government is ready to offer its expertise, research facilities, extension services and makes a policy indent for promotion of traditional agriculture, then there is no reason that Barani areas remain behind irrigated agriculture. These measures are even allowed in agreement on agriculture under green box. The only thing required, is the same zeal and vigor with which idea of green revolution was materialized. As many as,1.4 million hectares of Barani land can be much more productive and we can earn much needed foreign exchange almost if not equal half to that earned from mechanized agriculture. Then there is no need to explore new markets for our produce, as there is an ever-increasing demand for organic produce. The Aga Khan Rural Support Program (AKRSP) last year marketed 25 tons of organic apricots from Northern Areas against the demand of 400 tons from abroad. This year, their target for export of organic apricots is 60 tons and they are also aspiring to get certified their produce as organic stuff.

The other factor that undermines market access is mandatory standards. Every product, offered in market is supposed to observe standards set by standard setting bodies. For food items, standards are determined by FAO/WHO Codex Alimentarius Commission, while for items falling within animal origin standards are maintained by Office International Epizootics and standards for plant health are set by International Plant Protection Convention in consultation with regional organizations working under the umbrella of FAO. If we talk about standards of our products, we find that let alone USA and European Union, even Sri Lanka refused to buy onion from Pakistan on account of high residual content. The other potential threat in future, that can limit our access to the foreign markets, still not part of multilateral trade agreements, but will be very much there after next WTO ministerial meeting, is the link between trade and environment. It is not only mandatory for Pakistan but for the entire developing world to decide to take a U-turn, a complete shift from corporate agriculture to traditional agriculture, practiced since centuries, which is panacea to all present day ills. This change will not only ensure greater market access but will also serve the cause of environmental conservation. And above all, it is totally in compliance with standards maintained internationally.

Training Unit

SDPI's Training Unit- An Overview

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Josh Billings has rightly said that there is nothing so easy to learn as experience and nothing so hard to apply. Through the training arrangements we genuinely try to open up vistas of experience sharing and help trainees to apply these learning as per their professional requisitions. It is no disguising the fact that short training courses help professionals to equip themselves with the cardinal requirements of the trade and apply it to the best of its utility. It not only facilitates their working mechanism but also galvanize their immaculate performance. Training unit at SDPI was initially meant to extend short training courses of three to five days to Pakistan Environment Program partners. This was to facilitate implementing National Conservation Strategy by means of strengthening capacity of key sectors related to environment. Therefore, a few seats were reserved for the sectors interested in such capacity building programs other than the PEP partners.

All those who attended these training programs, the partners and the donors described the training courses arranged at SDPI as useful. All this encouraged the training unit to embark upon launching courses for in-house capacity building and for the private/public sector organizations. Since its inception (July 1998) SDPI's training unit has accumulatively arranged 76 training events under PECC, PEP and SDPI classifications and trained 1406 individuals. Gender ratio remained as 1093 men and 313 women.

The Population and Environment Communication Centre (PECC) at SDPI entrusted the unit to design and conduct trainings for the project on Population and Environment. The trainings on seven themes have been accomplished through which 190 individuals have been imparted training opportunity.

Training unit deems the quality component as major contributor to its success. The resource persons hired for such trainings are known for their expertise in the area. The reading material, group discussions, exercises, case studies and field visits/simulated exercises are integral parts of trainings.

Since its inception (July 1998) SDPI's training unit has accumulatively arranged 76 training events under PECC, PEP and SDPI classifications and trained 1406 individuals. Gender ratio remained as 1093 men and 313 women. Training unit deems the quality component as major contributor to its success. The resource persons hired for such trainings are known for their expertise in the area. The reading material, group discussions, exercises, case studies and field visits/simulated exercises are integral parts of trainings.

Moreover, it imparts trainings on an affordable fee package. The competitors having this standard of packages often stand above the limits of affordability in financial terms particularly to those organizations who run limited financial resources for human resource development as CBOs or small scale NGOs and small organizations. Even the packages like Environmental Impact Assessment or Environmental Monitoring that are designed for the corporate sector charge meager amount of fee.

The training unit is equipped with the latest art-of-the-craft accessories and a congenial learning atmosphere. The computer laboratory is spacious enough to accommodate the training groups to accomplish their group tasks. During the intervals trainees may well enjoy reading valuable material in the resource center or may also avail e-mail/internet facilities in the lab.

The training unit is currently working with five members well coordinated team of personals fully dedicated to shoulder all types of challenges in the realm of training. On the request of AKRSP, Chitral the unit designed and delivered a training course at Chitral with a great success. The criteria for the success of trainings is solely dependent on the evaluation carried out by the trainees. Their suggestions and comments are taken seriously and are brought forward to Fellows' Council and Executive Director for necessary actions. This sort of transparent activities went a long way making this unit one among the best training institutes in the country.