# cpwf_logo.JPGWater food and poverty in river basins

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## How are water, food and poverty related?

When we started the basin focal projects (http://cpwfbfp.pbworks.com/), ‘water poverty’ was a key concept in our analytical framework. We defined it simply as the poverty which could be removed by improved agricultural water management. As we started to progress through the first set of BFPs (for the Karkheh, Mekong, Sao Francisco and Volta) it became clear that our original ideas were overly simplistic, and that the causes of poverty were far more complex than we had envisaged. As Mark Giordano of IWMI noted from the Karkheh basin in Iran, it was difficult to support a simple concept of water poverty in the Karkheh basin because poverty, such as observed, was related more to institutional and political factors of overall development than to limitations in agricultural water management.

In each of the other basins studied, different factors began to emerge about the relationships between water, food and poverty. As analysis from 10 basin focal projects accumulates we can see more and more specific links that seem to add to a picture of enormous variety and complexity. This is perhaps hardly surprising, given the diversity of the river basins themselves: from the poverty-stricken Mali in the Niger basin to the relatively wealthy and industrial Sao Francisco in Brazil; from very ‘wet’ Mekong to the ‘dry ’ Indus; from the intensely irrigated Ganges or Yellow Rivers to the non-irrigated Volta. Conditions within the larger basins are also highly diverse. Take the contrast between Upland Laos and the Vietnamese Delta in the Mekong.

So how can we make sense of this complex picture, in order to progress from the specific to the general? We hypothesize that this huge diversity of relationships can be reduced to 5 distinct types of water-related poverty. Each is distinct from the other in its causes, hence solutions. We expect BFPs to help assign approximate numbers to each type of poverty so that – despite this complexity - it will be possible to improve our understanding of poverty alleviation, and increase the accuracy of targeting.

## Five types of water-related poverty

Poverty tends to increase:

1. …where people are deprived of water for basic needs of consumption or sanitation as a result of **water scarcity**.
2. …where people **lack equitable access** to water.
3. …where people are **vulnerable to water-related hazards** such as floods, droughts or disease.
4. …where people acquire insufficient benefit from water use. That is, **low water productivity**.
5. …where people suffer loss of livelihood as a consequence of change.

## Explained in a little more detail

### Type 1: Scarcity

Scarcity can be measured relatively easily as m3/capita. In fact, although provision of water is seen as a basic right, hence requirement, the total availability of water (as opposed to access) is not strongly correlated with poverty. One reason may be that in developing economies, people cannot live where water is unavailable. Some startling exceptions distort any such relationship between poverty and water scarcity. For example poverty occurs in very wet countries such as the Democratic Republic of Congo or wealth in very dry countries such as UAE (Dubai). The example of Dubai shows that when economies have sufficient wealth, technology can be bought to overcome the basic constraint of aridity. Nevertheless provision of safe drinking water and sanitation is a basic plank of development in all countries and where agriculture is seen as a major consumer (through irrigation in the Limpopo) or polluter (through cattle-vectored water borne disease in the Nile), changes in the agricultural system may improve total supply.

The ability to provide and regulate water is an ecosystem service that, until recently, has hardly benefitted the people who manage the provisioning areas. Schemes to develop payment for ecosystem services remain isolated and small but seem likely to expand in basins where income levels are sufficient to support transfers of cash payments to providers of ecosystem services.

### Type 2: Inequitable access to water

A more widespread problem than absolute water scarcity is lack of access to water. Deprivation can occur because of inequitable allocation of water amongst users. Of course, this is most severe where the water resource is limited. But case studies show that even where the total volume is adequate for all, but some users, such as agriculture, may take an unreasonable proportion of the resource. The causality is clear: a lack of effective regulation mechanism that benefits all legitimate users. Quantifying this effect beyond cases studies is more difficult. A range of solutions are being sought, including multiple use allocation and pricing policies. Infrastructure development to improve supply consumes a large proportion of overseas aid budgets. The CPWF’s central concept of developing multiple use systems is based on the understanding that poverty can be alleviated through more equitable access to water. The goal is to unleash the ability of women and men to develop imaginative uses of water resources and hence increase water productivity.

### Type 3: Vulnerability to water-related hazards

Large numbers of people in the Nile, Niger and Limpopo basins are vulnerable to drought; many in the Volta are affected by malaria and other water-related diseases. Floods are problematic in the Limpopo, and (this year) caused problems in the Sao Francisco. Large numbers of people in the lower Ganges have been hit by cyclone-related hazards. A recent report from the Global Humanitarian Forum estimates that 4 billion people are vulnerable to the impacts of global climate change, with an annual death toll of 300,000, and an annual economic loss of USD 125 billion. Solutions to reducing vulnerability include hazard warning and hazard management.

### Type 4: Low water productivity

The lack of benefit acquired from water use is an opportunity cost that – in theory at least - can be gauged by the water productivity gap, that is, the difference between actual and potential water productivity. Low productivity is caused by limitations due to co-factors of production. Commonly the cause for absence of co-factors is institutional failure – a lack of capacity to organize around the production system. This loss affects the vast majority of people who live in basins. Water productivity in most basins appears to be a fraction of its potential.

### Type 5: Loss of livelihood

Change in basins can disadvantage groups of disadvantaged people who. Two examples: fishers in the Mekong and other basins in SE Asia are at risk because of changes in hydrology resulting from hydro-power development; livestock farmers in the Sahel are at greater risk as a result of lost access to crop residues. These problems affect the poorest, who also tend to be those least heard. A reasonable solution appears to be more inclusive dialogue during change processes to ensure that all people dependent on common water and land resources are represented during change. This is described by Dore (2008) as Deliberative Water Politics: informed and transparent debate that enables broad engagement with the change process, and helps ensure that the risks of change are recognized and mitigated.

## For more information:

The above discussion attempts to bring together local, basin and global pictures of poverty.

For more detailed reading, see the list at: <http://cpwfbfp.pbworks.com/Poverty>.

For information about poverty analysis in individual river basins, consult the following specialists:

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| **Basin** | **Poverty Analysis** | | **Also see** |
| **Andean** | Glenn Hyman | g.hyman@cgiar.org | [BFP Andes blog](http://www.bfpandes.org/) |
| **Indo-Ganges** | Upali Amarasinghe | u.amarasinghe@cgiar.org | [IWMI BFP for IGB](http://bfp-indogangetic.iwmi.org:8080) |
| **Karkheh** | Mark Giordano | m.giordano@cgiar.org |  |
| **Limpopo** | Charles Mataya | cmataya@poly.ac.mw |  |
| **Mekong** | Eric Kemp-Benedict | erickb@sei-us.org |  |
| **Niger** | John Ward | j.ward@csiro.au | [Niger BFP](http://cpwfbfp.pbworks.com/Niger) |
| **Nile** | Don Peden | d.peden@cgiar.org |  |
| **Sao Francisco** | Steve Vosti | savosti@ucdavis.edu |  |
| **Volta** | Jorge Rubiano | jerubiano@gmail.com |  |
| **Yellow** | Akhter Ahmed | a.ahmed@cgiar.org |  |