**PSM comments on:**

***Water and food security - a zero-draft consultation paper***

1. **Overview**

We thank you for giving us the opportunity to study the zero draft of this consultation paper on this very important question. Water and food are essential to life, and so the topic demands insightful inquiry.

While there is much in the report to commend it, we regret that we find its strategic intent to be overly general. In order to remedy this, the introduction should contain a clearly stated set of strategic issues/themes linking water and food security and nutrition, and better references to the topic. In general, more should be done to increase the cohesion of narrative themes and to follow-through on ideas in order to arrive at a recommended strategy.

In general the report is confusingly structured and difficult to follow. It would benefit from revisions that re-organize ideas in order to present them in logical succession.

Increased balance and objectivity is required. Unfortunately, the current draft seems to be a mix of interesting material and facts with unsubstantiated and ideologically motivated assertions. The water/food security issue concerns the entire planet, including both developed and developing countries, and therefore measures should take global needs into consideration. Greater clarity is needed in separating conjecture from facts.

Whilst we recognise that this is very much a work in progress, we do believe that it requires a significant effort in re-drafting to improve its structure and ensure its readability, balance and credibility for decision-makers. At present, in some sections it reads more as a lobby document for a particular point of view rather than balanced analysis and advice. We hope that this is unintentional and that it can be corrected by providing a more balanced view in subsequent drafts.

1. **Generic questions**

In light of the above we attempt to give broad and constructive answers to the five key questions that you pose.

1. ***The scope of the topic of water and food security is very broad. Do you think that the V0 draft has adequately charted the diversity of the linkages between water and food security and nutrition? Is there important evidence or aspects that the present draft has failed to cover?***

We find that the authors have attempted to introduce too many subjects that are not strictly related to the mandate given. This makes it extremely difficult for the reader to identify and comprehend the linkages in a meaningful way. At the same time, some issues that have very great importance in the real world (water energy linkages, competition for water between varied human needs, the management of diffuse pollution, economic issues including financing and pricing etc.) are underplayed. The report must acknowledge that complex trade-offs are often necessary.

The impact and dependencies of agriculture on water should be highlighted at the watershed level. Agriculture accounts for the majority of global water withdrawal. It is therefore an integral part of any global or national water strategy. In this context the role of: farmers, as land and water stewards, and agri-business companies, as solutions and resources providers, should be explained in the report. In addition, it should be acknowledged that rain-fed agriculture accounts for the vast of majority of production, and should be considered very differently from irrigated agriculture.

Some of the ways in which access to water unlocks value for farmers in developing countries are not addressed in the report. These include:

(2) increasing a farmer's access to seasonal and operational finance.

(3) reducing the risk of crop failure/loss due to drought, thus making crop insurance more economically feasible.

(4) helping poor farmers build tangible assets (with proper land titles) that can appreciate in value and can be sold/transferred to create wealth for farm enterprises. (e.g. un-irrigated, untitled land can be worth less than $100 per hectare; irrigated, titled land can be worth $10,000+ per hectare)

1. ***Has the report adequately covered the diversity of approaches and methodological issues, in particular concerning metrics and data for water and food security? Which metrics do you find particularly useful and which not?***

On a general level, the metrics and data dimensions of the paper could be developed further to underline the water and food security challenges. At the heart of this is the question of how to grow enough food using no more water than that which is available today. In this regard, we believe the scenarios developed by the OECD in its work associated with the production of the *Environmental Outlook to 2050: the Consequences of Inaction*, offer an interesting example and useful data.

There is also no mention of any initiatives to close research and data gaps, including for groundwater resources.

A geographical map of the world-wide distribution of irrigated farmland, specifying land that is irrigated and the type of irrigation used, would be a useful piece of information in the report.

With regards to p.16 Comments on the poor predictive ability of current rainfall prediction models within the climate change realm (see e.g. the Berg River Catchment area in South Africa which is cited) could be elaborated on and studies accordingly encouraged. This is crucial for expectation scenarios and managing them on a national, regional and local level.

With regards to p. 39, lines 1-2*: “On average 1 kg of animal product uses from 3000 to 15000 m3 of water depending on management and animal efficiency in converting feed to products.”* The numbers cited appear quite high and should be further explained. Compared with carbon footprinting, the science of water footprinting is less well developed. Early attempts at quantifying the water footprints of dairy products, (e.g., 1,000 L/L of milk, 5,000 L/kg of cheese; [http://www.waterfootprint.org](http://www.waterfootprint.org/)), building on the concept of virtual water, have reported volumes only. Such volumetric water footprints are potentially misleading and confusing because they fail to take into consideration the type of water being used and the local water scarcity where processes occur. For example, the potential harm associated with consumption of so-called green water, derived from natural rainfall over agricultural lands, is not equivalent to so-called blue water withdrawn from surface and groundwater resources. A more detailed analysis using life cycle assessment-based methodology, taking into account local water stress where operations occur, reported normalized water footprints of 14.4 L/kg of total milk solids in whole milk at farm gate and 15.8 L/kg of total milk solids in skim milk powder delivered to export destination (Ridoutt et al. 2010, J. Dairy Sci. 93:5114). In general terms, description of livestock products as “water intensive” can be misleading. Rainfed livestock grazing systems can be more water effective than irrigated crop production.

1. ***Food security involves trade of agricultural produce, and a virtual trade of water. Agricultural trade interacts with water and food security in various ways, and differently for food importing countries, food exporting countries, water scarce versus water rich countries. Do you think the V0 draft has appropriately covered the matter?***

As the report’s general philosophy appears to be weighted against the economic dimension of sustainable development, in favour of the ecological and social dimensions, its contribution to this discussion appears less fertile than it could be.

In addition, increased economic efficiency due to water transport is an important element of the water-food-energy-trade nexus not touched upon in this report. Bulk and cold chain transportation by water costs a fraction (per km, per kg) of road transport and should be included as an important "food security" variable. Improved water transport will unlock value in four ways: it can reduce COGS (cost of goods sold), it can reduce post-harvest losses, it can reduce the cost of food for consumers, and it can increase farmer incomes.

1. ***In this report, we considered the potential for an expansion of the right to water to also encompass productive uses. What kind of practical and policy challenges would this bring?***

We find that the report is insufficiently clear with regards to the expansion of the right to water, and perhaps takes the logic of human rights too far. Mixing the water needs of people with those of irrigation and ecosystems in this report is more likely to add confusion than to provide solutions. This would not help decision-makers and is likely to devalue much of the rest of the content of the report. We suggest that the recommendation on extending the existing human right to access to safe drinking water and sanitation beyond its current well-defined scope be removed from section 3.

1. ***Which systemic actions/solutions/approaches would be the most effective to enhance water governance, management and use for food security?***

In general, the role of technology, best practices and innovation is under-represented in the report. Solutions like drip irrigation, drought-tolerant crops, and grey water use deserve more attention, as does innovation in allocation management systems.

We believe that it would be much more constructive for the report to focus on concrete policies, technologies, and programs to provide farmers with access to water.

We would suggest the report place more emphasis on the processes of water stewardship as a practical way to enhance water governance, to allocate resources, and improve water management to ensure food security in ways that are consistent with the need to meet other securities. In our experience, water stewardship is a more practical and operational approach to mitigating water security issues than the water footprint approach. The water footprint approach is good for awareness raising, but does little to provide real guidance for concrete action. We therefore suggest you add a section on water stewardship.

We also suggest that a more in-depth discussion of how states can develop national policies and priorities to improve water productivity in both rain fed and irrigated agriculture would be beneficial.

It is also difficult to see how this question can be answered satisfactorily without a much more serious consideration of the economic dimensions of the challenge, including the questions of costs, price and value. Without this, the capital and operating investments necessary cannot be assessed and nor can the value of the benefits to be generated.

The document would also benefit from more structure when discussing the value chain for food production – including post-harvest losses.  This would be a useful framework to use in framing the objectives of this report as well as the risks/opportunities involved.

1. **General comments on content**

Given that this is an early draft, we do not believe it is of much value to make very specific comments on detailed drafting. Nevertheless there are a number of points that we believe it would be useful to highlight. Please do not consider this an exhaustive list.

* 1. **Allocation and reallocation**

One of the most difficult challenges that decision-makers will have to face in the coming years is the need to prioritise the competing interests and trade-offs of different parties (this includes both individual and collective interests). At the heart of this will be the need to ensure the water, food, energy, land and other securities of individuals, communities, both state owned and private corporations, the environment, states, regions and global systems. The geographic scale and temporal constraints of these are likely to become less and less well aligned.

Much of this is implied in the draft report, but obscured by the lens through which the report has chosen to examine this complex subject. Decision-makers at many levels of government will be called on to both allocate limited resources, such as water, and, much more difficult, reallocate them, which may mean removing or restricting an allocation that someone already has for the good of everybody else. Some such decisions have to be permanent and others temporary to respond to a drought or similar event. Aligning individual rights with collective interests presents real, practical challenges. Whilst the report rightly draws attention to the need to include all stakeholders, including those with a weak or no voice, the report appears to champion these latter stakeholders without helping policy makers develop policies that satisfy all water demands simultaneously, including those that underpin jobs, production, and overall stability.

* 1. **Section 1.3.5**

Section 1.3.5 is titled “Increased interest for water resources by big corporate actors: “water grabbing”?”  We recommend replacing this with a section that inventories and assesses corporate interests and investments in water, particularly from a corporate citizenship/sustainability perspective.  There are also significant risk management and productivity objectives of corporations that would be synergistic with efforts to manage water and food security and nutrition. This document misses the opportunity to include an organizing principle around which they could rally private sector support and engagement.

We note the CFS specifically chose not to use inflammatory language and undefined terms (e.g. “land and water grabbing”) during consultations on the Voluntary Guidelines on the Responsible Governance of Tenure. We suggest that the HLPE follow suit.

* 1. **Dealing with land salinization**

With regards to page 30, lines 22-27: further conventional irrigation with saline water can, in the long term, rule soil out from being feasible for agricultural uses. Adequate irrigation practices such as drip irrigation along with drainage can maintain the salinity level at the root zone beneath the critical salinity damaging for non salt durable crops. Drip irrigation keeps the root zone constantly wet due to the low discharge rate and the daily irrigation. In these conditions the salinity level can be constrained with less crop yield reduction and sustained soil salinity, for a longer period of time.

* 1. **Pollution prevention, protecting water quality, water reuse and resources recovery**

The questions of preventing pollution, catching and removing polluting substances from used or polluted water so the water can be reused safely, and of recovering the resources thus removed for beneficial use are becoming widely recognised globally. These questions apply to agricultural as well as urban, and industrial activities, and to energy production. They are partially mentioned in the report. In our view however, they need to be emphasized much more strongly.

In many cases, agricultural activities are the cause of very significant amounts of both “point source” and “diffuse” pollution. Poor agricultural practices, including uncontrolled discharges, polluted run-off, and erosion are some of the most serious causes of damage to the aquatic environment worldwide. They pose a real threat to water security at all levels. At the same time, they reduce the amount of water available and lead to expensive wastes of other resources. Recent and ongoing work by the OECD could be referred to in this context.

Governments, farmers, food processors and consumers all need appropriate information, incentives, regulations and penalties, designed to overcome these pollution related issues. Action needs to be taken that is in line with the 3R’s approach: Restrict pollution at source, Remove pollution from water after use and Reuse the water and other resources beneficially. We believe that there is considerable scope for the report to be reinforced to highlight this as a very important way of improving the water-food-energy-land security nexus.

We have several concerns with regards to the treatment of the relationship between fertilizers and water quality in the report. For example, in Page 14, lines 2-3, it is suggested that Nitrogen and Phosphorus are “key water pollutants stemming from agricultural production”, without adequate discourse on the use of best practices and varied sources. Page 22, line 16, Suggests using point source wastewater on agricultural fields to reduce cost of fertilizer application. Page 46, lines 7-9, promotes the “underutilized resource” of human urine and feces as fertilizer as an “untapped resource”. We suggest that these sections be reconsidered, taking into account food safety and human health considerations, and acknowledging that sewage, whether human or animal, is capable of polluting and spreading disease. The concluding point of the policy recommendations on p. 49 – line 6, should have the words “water reuse and recycling, nutrient recovery and reuse” added after the words “urban agriculture”.

It should also be recognised that the reuse of urban wastewater is growing steadily throughout the world as a means of mitigating water scarcity. It would be useful to add a paragraph to section 2.3.1 explaining that to mitigate potential health difficulties, WHO has produced guidelines that are periodically reviewed and improved[[1]](#footnote-1).

More emphasis should also be put on the recycling of water and sourcing from other places such as desalination of seawater. As noted earlier, innovation is under-represented as an aspect of this project.

* 1. **Increasing water use productivity in Agricultural production**

As indicated by the OECD in the Environmental Outlook to 2050[[2]](#footnote-2), there will be little scope for increasing water for irrigation. This point should be introduced more clearly and developed further in the report. It is very important to understand this as a global constraint and quantitative limit to water available for agricultural production.

Improved input-use efficiency through better technology and related productivity increases is the most economically viable solution to closing the water gap in agriculture dominated economies, as highlighted in the “*Charting Our Water Future*” report of the Water Resources Group. Water harvesting, and techniques such as conservation tillage, should be explored. The report should also emphasize how productivity gains in agriculture will lead to long-term improvements in water use efficiency. The following measures could be considered, as they are deemed to be important in this context:

* 1. Sustainable Intensive Agriculture - *Grow More from Less* – we have to use water wisely and efficiently to grow more food and to reduce water wastage and loss throughout a product’s value chain.[[3]](#footnote-3) Produce more crops per drop of water, per hectare of land, per hour of labor, per application of crop protection products.
  2. We agree with the statement in the report that “*the challenge for irrigated agriculture in this century is to improve equity, reduce environmental damage, strengthen ecosystem functions, and enhance water and land productivity in existing and new irrigated systems.*” (page 30, line 28-30). However, this could be tackled by focusing on maintaining and improving the agricultural water demand and supply balance within a watershed, through for instance:
     1. *Altering traditional crop selection criteria –* to promote consideration of water supply (not water availability) in the crop selection process. For example, substitute water intensive crops for less water intensive crops or imports, in water scarce regions. There is extensive work underway on dry-land techniques
     2. *Maintaining and improving soil structure* - to enhance soil water holding capacity and reduce soil based evaporation. This is mentioned at places in the report, but the benefits of sustainable soil management and use, or good water / irrigation management practices in controlling soil erosion and water contamination, are not emphasized. (land productivity section)
     3. *Advancing water application systems in crop production* – to encourage adoption of water efficient irrigation techniques: sprinkler or drip irrigation; combined water, fertilizers, and chemical inputs application techniques.
     4. *Trans-boundary cooperation* - to maintain and improve water demand and supply balance. For instance, there was not much mention in the report of the groundwater boom in Asia. Again, the role of innovation must be emphasized.

Building a virtuous circle of improved water productivity, primarily in irrigated agriculture, but also in rain-fed production, reduced waste of water, energy and other related inputs and reduced damage to water resources, needs to be given more emphasis. Could the potential for upscaling the approach outlined in section 2.4.4 to cover a wider range of producers than small scale subsistence farmers alone not also be considered?

* 1. **Section 3.2.1 From Delhi to Dublin**

The way the report sets the fourth Dublin principle apart from the other three appears to be very unhelpful. Our understanding is that all four Dublin principles were intended to act together and inseparably. Water is a social good and an environmental and an economic good, and it is also a common good and a private good. It is all of these things at the same time, with the relative importance of one dimension varying relative to another only in degree depending on circumstances. By isolating the fourth principle from the rest and apparently opposing the economic approach, the report perpetuates an outdated and unconstructive view.

* 1. **Section 3.3**

Section 3.3.1 “valuing and pricing water” could be made into a constructive and helpful discussion by developing the statement made in the first sentence “*Water pricing policies can improve efficiency and sustainability when combined with appropriate supporting policies*” (page 59, lines 5-6). For example, the OECD highlights water pricing as a useful policy option for creating incentives for water efficiency. “*Water pricing can be used to signal scarcity and to create incentives for efficient water use in all sectors (e.g. agriculture industry, domestic). Social consequences are best addressed through well-designed tariff structures or targeted measures. In combination with regulations, standards and public support to innovation, water pricing will curb water demand and make alternative water sources (such as reusing untreated wastewater) competitive*.”[[4]](#footnote-4)

There is little in section 3.3. of real use for policy makers. Statements such as “*water pricing may conflict with the idea that the provision of water services is a basic right to all individuals if water prices rise to a level that low income households cannot afford*” (page 59, lines 7-9), which is not based on the position of the human right to safe water and sanitation, are misleading and very far from the water for food topic of the report. Other statements have nothing to do with the context being discussed, for example, “*and past and controversial attempts at water privatisation*”; “*The role of the World Bank has been particularly controversial around both the hydropower and privatisation debates*” (page 66, lines 1-2). They should be removed to avoid devaluing the report.

Section 3.3.3 provides a very distorted view of the activities of the private sector and does nothing to recognise the constructive contribution made by many different firms and business organisations from different industrial sectors to improving the understanding of water issues, including the water-food-energy nexus. Private companies also provide know-how, processes and technologies, and investment, as well as implementing cooperative water management processes with governments and other stakeholders.

The first three pages of this section deal exclusively with the provision of public drinking water and sanitation services, which is a long way from the topic of the report. In addition the section implies that private water operators do not see water as a public good to be provided at affordable rates for everybody. This material should be deleted.

* 1. **Section 3.6**

Section 3.6 appears to stray further and further from the subject of the report and as a result becomes less and less helpful. It appears to be designed to put pressure on human rights specialists to accept a particular perspective rather than to provide operational advice to those working in the field of food and nutritional security.

The introductory paragraph concludes with the statement “*the right to determine and set one’s own priorities and strategies*” (page 69, lines 20-21). There is a trap in this, because there have to be limits to what the individual can do when this affects the rights of other individuals or the community as a whole. This dilemma appears to be recognised in some of the comments in the rest of this section, but no helpful advice is offered..

Section 3.6.3 appears to be designed to exacerbate the supposed controversies rather than to resolve them. Much of this section has nothing to do with the subject, particularly box 22, which should be removed since it has no linkage with food security..

* 1. **Gender equality**

The section on gender equality in the water management and use sector could be strengthened, showcasing the benefits of achieving such equality. (we recommend referring to “*Effective gender mainstreaming in water management for sustainable livelihoods: From guidelines to practice*” by Dr. Margreet Zwarteveen, Irrigation and Water Engineering, Wageningen University.)

1. **Draft recommendations**

The recommendations should focus on more constructive suggestions not only on **what** should be done, but on **how** to do it.

Expanding the existing right to safe drinking water to include “*water for ecosystem reserves and water for subsistence production*” would be detrimental to the billions of people who are still waiting to have their human right to access to drinking water that is really safe. For this reason, we suggest that recommendation 12 is removed and replaced by a recommendation that focuses on water for food production only.

The report should include a recommendation that the use of water in agriculture be optimized, and water optimization be prioritized in agricultural policies. Policy frameworks which recognize the interdependence of energy, food, water, and health should be promoted. In addition practical, feasible, and time bound water policy targets should be set for the achievement of a sustainable level of water efficiency in the agricultural sector.

The aim of agri-policies should be to get a higher yield from every drop of water in the most sustainable manner, if we are to manage this scare resource more wisely. The importance of innovation, research and development in this area is key, including drip irrigation and drought resistant technologies. These policies should be supported by productivity based indicators/metrics, which recognize the interdependence of water with other issues, particularly energy and food, as well as climate. For instance, water metrics based on food calories per unit of irrigated water could be considered.

Policies to support the resilience of farmers, particularly smallholders are essential and should align with work like that done by ICARDA and CCAFS.

The report should include recommendations to Improve the targeting of policies in areas where water wastage and pollution is most acute. They could involve:

* + *Integrated planning and management across competing uses of water* - to ensure that everyone gets a fair share of water. For instance, there is no mention of water user associations/farmer associations – they can be very effective in managing water use in developing countries.
  + *Establishing and strengthening legal and governance frameworks for water* – to facilitate correct mapping and accounting of water scarce regions. For instance,
    - formalization of the water sector to facilitate water valuation and establish water rights;
    - building the capacity and knowledge of policy makers and decision takers to help them design, implement and understand the impacts of policies in advance, as well as to monitor and track on-the-ground progress of enacted policies;
    - setting-up information systems for dynamic mapping of water sources in order to support farmers, water managers, and policy makers;
    - supporting training and educational institutes to build capacities at local level to better manage water resources; and financial institutes that benefit rural poor and resource constraint growers to adopt better means of water resource management,
  + *Promoting public-private partnerships – to* enhance water use efficiency and to garner support for inter-basin transfer infrastructure.
  + *Identifying and promoting technologies that develop and protect water resources* – to enhance agricultural productivity and simultaneously support mechanisms that help in the diffusion and dissemination of these technologies to the ones that need them most.

The report should include a recommendation that Businesses be encouraged to drive sustainable solutions at scale while linking development goals to core business interests, identifying and managing their impacts and collaborating with governments and civil society. They could include:

* + Incentives for efficient irrigation systems tied to productivity improvements, or even to amount of calories produced.
  + Simple and pragmatic water accounting and reporting tools developed to measure agriculture water intensity (off-rain water).

1. <http://www.who.int/water_sanitation_health/wastewater/gsuww/en/> [↑](#footnote-ref-1)
2. OECD Environmental Outlook to 2050 : OECD 2012, <http://www.oecd.org/env/indicators-modelling-outlooks/waterchapteroftheoecdenvironmentaloutlookto2050theconsequencesofinaction.htm> [↑](#footnote-ref-2)
3. Approximately, 70 billion dollars’ worth of crops is wasted every year. Additionally, some 15-35% of all crop irrigation is considered unsustainable and underground aquifers are overexploited. This can be seen around the world, such as the River Rio Grande failing to reach the Gulf of Mexico for the first time in 2001. [↑](#footnote-ref-3)
4. OECD pamphlet supporting the Environmental Outlook to 2050: the consequences of inaction - key findings on water - OECD March 2012 – p4. <http://www.oecd.org/env/indicators-modelling-outlooks/waterchapteroftheoecdenvironmentaloutlookto2050theconsequencesofinaction.htm> [↑](#footnote-ref-4)