

COALITION FOR ENVIRONMENT AND DEVELOPMENT
Sustainable Cultures – Cultures of Sustainability

BACKGROUND PAPER 21

by

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**SELF SUSTAINABILITY VS SELF DESTRUCTION:
A CASE OF SELF RELIANT IRRIGATION PRACTICE
IN GAYA, INDIA**

It was 10th October, 2008. The middle school at the school Village Chakand Bauli in the Gaya district (south Bihar) had not seen such a sight earlier. About 62 peasants from surrounding villages had gathered to deliberate upon working out a blue print of sustainable agriculture by reviving their traditional irrigational practice. They had called for a general body meeting of farmers from surrounding villages to work out an organizational mechanism to regulate the functioning of the committee that would undertake the work of reviving the age old practice of natural irrigation through a system of *ahar* and *Pyne*, a system that finds its mention in Buddhist *Jataks* referring to a society of 6th Century B.C. But why the farmers of 21st Century wanted to revert back to an age old system? But, before we seek answer to this question an overview of the context, a quick background of the region would be useful.

Cradle of civilisation

The tract of South Bihar, comprising districts of Patna, Gaya, Shahabad, South of Munger and south of Bhalgalpur, has mostly old alluvial soil with very little water retaining capacity. Gaya

district falls between Chhotanagpur plateau and the Gangetic valley forming the southern part of dry zone with annual rainfall between 1000 mm to 1600mm. It has a marked slope from south to north which results in quick flow of water. Natural conditions are very adverse for regular cultivation if left to god /nature. Yet, it has remained the most popular tract in the world for two millenniums or so.

It has been the cradle of the civilization in India. The kingdom of Magadh came up as early as 6th century BC giving rise to the first Indian empire – the Mauryan empire. It became the seat of what is known as ‘second urbanization’ (after Indus valley civilization). It has been the place where two ancient religions of the world struck roots – Lord Budhha got his enlightenment at Gaya and Mahavir Jain, the originator of Jainism, died at Pawapuri, which also falls in Gaya district.

During medieval times, this area came under control of two major estates - the Maharaja of Tekari and the Bodh Gaya Math controlling vast acreages of land. The Bhudan movement inspired by Vinoba Bhave’s ideals of Gandhian austerity was the first major attempt towards land redistribution during 1950s and 1960s in the mid-1970s Jaiprakash Narain’s call of *Sampoorna Kranti* (Total Revolution) got its vibrant echo in this area with *Chhatra Yuva Sangarsh Vahini* launching their struggle against the continued suzerainty of the Bodh Gaya Math in south Gaya. In one of the most illustrious people’s struggle of modern times the Vahini activists played a major role in awakening the masses against the feudal oppression amidst fierce resistance by the landlords. In the 1980s, the Maoist ideas struck their roots in this area turning it into a bloody battle field.

Famine of 1967 : From rain god to Bore-wells

The socio-political turmoil for last 50 years in this region has a parallel story. The Famine of 1967 resulted in the emergence of a new beginning. The farmers of this area started opting out of the traditional irrigation and started opting for bore-well irrigation. It was more reliable than the whims and fancies of Indra, the rain god. The State government also extended support to farmers by offering State Tube- wells and lift irrigation facilities. Electricity supply was quite adequate, then. The traditional way of getting drinking water from open wells or ponds were abandoned by the common villagers. Hand pumps drawing water from below the surface had become the main source of drinking water. UN agencies like UNICEF along with the government launched a campaign to convince people that water from open source was not safe and provided for setting up of hand-pumps. Such campaigns

also inadvertently or otherwise, drove home the message that drawing water manually from open sources like well, pond or river were not just unsafe but amounted to 'drudgery' especially for women folk who usually got the water home from such places which may not necessarily be located in the vicinity of their houses. Such contempt for manual labour inherent in the very logic of 'modernist' outlook can be seen even today in places like desert areas where getting tap water is considered to be the most important indicator of development.

But within 10-12 years people started realizing that the ground water level was going down. The case of Gaya town explains the scenario in a dramatic unfolding of events.

Year 1995: In the well of Prof. Rukhaiyyar water was available at 2 to 3 feet during the rainy season. It would go down to 10 feet by the summer.

Year 2006: Ex-MLA Mahesh Singh Yadav bore 6 inch tube-well for as much as 600 feet. While stone-dust kept flying in the entire colony, no water was found. By this time the average water level had gone down to 200 feet in the town. Almost all of the tube-wells dried up. The town saw one of the worst water crises of the recent times. Road-blocks, demonstrations by public became daily routine in the town.

Year 2008: The water level is said to have risen and water is available at 30 feet now. No new tube-wells are bored any more. There is enough drinking water for everyone in town.

This dramatic turn-around in the availability of water in the area has an equally dramatic story behind it.

Magadh Jal Jamat

It was April 2006. In the face of unprecedented crisis of water, some concerned citizens had gathered at Mirza Ghalib College. They felt that just creating pressure on government would be of no avail. They must get to act themselves to find a solution. They decided to take up the responsibility of de-silting the ponds of the city. To seek greater support from the public an appeal was drafted. Local administration, tired of dealing with growing popular unrest, also became one of the signatories of the appeal.

The following fortnight saw a ‘festival’ of “shram-daan” (literally, labour-donation) to de-silt the ponds of city. As the “labour-donators” got into act in a few ponds, they saw a surge of support from various quarters coming to them by literally joining hands. Suddenly, de-silting work started in as many as 15 ponds of the city simultaneously. Students from schools and college, Army from the cantonment areas, local people and others were joined by scores of organizations including Indian Medical Association, Chambers of Commerce, Bar Council, Homoeopathy Doctor’s Association,

Magadh Jal Janmat

(i) It is an open forum dedicated to the issues of water. It is not a registered organization.

(ii) It has representation of all the districts in the Magadh area and comprises individuals and representatives of institution/organization.

It has carried its work so far on “Shram-daan” (labour donation) and immediate cash support by individuals or organization. It does not have any donor or funding agency to support its activities.

Dalit Muslim’s Organization, Bihar State non-gazetted Employee’s Association, Nehru Yuva Kendra Sangathan and a number of NGO’s. Apart from individuals, some 48 organizations came forward to contribute in one of the most spontaneous celebrations of people’s collective



will. As many as 15 ponds had been cleared off their silt in just 15 days.

“The reason for such a quick correction in the water table has been due to the fact that given the geo-morphological situation in the city, all these ponds are located in re-charge zone. This means that as ponds they are not very successful because water leeches into the ground very fast

unlike other ponds which can hold water for much longer. The location of town is such that from the hills the water finds its natural slopes and deposit into such natural depressions or man-made ponds and quickly gets soaked due to sandy layer. The “Phalgu” river flowing in the area dries up in the summer completely but dig up in the sand a few inches and you get fresh drinkable water their”, said Pramila Pathak, Professor of Physics in a local college and a founder member of MJJ.

The “shram-daan” used to start at 8 o’clock in the morning and would continue up to 11O’clock. People gathered again at 4 o’clock in the evening for two hours. Those who

couldn't do physical labour helped with providing sundry help like offering water. Others just sat there to show solidarity. On an average of thousand people per day working simultaneously on different sites for 15 days it created a unique history. And what was the total expenditure? Rs. 89,000/- altogether. Rs. 70,000/- was contributed by Smt. Sushila Sahai, an octogenarian lady of the town, who herself remained present on the site as a 'shram-dani'. Remaining Rs. 19,000/- were raised as individual donations. Numerous people contributed in kind by way of providing food, materials etc.

"Magadh Jal Janmat", a people's informal collective working to create popular awareness about water conservation for the last two and half years was taken by surprise with such a pleasant turn of events. It continues to be one of the most inspiring examples of collective initiative for water conservation in the recent history of this area, or perhaps the country.

"We were also taken by surprise when we suddenly got such an overwhelming response from all quarters. We have been trying to create dialogue with people for the last two and half years or so. We were trying to create a general consensus that water crisis is our problem and we must come forward to take responsibility. The same people who jumped into the pond for "shram daan" were dismissive about our views only a few days ago. The unprecedented water crisis of 2006 did not leave much of scope for them. They realised that neither

technology (of deeper bore-well) nor the government assistance (of providing water on tankers) was going to be of any use. They were forced by the circumstances. We take only a small credit of putting forth before them an alternative in which anybody and everybody could contribute and which looked promising and 'doable' in the given condition. We were fortunate that it clicked. The next two years have seen good rain and that helped in re-charging the water level dramatically.", said Ravindra Kumar Pathak, Professor of Pali in a Local College, who has been the soul-force behind MJJ.

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| <p>Magadh Jal Niti (Water Policy of Magadh Jal Jamat) Salient features</p> <ol style="list-style-type: none"> 1. Protect the rights of weaker sections. 2. Decide priority of ownership on use of water on humanitarian grounds. 3. Synchronise the changed social and technological condition for the larger benefit. 4. Oppose positions and initiatives that go against the interests of people. Create popular resistance and challenge them in the court of law even if they have the official sanctions. |
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Three core decisions form the guiding principle of MJJ:

- (a) This is a social forum believing in consensus and issue based mobilization. Everybody in the society has his/her ownership and thus the work- culture would reflect the diversity and dynamism present in the society. It includes everyone – the government, non-governmental institutions and individuals.
- (b) The group has developed a water Policy for this area called “Magadh Jal Niti”. (This water policy was adopted and released for public on June 4, 2006.) Despite a national water policy in place, the feeling among the activists was that there ought to be a separate policy for the area taking into account the specific soil-morphology and unique needs of the people. They felt that water is too important an issue to be left to government officials, technical people like engineers and politicians alone. Rather, every individual should be a party and should be taken on board to sort out contentious issues. This water policy forms the core around which their work is centred. Any initiative that goes against the policy, whether it is taken by the government, non-government institutions or individuals, will not have the support of this group.
- (c) Since, *Magadha Jal Janmat* is committed to accommodate the diversity existing in society-it acknowledged the diverse “quality” of work undertaken with support from government , non-government, labour-donation, individual contribution or a mix of them which impact the work in their own ways. For different kinds of supports, the responsibility and credits are also different in nature. That is why, on the works undertaken by them the *Magadh Jal Janmat* has a limited claim – “on the call of *Magadh Jal Janmat*” (MJJ). The group believes that local committees constituted for the purpose have the main responsibility of coordination and execution, though MJJ may take the initial responsibility when needed.

Farmers : Caught between the cliff and the hard rock

Now that the good rain has further contributed to the exemplary collective effort of water conservation in the town, *Magadh Jal Janmat* has turned its attention to the villages, which have been reeling under severe crisis of falling water table and growing cost of running pumping sets. With electricity supply becoming erratic the State borewells were also not dependable as farmers needed water at a certain time and could not wait for the whims and fancies of power supply. Those farmers who could afford opted for diesel pump sets. As the years passed by the ground water kept going down and diesel prices were soaring up.

“By 2007-8 the diesel prices had gone up as much as Rs. 36/- per litre. Even the wealthier farmers could not afford it now as the pumping sets would give less water and consume more diesel. Farming had become completely

unviable and we had no option than to depend upon the rain. This forced many marginal farmers to move away to take up the work of labour in mines in the adjoining area (which is now the state of Jharkhand). Those who could not leave their home had to think about other

options. Magadh Jal Jamat has been active in creating awareness and furthering the cause of making traditional irrigation methods of “Pyne” and “Ahar” functional again.



Magadh Jal jamat has taken up the cause of one of the important *pynes* called “*Jamune-Dasain-Pyne*”. They are using the same method of awakening village community and inspiring them to take charge in their own hands as they did in Gaya. In doing so, they took up the repair of the main channel just outside the city recently where district administration with their head, the District Magistrate, along with large number of concerned citizens participated.

When I went to see their work, they were busy in inspecting the breach in the channel that had taken place on the other side of the railway track. We met a few peasants there, who wanted that breach must be plugged. *Magadh Jal Janmat* (MJJ) people refused to take up the work and rather asked the concerned farmers and their community to come forward and undertake the repair. “If they came forward, MJJ will come to their help and would give some financial assistance also from their kitty”, they were heard talking on phone. The MJJ insists on motivating the community to take up the work while they provide material, technical and financial resource. Faced with the twin trouble, the villages are also gradually forced to realise the importance of traditional irrigation methods of “*Pyne*” and “*Ahar*”.

The Historical Reference

The traditional irrigational technique has a long history running a few millennia back. Known from the time of Jatakas, this community created and owned such irrigational facilities. We have references in the ‘Kunal Jataka’, an ancient Buddhist scripture, which talks about canals dug commonly which served at times as demarcation line between the two land properties. It also mentions that such commonly owned water led to keen dispute.

Later the *Arthsashtra* mentions ‘*aharyadaka-setu*’, as a method of irrigation. It gives details of the social mechanism; planning, construction; maintenance and control of allocation of water and its cost, labour and mechanisms of conflict resolution.

Scholars dealing with such traditionally irrigated societies have termed it ‘hydraulic society’ (Wittfogel), which according to this concept were centrally organized requiring complete control over water giving rise to bureaucratic management and despotic state. Most

of the traditional scholarship would take this as the basis of their notion of 'Oriental depositism'. They have, however, failed to take into contingency the unique nature of *Ahar* and *Pyne* which were largely managed by the community.

In the medieval period, the responsibility of maintenance rested with the Zamindar. Maintenance was mainly in terms of de-silting the tracts. A system of *Goam*, where every cultivator had to supply one man per plough to carry out maintenance/repair work, came into existence. The local zamindar fixed and announced the date of *goam*. If repaired regularly, it didn't involve great effort or finance. The allocation of water within the village was the major source of conflict. A system of *para-bandi* to regulate distribution of water among villages was in place where each village had a fixed quota of days/hrs to utilize the water from the *Ahar* or *Pyne*. A written regulation was maintained by *Lal Bahi* (red register). There was a clear relation between the irrigation work and mode of extraction of agricultural surplus. One of the systems worked out for it was called *Danabandi*, under which the rent was fixed by assessment of crop in field before harvesting.

So long as landlord's income was dependent on his expenditure on improvement of irrigation works locally known as *gilandazi*, no serious decline in the system occurred. But in the later period the system of 'fixed cash rent' came into existence, which created problems as the landlords gave no attention to the improvement or repair of the irrigation system which finally gave rise to *bakasht* movement against the landlords. In the modern times this area has seen major upheavals as briefly mentioned earlier.

Ahar and Pyne

Ahar and *Pyne* are unique irrigation method evolved and managed by the local community.

Ahar is basically a a rectangular catchment basin with embankment only on three sides. In view of the pronounced South to north slope, one meter/km on an average, it is a water storage device by creating an embankment of one to two meters on lower ground from two extreme of this embankment with two other embankments projecting towards higher ground (south) gradually diminishing in height- ending at ground level so that water flows in through the remaining open side from rainwater run-off or from river canals. Unlike tanks, *Ahars* are not dug out- at times built at the end of rivulet or artificial work like *Pynes*. *Ahars*, with sides more than a km long which irrigate more than a thousand acres of land, are not rare but smaller ones are more common

Pyne is an outlet of water from a river or an *Ahar*, through which water arrives by a gravitational draw into distant fields. It is a system to utilize water flowing from hilly rivers running south to north. Most of the year, many of these rivers are dry- but with rainfall they suddenly swell. Due to the slope they rapidly run down or percolate through sand within few days back into sand. Thus, *Pynes* are devices to prevent wastage of water and use them for agricultural purpose. They are led off from point facing the current of these rivers.

In other words, the technique of *Ahar* and *Pyne* uses the natural land gradients to draw water from seasonal rivers without the need of any external hydraulic pressure to fetch the water into the fields. It is in fact an indigenous technique to provide gravity irrigation. *Pynes* are diversion canals from rivers, either to bring water to the fields directly or to an *Ahar*. A *Pyne* also acts as a feeder canal for an *Ahar*, but an *Ahar* can also sometimes be the origin of a *Pyne*.

Some of the *Pynes* are 20 to 40 km in length with a number of distributaries irrigating hundreds of villages. Because of gradual slope within a few km from origin the beds of *Pynes* rise to the ground level facilitating irrigation of adjacent areas retaining flow sufficient enough to move ahead. For irrigation they are temporarily blocked at suitable lengths. As a result many smaller rivers, whose riverbeds are long stretches of sandy plain, never reach the main river like the Ganges. As they leave their mountainous terrain and the gradient flattens, their sediment-laden water loses its force and is lost in the fields. Also these rivers carry good amount of sand along with water filling the *Pyne* beds, which need regular de-silting.

According to the First Irrigation Commission (1901-03) of total 1,670,000 acres more than half of the land was irrigated this way. Gaya district, where this system of *Ahar-Pynes* reached the highest level of development, remained practically immune to famines or floods. Whether it was the Orissa famine of 1866 or the Bhar famine of 1873-74 or later one of the greatest famines of 1896-97, the people of Gaya practically needed no relief.

Both these methods of “*Ahar*” and “*Pyne*” have been prevalent in this area for the last 2500 years or so. They were managed and maintained by the community. There are a number of villages who continue this activity till today and have become “role-models” when others found themselves in deeper crisis of water.

With modern irrigation heavily depending upon ground water irrigation with pumping sets, these “*pynes*” got into disuse gradually. For want of repair and maintenance they existed only notionally. But faced with the crisis of ground water and higher cost of fuel to run pumping sets, they have once again caught the popular attention.

Goam: a community cooperation for self reliance

Before we look at the situation today, let us understand the notion of *goam* so central to the present movement for a self reliant agriculture. Goam is a traditional term used for collective cooperation for undertaking repair work of the irrigation canal in this area. It is not *shramdaan* (literally, donating labour), asserts Ravindra Pathak, a prominent leader of *Magadh Jal Jamat*. *Shramdaan* has a certain arrogance about it, as if it is a charity, he says. When it is a work for ourselves then charity for whom, he asks. In Goam, it is not just physical labour alone but an example of inner determination coupled with a planned community cooperation to clear up the silt from the *Pyne* year after year. As mentioned earlier the dates for Goam used to be fixed and announced by landlords earlier. Every village through which the *Pyne* passed would have their share of responsibilities clearly written in the community water register called '*aabpasi dastavez*', which clearly spelt out the path of *Pyne*, water sharing rules, the amount and time for which they have their rights over the water etc. The independence gave them rights to self determination and even freedom to remain indifferent. The land became private property and the government departments were no longer concerned about it as they had no relation with the harvest.

Lakshmipur: a success story

Some of the villages continued the tradition of Goam on their own and progressed on the path of prosperity where as most of the villages who depended on government or any other external agencies to help them saw abject decline in their agriculture produce. Lakshmipur is one such village on Jamune Dasain *Pyne* which has kept alive this tradition of *Goam* steadfastly and has shown the path of self reliance.

Most of the population of the village are sheikh, Muslims. Usually they were employed as Sipahi (police) for Tikari Raj and so their nature remains very disciplined and unsparing. The rule of village is applied on each and every one without any exception. The village is divided in wards and every ward has its own in charge called *Gardar*. They have a committee which has two experts. For three months in a year two *barahils* are appointed on payment basis who have the responsibility to patrol on the *Pyne* to ensure no one violates the water rule. They report to the committee every second or third day.

When the committee decides the date of Goam every one above the age of 15 years must join in without exception. Whether it is service holders living in the village or a local lecturer or ordinary shop keeper all have to come along. The old, sick and women folk are exempted. But those who do not own land also have to join. The iron smith is ready with his equipment to ensure the tools are in perfect shape, the barber is ready to take out thorn from the feet, the local doctors are there with first aid kits. Early in the morning they take their Tiffin and move on to the 18 kilometer long stretch of the *Pyne* undertaking the repair work. The entire village transforms into an alert soldier and work through the night. Till today, Lakshmipur had never had a failed crop of paddy.

Taking cue and inspiration from the great example of cooperation for self reliance the Magadh Jal Jamat has been trying to inspire other villages to take up the repair work of Jamune Dasain *Pyne* so that the villages which have not got water for last many many years should also taste the fruits of self dependence. The result is that Mr. Shahabuddin of Lakshmipur is the Secretary of Jamune-Dasain-*Pyne* Committee, spreading the flame of hope all over.

Jamune-Dasain-Pyne

Coming back to the farmer's general body meeting mentioned at the beginning, presided over by Smt Sushila Sahai, a respected Gandhian sarvodayee activist, the farmers unanimously elected 104 members drawn from 28 villages (four members from each village) to lead '*Jamune-dasain- Pyne committee*', a unique initiative to revive the age old natural irrigation technique. Some of the members of Magadh Jal Jamat, which had taken the first step in inspiring the local farmers to take steps for a self reliant agriculture, were taken up as the consultative committee members and patrons in the committee formed to reclaim the old irrigational tracts and ensure water to farmers when they needed it most for almost no cost.

The efforts of *Magadh Jal Jamat* in the direction of recharging the ground water in Gaya town had drawn popular attention. They took proactive measures to encourage us to think about reviving our traditional system of irrigation. We also realized that some of the villages who continued relying on this traditional practice were doing rather well. We were most struck by the fact that many of the activists of *Magadh Jal Jamat* had nothing to benefit from this as they were service holders with no land of their own. Moreover we hardly had many options. So, we became active and decided to revive the age old irrigation practice which ensured us regular supply of water for virtually no cost.”, said Ramanand Prasad

Singh, a farmer, who is now leading the '*Jamune-dasain- Pyne committee*' as its president. The '*Jamune-dasain- Pyne committee*' has taken up the baton, as it were, from *Magadh Jal Jamat* in its endeavour to become self reliant in agriculture by restoring the traditional irrigation technique of *ahar* and *Pyne*.

Jamune-Dasain-Pyne originates six kilometers west of the city of Gaya at Orma Chaoardah village in Chandauti block. This *Pyne* takes off from *Jamune* river and in most parts this is supported by natural seepage of water along the *Pyne* that keeps it alive all year long. The *Pyne* is over 28 kilometer long and irrigates more than 32 villages. It has ten main distributary channels (therefore, the name "Dasain" meaning ten) and many dozens subsidiary channels. Taking together all the distributaries the total length covered by this *Pyne* would be over 60 kilometers.

Earlier, this *Pyne* was managed by the Tikari Raj, the Tikari family of landlords. After independence the confusion remained as to who would undertake the repair or maintenance job. Those farmers who could afford resorted to irrigation through pumping sets. But as the situation changed the farmers found it more and more difficult to cultivate with modern techniques of irrigation which could not recover even the cost. The situation worsened to the extent that people had the option of 'buying from land or from the market'. Those who used to believe, 'agriculture is the best profession, followed by the business, service was the last resort if you had nothing else left than to beg', now turned their faces away from agriculture as completely unviable option for them.

"The problem came to such a passé that attempts for self reliance became the only solution. People are now coming back to join hands to revive the traditional system of irrigation", said Ramanadan Singh, the president of *Jamune Dasain Pyne Committee*. Thus, with the efforts of *Magadh Jal Jamat*, the first meeting of the *Jamune Dasain Pyne Committee* took place on 3rd February 2008 at Mahabodhi college premises in the Belaganj block of Gaya to revive the *Pyne* by undertaking *goam*. It soon caught on the imagination and by the month of October an independent committee had come into existence committing to undertake the task of reviving the age old traditional irrigation system.

Today, out of over 32 villages on the *Jamune Dasain Pyne*, more than 28 villages have joined hands to come together. The committee has fixed a contribution equivalent to two liters of diesel per bigha (~1.5 bigha = 1 acre) i.e. Rs 70/-. About 12 villages have already contributed their share. Others are collecting it. "We have asked the villagers to collect the money and keep it with them so that when they require they have it ready with them." Said

Ramnandan Singh. It is not just money that they ask as contribution. Those who can not afford money are welcome to give 'labour'. In fact, we give them greater priority and honour who come forward to support our effort with their personal efforts as labour, said an activist of the Jamat.

It is not an easy task to mobilize people for such a campaign. "People have become used to dependence. They look forward to either government or to an NGO to take up their work" laments Nand Kumar Singh another leader of *Magadh Jal Jamat*. But we are going ahead with the conviction that sooner than later they would realize that there is no substitute to self reliant model. In the centenary year of Gandhi's Hind Swaraj, volunteers of Magadh Jal Jamat and Jamune Dasin *Pyne* committee hold a real promise of achieving another landmark success in their unflinching endeavour for a self sustainable practice in society.

In lieu of Conclusion:

When the power of collective unfolds all conclusions seem tentative. The Magadh Jal Jamat has initiated yet another collective venture when just before Holi, the festival of colour, they have decided to launch a campaign to protect the river *Phalgu* for a stretch of about 12 kilometres downstream starting from the holy town of Bodh Gaya. It has been decided that a mass campaign will be launched against emptying of the sewer lines into the river. Success coupled with such enthusiastic collective support is a heady mixture indeed!

Sustainable Cultures – Cultures of Sustainability is a study conducted by the Coalition for Environment and Development, Finland and funded by the Ministry for Foreign Affairs of Finland. For more information see http://www.ymparistojakehitys.fi/sustainable_societies.html