**Suicidal land loss?**

- Dr. Salim Rashid

***Introduction***: The purpose of this article is to argue that the current rate of loss of agricultural land in Bangladesh is no less than 1% per annum. At this rate, if we argue from the probable causes creating such loss, at least 30% of the agricultural land of Bangladesh will be lost over the next 25 years. This is a fact of great importance, second only to the depressing stories of workers who flee abroad in search of jobs and security. Since the measurement of land is not a particularly complex affair, it is hard to believe that there can be so much diffidence in arriving at a figure usable for policy purposes.

The claim of 1% loss was common knowledgeuntil November 2012, when the figure shrank to .3% without any adequate debate or discussion of the issue. After reviewingsome recent estimates for land loss I will claim thatwe should still use 1% as the most probable rate at which agricultural land is being lost. Along the way I will comment on the needless fog that surrounds a seemingly simple question.

The sole focus here is upon land area and not its quality; for policy problems like food security, many questions arise regarding land degradation, salinity, inundation etc which will be ignored. Everyday conversation reveals an instant acceptance of a high rate of loss of agricultural land, yet recent official figures provide no justification for urgent action. At the least, there should be reconciliation of such divergent views.

On Nov 15, 2012 an article in the Daily Star announced that

“[New study finds 0.3pc of arable land lost each year](http://archive.thedailystar.net/newDesign/news-details.php?nid=257516)”

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| ‘Bangladesh loses 0.3 percent of cultivable land each year due to massive urbanisation, industrialisation and new roads, not the 1 percent long been claimed, according to a recent study….Between 1983-84 and 2008, cultivable land decreased at an annual rate of 0.3 percent, said Mahabub Hossain, executive director of BRAC…"It is an important piece of information, as various issues such as food security hinge on the availability of land," he said, urging the government to conduct a detailed research to find out the amount of land available in the country for agriculture.The agriculture economist said although policymakers claim that a large swathe of land has been reclaimed recently, the amount is still not visibly significant.’The first point to be made is that the estimate was not presented by Dr Hossain, contrary to the impression given by the second sentence quoted. Furthermore, Dr Hossain’s skeptical comment about a large swathe of land as not ‘visibly significant’was not appreciatedin the report. Remarkably, the article does NOT tell us who conducted the study, how it was conducted, and where one could access the new study. This is not how an informed public is to be created.The article clearly struck a chord since it elicited an editorial two days later,“[Monitor **loss** of **arable land** carefully](http://archive.thedailystar.net/newDesign/news-details.php?nid=257742) “, on Nov 17, 2012, pleading for a credible study. Once again the study in question is not named but the seriousness of the issue is underscored.The editorial refers to ‘statistical gymnastics’ having consequences for food security planning. It concludes by saying; “We, therefore, endorse the views of Mahbub Hossain that since food security hinges on the availability of land the government should conduct a detailed research to find out the total land available for agriculture.” Why does the media not invest a little time and effort on this issue, since it clearly realizes its critical importance? Why is measuring land now considered the province of specialists? How can this be responsible journalism? |

This brings me to the first point I wish to make; measuring land is not intrinsically esoteric. Everyone should be able to follow what is being done. Indeed, credibility requires that policymakers use methods that the public can understand, and accountability requires the methods used to be replicable by informed citizens. *Without credibility and accountability, democratic participatory policies cannot be formed or executed. I will focus only on widely available sources, as that is all that an informed public can draw upon.*

***Bewilderment:*** Here are some estimates of land loss, provided only to make the point that the literature can leave one confused. They come from a recent authoritative USAID supported study of NFPSCP (May, 2012) in their review of the literature. “Some 220 ha of arable land is being lost daily to uses such as road construction, industry, houses, etc. (2004)”

BIDS conducted a study to estimate annual conversion of agricultural land to non-agriculture during 2001 to 2008. The survey of 24 villages in six divisions (four villages from each division). Through this study BIDS estimated annual conversion of agricultural land to non-agricultural use is to be 0.56 percent.

In 2004 the Directorate of Land Records and Survey (DLRS) of Ministry of Land in PalashUpazila of Narsingdhi district and Sonargaon of Narayanganj district, observed a decline of agricultural land by 27 percent in Palash between 1983 and 2003 and by 16 percent in Sonargaon bet (1983-2003; 1978-2003) i.e. more than one percent per year.

In addition, if one looks at the detailed charts that used to appear on the ministry of agriculture website one finds further surprises. Between 2004 and 2005 the loss of agricultural land was at the rate of 4.75%, especially astonishing in view of the fact that much of the accreted land comes from Noakhali. Whether it is the definitions or the data that are deficient, we simply do know.

The fog that is created at present can also be illustrated by the multiple statistics one can draw upon. A recent study conducted by the BIDS, “Estimation of the Parameters…Dec. 2012, makes this point using data from the Department of Agricultural Extension (DAE), BBS, and Sparrso .It turns out that BBS has 3 sub sources of data for 2008. 1 The Annual Estimate AE, 2. The Census C 3.The Sample Survey SS; so in reality careful analysis requires a study of 4 potentially different estimates. Some differences lead to calculable corrections. The C and SS studies of BBS exclude plots below .5 decimal but AE may not exclude them. Since lands which are below .5decimal are about .13% of total agricultural land, we can make our own adjustments. If this were the only difference, then we can compare the different estimates, but unfortunately, BIDS (2012) shows us that this is not so.Now consider that the Census and the Sample Survey almost never agree for area under cultivation---so how was the sample survey undertaken? That BBS are the mandated source for all policy data makes such questions particularly relevant.

 If one attempts acareful comparison of all the differing estimates, one is still faced with a caveat from BBS; Fn5 on p22 of BIDS (2012) says “However, the concerned BBS officials are of the opinion that comparison of data from Annual Estimates 2008, Sample Survey, 2008 and Census of Agriculture, 2008 is inappropriate due to differences in methodology, coverage, and purpose in collecting the data in these three cases.” Such caveats are a real problem because claims about “timing, purpose, coverage and methodology” can cloud any question based on survey data. Someone has to take a little time and make explicit exactly what the differences are so that we can make our own adjustments. Otherwise, there cannot be an informed citizenry. The alternative of an accurate Census, is too slow and too expensive to be relevant for policy, but modern technology offers us a viable option, satellite imagery.

***Clarity:*** Satellite images are the most objective data source we know of for such questions. They have the enormous advantage of being verifiable by independent researchers. The images from NASA cost 5 lacs at 30 metreresolution and 1 crore for 7 metre; this isnot cheap, but for the important policy uses involving food security of 160 million people, it is practically free. Processing the data on a soil resource development institute (SRDI) computer takes another 16 hours, so time is not particularly a constraint. Table 1 shows the summary results of such analysis. At the moment, SRDI uses about 1500 locations to verify, or ‘ground truth’, its findings, so this is reassuring. Most importantly, if the images are made available to qualified researchers and the media, anyone who has alittle time and money can independently verify queries about land and and soil, right down to the ‘bhita’ level, just by using the computer. Since BBS and SRDI differ on the total amount of land, as well as the significant sub-categories of land, it will be best to treat each source, BBS and SRDI, separately, especially since the finding about the rate of crop land loss is not much affected thereby. [The SRDI volume exhibits some needless criticism of prior data, which is best ignored]

What is required however is for SRDI to obtain data at the much higher resolution and ground truth their findings with the specific clusters where BBS develops its data from; simultaneously, BBS should move to further random spots to confirm or refute the findings of SRDI.The total land area of Bangladesh has increased by .4% between 1948 and 2006 according to Rahman (2010), who used BBS statistics. Rahman considers this to be due to accretion of river chars, but this is questionable. Unless the water flow in a river lessens, the formation of a char on one bank should mean an overflow of water somewhere else. So the net accumulation of land should be due to coastal reclamation. BBS claims the total cultivable land area of Bangladesh to be 9.5 million ha, while it is only 9.1 million ha according to SRDI; the natural candidate for reconciliation is accreted land.

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| TABLE 1. land use changes 1976-2010  |  |  |  |  |  |  |
| land cover type | year 1976 |  | year 2000 |  | year 2010 |  | average annual change |
|  | area (ha) | % | area (ha) | % | area (ha) | % | Of the total (%) |  |
| agricultural land | 13303654 | 91.83 | 12742274 | 87.69 | 12176904 | 83.53 | -0.172 | -0.416 | -0.244 |
| crop land | 9761450 | 67.38 | 9439541 | 64.96 | 8751937 | 60.04 | -0.101 | -0.493 | -0.216 |
| forest | 1754917 | 12.11 | 1311121 | 9.2 | 1434136 | 9.84 | -129 | 0.081 | -0.067 |
| mangrove forest | 452444 | 3.12 | 486791 | 3.35 | 441455 | 3.03 | 0.009 | -0.032 | -0.003 |
| river | 911819 | 6.29 | 888441 | 6.11 | 939073 | 6.64 | -0.007 | 0.033 | 0.004 |
| lake | 50829 | 0.35 | 58261 | 0.4 | 51739 | 0.35 | 0.002 | -0.005 | 0 |
| beel&haor | 239977 | 1.66 | 251774 | 1.73 | 250727 | 1.72 | 0.003 | -0.001 | 0.002 |
| aquaculture | 582 | 0.01 | 143506 | 0.99 | 175663 | 1.2 | 0.041 | 0.022 | 0.035 |
| tea estate | 119847 | 0.83 | 138533 | 0.95 | 96152 | 0.66 | 0.005 | -0.029 | -0.005 |
| salt pan | 11789 | 0.08 | 24306 | 0.17 | 36022 | 0.25 | 0.004 | 0.008 | 0.005 |
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| non-agricultural land | 1183605 | 8.17 | 1788307 | 12.31 | 2400687 | 16.47 | 2.129 | 3.415 | 3.025 |
| rural settlement | 885637 | 6.11 | 1458031 | 10.03 | 1766123 | 12.12 | 0.163 | 0.208 | 0.177 |
| urban and industrial | 26799 | 0.19 | 47495 | 0.33 | 87616 | 0.6 | 0.006 | 0.027 | 0.012 |
| accreted land | 271169 | 1.87 | 282781 | 1.95 | 547128 | 3.75 | 0.003 | 0.181 | 0.055 |
| Total | 14487259 |  | 14530581 |  | 14577771 |  |  |  |  |
| Source: Agricultural Land Availability in Bangladesh, SRDI (2013), p15 |  |  |  |  |

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The Table shows that river char, haorsetc cannot account for the increase of land, which must arise from recovered coastal land. But this may resolve the paradox of popular perception. Yes, crop land is being lost at unheard of rates from known settled areas; but this is sometimes balanced by land recovered in the coastal areas of the Bay of Bengal. [p2, #3, SRDI]The timing of this physical event is marred by disagreement. According to BBS, the accretion basically occurred in the 1980’s [Table 1 of SRDI, p4], but the gain in fertility and hence classification as crop land seemed to occur over the next two decades. The last row of the SRDI table shows accreted land increasing at 3.75%; even though this is considered as non-agricultural land by SRDI, it may account for the increase of crop land in BBS, since such char land becomes more fertile over time.

BBS data shows us that between 1986 and 1996, to choose two arbitrary dates, crop land was being lost at about 1% per year. [Table 1 of NFPSCP].This clears up the argument. First, the public *is* correct in pointing out the loss of the agricultural land that they do see—in all settled areas of Bangladesh land is probably being lost at 1%. Secondly, the experts claim is also true--- very few of us see the total crop land because the new lands are remote and coastal. The reader can be left to judge whether any complacency about land loss can be justified on this basis.

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| ***Summary of crop land loss:*** Let us focus upon the period between 1986 and 1996 in the BBS data. Land was being lost at 1% to satisfy the need for housing, roads and industries. Have the forces creating a demand for housing, roads or industries lessened since then? Quite the contrary. Economic growth has accelerated somewhat, staying consistently above 6%, despite some wavering, and so has the inflow of remittances, which may have increased somewhat during the global depression. It is only the classification of acquired coastal land that is permitting complacency about the actual loss of crop land. What are the causes of coastal accretion? Are they waxing or waning? This is a more delicate scientific issue, which really does need experts, butno one appears to address this issue in the media. What about SRDI data? Whatever their differences over the totals, SRDI data clearly shows an acceleration of crop land loss in recent years. It jumped from 13413 ha pa in the 24 years before 2000, to about 68690 ha pa in the decade since---a fivefold rate of increase. If we estimate a point rate of change in 2010 it is about -.8 per cent. Since the data shows an accelerating trend, the rate of land loss in 2014 can be claimed to be 1%.The media has to prod the establishment into giving us competent, comprehensible answers and stop bandying loosely referenced information. Till they do this, the most reasonable opinion about the policy relevant rate of loss of agricultural land is still 1% per annum---which is alarming.The original article in the Daily Star astonished me, so I immediately queried several economists who should know, ---and got no response. The second problem lies with our experts. They make carefully guarded statements but never seem to follow up their doubts. Why does every question have to become a ‘project’---something to be financed by a donor? Can Bangladesh not build up its own expertise simply because the questions are relevant? |

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*Dr. Salim Rashid, Chairperson Compact Township Foundation (CTF), Visiting Professor University of the South Pacific, and Professor emeritus, University of Illinois, USA*