

Paper: CSG02/08

Report to CREW Steering Group on Scoping Workshops – short version

Scoping and prioritisation

The general purpose and design of the workshops was discussed and agreed at the PRAG and Steering Group meetings in May 2011. The final structure was agreed with RESAS in July 2011, with a draft agenda and list of invitees sent out to the PRAG. A scoping paper reminding workshop participants of the research already available, 2011-12 CREW projects and potential gaps for CREW to address was sent out before the workshop for comment.

Workshop 14th September 2011

An afternoon workshop was held at the Royal Botanic Gardens, Edinburgh. It was attended by 21 participants (see Annex One) representing the organisations on the CREW Policy-Research Advisory Group (PRAG). The objective was to discuss the priority policy support needs for Scottish Government 2012-3 and how collaborative projects involving the Scottish HEI and MRP sectors can best support them.

The workshop began with a brief overview of CREW and then focussed on 4 breakout sessions discussing: Flooding and Hydrology; Monitoring Technologies; Climate Change and Wider Use of Water Resources. The groups worked through the 'gaps' identified in the Scoping Paper document ¹ with the Government and Agency Stakeholders noting if there was a policy demand and the researchers noting where they were confident there was a supply that could deliver in the required timescales and budget. Unless stated, topics covered rural, urban and coastal areas. The discussions also noted where there were suitable policy champions to help distil these subjects into projects; and where resources already existed.

It was difficult to cover all the gaps in the required timescale. Some gaps were very broad and in need of refining; others were quite similar and were in need of clustering. Also, the uneven size of groups made it more difficult to get input from all participants within the time allocated (see lessons learnt below). Where there was insufficient time to cover all the gaps in the breakout sessions, these were highlighted in the plenary to ensure that comments could be made about them. There was a final plenary to highlight gaps and identify cross-cutting themes.

The findings from this workshop were then used as inputs to the PRAG workshop the next day. Note: the flip charts from this workshop are archived as photographs and can be requested from the CREW Facilitation Team (contact Emily.hastings@hutton.ac.uk).

¹ This will be posted on the VCREW website very shortly – see <http://www.crew.ac.uk/home>

Workshop 15th September 2011

A morning workshop was held in the same venue, attended by nine members of the PRAG. The objective was to discuss outputs from the previous day; re-categorise themes if required; highlight procurement criteria and prioritise the proposed projects. However, due to the volume of possible topics (67 at the start of the day) and the discussion around the outputs from the previous day, we were unable to consolidate the topics into projects for prioritisation. Instead, the facilitation team used the useful comments provided by the PRAG to refine and cluster the potential topics in projects after the workshop. Prioritisation of these topics was addressed by email. Note: the flip charts from this workshop are archived as photographs and can be requested from the CREW Facilitation Team (contact Emily.hastings@hutton.ac.uk).

In addition it should be noted that the following projects were accepted as relevant by Scottish Government in 2010 but deferred until the 2012-13 funding cycle. They were included in the list of gaps discussed in the workshop on 14th September. We note below how these projects were re-scoped during the workshop and the prioritisation results.

- Managing agricultural soils to minimise flooding of downstream urban areas – this has become part of WUWR project 6 about the relationship between soil moisture and run-off. Note that the prioritisation process scored this relatively low (12th of 15 projects).
- Understanding barriers to uptake of Natural Flood Management at individual, catchment and national scales – this has become project 2 under flooding and hydrology. Note that the prioritisation process scored this relatively low (4th of 7 projects).
- Trialling use of environmental sensor networks to advise farmers when to apply slurry in priority catchments – this was not seen as a specific policy priority but is part of project one under monitoring technologies. Note that the prioritisation process scored this relatively low (7th of 8 projects), but the idea of a warning system was noted under project 6 within WUWR.
- Understanding Catchment/Climate connections through development of an integrated catchment-based assessment framework of links between land, water and management choices under climate scenarios – this is linked to several projects including 5, 8 and 10 under Wider Use of Water Resources. Only project ten was ranked relatively high in the prioritisation (3rd overall).
- Understanding complementarities and conflicts in spatial planning (i.e. the coordination of different policies and plans within a catchment and river basin) – the focus became more about policy integration and is covered under project one for Wider Use of Water Resources. This was the highest ranked WUWR project for all, including demand and supply.
- Assessing impacts of shifts in biological and hydrological interactions in soils – this was not really identified as a policy priority in the workshops. However, it is an aspect of WUWR project 6.
- The water economy of agriculture: understanding the water footprint of a variety of agricultural commodities and farm types – this has been widened to include all sectors – see project 3 under Wider Use of Water Resources. This was ranked 6th of 15 projects.

Prioritisation of Projects

The actions of the CFT reduced the original 67 projects to 35 projects. This is still a very long list to ask the Steering Group to reduce into a short list for development into project calls. Only 8 – 12 projects will likely be supported. Therefore, it was important to give the Steering Group some idea of the strength of support for the topics via a prioritisation process. This list is still very long, but represented a practical trade-off between the original list of gaps and leaving out something of real interest to the PRAG.

The PRAG membership (those who attended and/or were invited to attend on 15th September) were emailed the list of 35 projects, organised under the 4 themes and given a week to respond. Within each theme, they were asked to rank the projects, giving the highest number to the project they felt was most important to them, and the lowest number to the project of least importance to them. There was one vote per PRAG member only, although CAMERAS returned both an overall score and scores from FCS, SNH, MSS, SEPA-Floods and SEPA-Land Use. The results are presented as a total; average across the 'demand' and 'supply' side and averages for within the 'demand' and 'supply' side. The numbers in brackets provide the ranked order based on the averaged overall score within each theme. Note the differences in rankings between the overall and demand side for the Flooding and Hydrology theme; where cost-effective responses was most popular for the demand side, but only ranked 3rd overall; and accuracy of flood risk methodology was ranked 2nd equal for demand side but ranked 7th overall. Likewise, the carbon (GHG) calculator was the most popular choice by the demand side, but only ranked 3rd overall under the Climate Change theme. The demand side rankings for the Monitoring technologies and wider use of water resources themes were roughly comparable (within a place). The supply side also diverged, with the project ranked fourth overall in Flooding and Hydrology and the project ranked 3rd for

The DEMAND led priorities are highlighted in column 3.

The issue of how to weight choices between the 4 themes will be left to the Steering Group. Any such process is open to strategic behaviour or misunderstandings, but we have endeavoured to provide maximum transparency so that the results as presented to the Steering Group are clear for all to see. Please note that these results are for the Steering Group to **review** and not a final decision on which projects will go through to procurement.

The Steering Group will be asked to decide on how many projects to take forward from each theme.

Results of PRAG prioritisation

Topic within Themes	Overall Score ²	Av overall Score ³ N = 8 or 9	Average Demand side Score N = 5	Average Supply side Score N = 3 or 4
Flooding and Hydrology				
1. Understanding the accuracy of Flood risk modelling methodology using existing data (7)	29	3.625	4.6	2
2. Policy options for incentives to implement NFM (4)	31	3.875	2.8	5.666
3. Resilience of receptors to flooding (2)	43	4.777	4.4	5.25
4. Understanding the secondary (knock-on) impacts of flooding (6)	33	3.666	3	4.5
5. Good practice for communicating Flood Risk (4)	31	3.875	4	3.666
6. Understanding existing data and processes involved in surface water urban drainage in urban areas (including alternatives to SUDS) (1)	44	4.888	4.6	5.25
7. Cost-effectiveness of engineering or behavioural responses to managing surface water in urban areas (using model predictions) (3)	33	4.125	5	2.666
Monitoring Technologies				
1. Developments in monitoring technologies and their potential to support multiple policies, including recommendations on spatial and temporal resolutions (3)	50	5.555	4.8	6.5
2. Appraise how potential developments in monitoring technologies can reduce uncertainties in prediction and event management, including improving compliance and understanding efficacy of measures (2)	47	5.875	5.6	6.333
3. Monitoring methodologies for known unknowns including nano-materials; micro-plastics; priority hazardous substances and microbes from animals to identify their sources and impacts (4)	40	5	4.2	6.333
4. Sharing good practice in monitoring freshwater habitat networks (7)	24	3	3.4	2.333
5. Methodologies to identify sources and pathways for urban diffuse pollution to identify measures/treatments with multiple benefits (1)	54	6	6.4	5.5
6. Existing approaches to monitoring groundwater and gaps in data/knowledge (6)	31	3.875	3.8	4
7. Monitoring of the source and pathways of sediments and calculation of their economic impacts (5)	42	4.666	5.4	3.75
8. Mapping the extent of non-native invasive species and their impacts on various receptors (8)	20	2.5	2.4	2.666

² Highest score reflects the project that was considered most important. As there are unequal numbers of projects, the overall scores between themes cannot be compared, so the focus should be on the rank order.

³ As one return only provided their top 3 projects, some of the overall scores were averaged by 9, others by 8, depending on the number of returns.

Climate Change				
1. Understanding what new data is needed to understand the impact of climate change (1)	32	3.555	3.4	3.75
2. Methodologies to reduce carbon cost of managing priority hazardous substances from urban diffuse pollution (4)	22	2.75	3.4	1.666
3. Impacts of climate change on freshwater biodiversity (1)	32	3.555	3	4.25
4. Analysis of carbon costs relative to other costs of waste water treatment (5)	22	2.444	1.6	3.5
5. Carbon calculator for impacts of water specific measures (3)	24	3	3.6	2
Wider Use of Water Resources				
1. Integration (and unintended consequences) of multiple policies including RBMP, FRMA, SRDP/CAP and HD (1)	107	13.375	12.6	14.666
2. Delivery of ESS via multiple policies including RBMP, FRMA, SRDP/CAP and HD - assessment of how to evaluate the ESS and how to provide guidance to implementing authorities (2)	108	12	10.4	14
3. Identification of Scotland's water footprint (including review of existing methodologies) (6)	88	9.77	9.6	10
4. Approaches to controlling pollution at source (covering rural and urban diffuse pollution and including bathing water areas) (3)	85	10.625	9.8	12
5. Using the Land Use Strategy to increase the positive relationship and decrease the negative relationship between land use and water quality (5)	89	9.888	8.4	11.75
6. Using soil moisture data to characterise run off affecting quantity (floods and drought) (12)	42	5.25	6.4	3
7. Conflicts in wetland habitat management (9)	55	6.875	7	6.666
8. Catchment level modelling and catchment level collaborative delivery of measures (7)	67	8.375	9	4.666
9. Good practice within advisory groups and identification of governance issues (includes mapping existing groups) (14)	35	4.375	3	6.666
10. Models and/or maps to understand multiple benefits of catchment measures (3)	85	10.625	11.4	9.333
11. Economic and behavioural incentives available to help manage water quality and quantity (8)	65	8.125	7.8	8.666
12. Sensitivity mapping for Hydro-electric power provision (15)	34	4.25	3.6	5.333
13. Impact on/ability of rural communities and land managers to implement water policies (10)	54	6.75	7.6	5.333
14. Potential of citizen science and participatory monitoring to support water policy (11)	44	5.5	6	4.666
15. Opportunities for business beyond the land based sector to protect and benefit from the water environment (13)	41	5.125	5.2	5

General Comments

The PRAG were presented with some overarching themes from the previous day for discussion. The bullets below reflect the combined comments from both workshops.

- Often policy stakeholders were not always sure if things were a gap or a need as they did not know if research existed; or whether existing research was in an accessible form. It is important that all projects are framed around the guiding legislation and policies if they are to provide policy support, rather than framed from a science perspective.
- Some responses to the scoping paper questioned the focus on SG policy units. Initially the focus is here, but there is an opportunity to revisit this for 2013 onwards. There were also concerns about how the short-term policy support role of CREW fitted with a more strategic research approach.
- Often, the main gap identified was the need to know what is already out there and whether existing research could be repackaged with a 'waters' lens. Therefore many topics could be delivered as a synthesis and review of existing materials to provide a 'one stop shop'. This could include non-Government guidance (e.g. best practice; strategies) as well as research findings.
- It is not always clear when a perceived gap should be tackled by CREW or by other Centres of Expertise, networks or ongoing research programmes (see general issues for CREW). It is also unclear when something should be tackled via CREW, or by an agency or organisation itself through internal research and development.
- The workshops were focussed on policy needs and it is important to note that CREW can service both policy development and policy implementation. However, these can span different 'levels' from very broad strategic interests within Scottish Government, to very particular aspects of operations. At times, different agencies and divisions in Scottish Government work at the same 'level' but at other times; different 'demand' stakeholders have very different needs and priorities. The focus should be strategic at this stage. Furthermore, there are different policy objectives for water, such as maximise benefits of the water environment to Scotland or balancing economic and environmental objectives. Thus, there may be competing 'policy' needs.
- There were also gaps identified that did not fit with projects starting April 2012 for six, twelve or eighteen months. Some needs were more immediate and should be channelled to the 'call down' service. Others were too ambitious for the scale of CREW projects and should be fed into the wider RESAS research programmes/other research delivery mechanisms; or tackled through legislation or government policy. Examples of the latter were implementing more sustainable WWT; understanding the hydrology of inter-basin transfers; or updating statutory guidance.

- Often there were multiple dimensions to any topic raised: providing a synthesis and review of existing knowledge and/or providing a review of existing methodologies and/or using existing data to produce a model output or map and/or considering what results might mean for policy and practice; often including how to best communicate and work with wider stakeholders. Unless specified below, the call may ask for researchers to do all of these to some extent. There was also a very interesting question raised about when CREW projects would provide objective evidence or remain at the level of professional opinion; or be on some spectrum between the two.
- Sometimes a topic was raised that was already being tackled within the RESAS five year programmes. This meant there is the risk of duplication. However, CREW should be focused on translating existing research into policy support whereas the programmes are doing new strategic research, so the project may tackle the same topic but not in the same way. Potentially CREW projects that synthesise existing material and scope knowledge gaps could be used to better target strategic research in the programme. Furthermore, there are others in the HEI sector with expertise who are not involved in the RESAS programme delivery – should their expertise be excluded due to duplication with the RESAS programme? CREW should be an opportunity to dovetail RESAS funded research with other research activities, within Scotland; the UK and beyond.
- Are the four theme headings still useful? These range from extremely narrowly defined (monitoring and technology) to very broad (wider use of water resources). Also many topics arising under WUWR are not strictly about water use but about water quality or integrated methodologies. It should be noted that there was more policy interest expressed in how to interpret and use data from monitoring than in monitoring technologies or technological innovation per se. Some responses to the scoping paper highlighted the need to look across the four topics, particularly to address issues of integrated catchment management. At present these have been lumped into the 'WUWR' theme, making it the biggest theme (double the size of the others). It was noted that it was unclear where diffuse pollution or water quality should sit – many projects under monitoring technology are relevant to water quality and diffuse pollution but are obscured by the theme's name. The steering group could advise on whether the theme names should be revised in light of these comments.
- To what extent should the projects cover all water bodies? The lack of focus on standing waters was raised by the supply side; whilst there was little of obvious relevance to the Marine demand side in the projects identified. Could projects be tweaked to have more of a coastal or marine focus?
- There is an ongoing requirement to highlight CREW and its objectives within the policy groups and the HEI sector. This could be achieved through developing a 'Sales Pack' for CREW and/or visiting groups and organisations to explain CREW to them.
- As CREW is about networks and human resources; there must be a strong focus on knowledge sharing. This could be face to face via workshops; virtual using V-CREW as a portal to existing resources (including providing a repository for existing good practice guidance); and/or printed material

such as handbooks or briefings. The sharing should focus on connecting with existing forums and advisory groups to ensure that these groups learn from one another as well as international good practice. Related to this was the need to 'map' the networks that CREW can and should work with – the existing stakeholder and research networks that could both provide existing information and be routes for disseminating information from CREW projects. There were questions raised about definitions and terminology impeding this knowledge sharing. Rather than having a specific project on communication and awareness raising, this was seen as something that would often be integral to all projects.

- It was noted that CREW is a learning process. Policy makers are not necessarily used to thinking about policy needs 18 months ahead, whilst researchers are perhaps used to planning strategic research, not focussed outputs to support policy. It will take time for all those involved to synchronise their planning and delivery cycles and it is not surprising that this was challenging for the first scoping workshop. However, progress has already been made in improving mutual understanding and communication. Scottish Government should be congratulated on setting up a mechanism to achieve this. The Australian Cooperative Research Centres model was suggested as something to try to follow (see <https://www.crc.gov.au/Information/default.aspx>). At the Thursday workshop, it was confirmed that the focus was on policy support, which fits with the HEI 'pathways to impact' and may provide opportunities for spin-off academic papers, but these papers were not the main outputs required.
- There was some discussion about how CREW could best support the Hydro nation concept and promote Scottish science internationally. Thus, the language of Hydro-nation should be reflected in CREW process as things develop. Possibly, the international dimension is something for Steering Group to provide some guidance on. Some projects contain an international dimension (good practice reviews; synthesis of existing knowledge across the world) but this is not the same as promoting Scottish Science internationally. This could be linked to comments about how and where CREW's outputs are promoted and disseminated. This could be something for V-CREW to consider.

Lessons Learnt for next Scoping Process

Some responses to the prioritisation process noted that they felt the demand side (policy makers) should be the only people involved in prioritisation – the supply side should be involved until the policy priorities are set. The provision of the column with the averages from the demand side only allows the Steering Group to do this, should they want to. With regard to demand side voting, should CAMERAS have received more than one vote for the prioritisation exercise?

The process has struggled to achieve the overall goal for CREW in its first year – to generate a systematic scoping of the water challenges facing Scotland with a strong steer from demand-side stakeholders to identify priority projects. However, many felt that the process should get easier as the concept of CREW consolidates and an annual cycle is developed. It is clear that plenty of time is needed to prepare a scoping paper and then to allow sufficient time for

comments on this paper before the first workshop. There also needs to be sufficient time between the two workshops for the facilitation team to refine the list of 'gaps' into something more manageable for discussion by the PRAG. One suggestion is to use the existing working groups and forums (e.g. Scottish Advisory and Information Forum on Flooding working groups) to input into the scoping paper and help identify gaps.

However, it will always be difficult to balance the need to have a manageable short list of projects to prioritise with the range of potential ideas arising from the demand and supply side stakeholders. It is also impossible to group projects in ways that please everyone. Despite our best efforts – reducing the list from the workshop by half – participants felt there were still redundancies and overlaps. However, others also objected to projects 'disappearing' through this process of distilling the short list. Finally, it is impossible to convey the detail of a possible project through a short title. The exercise should contain a short description of the project in future. In this instance, it was still unclear if there was consensus on what each project should be until further development is undertaken for those to be taken forward for procurement.

It is important to avoid having over-specific procurement criteria that may exclude relevant bids; but many of the issues noted are important aims for the projects. Specific suggestions included ensuring that the tenders demonstrated evidence of support from policy and the projects were interdisciplinary where the topic demanded this.

One reflection on this years' procurement process was ensuring there was clarity on where the HEI partners added value. However, it is hoped that having a more collaborative phase of developing projects with MRP, policy and HEI interactions pre-submission should make this much easier to achieve. It is also important that the projects are demand-driven and focussed on the outcome sought, so that the best mix of HEI and MRP expertise for that project is achieved, rather than having pre-set ratios or expectations.

Proposals need a clear policy champion who will liaise with the principal investigator during development of the submission. Considerable discussion should go into confirming who requires the project, how it should be delivered, and when it is needed, BEFORE formal submission of the project. This will mean a window of at least 6 – 8 weeks between putting out the call and submitting something.

Next steps after the workshops

This report captures the main mechanisms by which demand and supply stakeholders contributed to the scoping process for CREW. The report is being circulated to all attendees and those invited but unable to attend. More importantly, it is being presented to CREW's Steering Group (see annex 3) who will decide which projects are taken forward for procurement. There will not be further scoping before the call is put out, although the CREW procurement secretariat will liaise with the CREW facilitation team to translate the Steering Group's choices into text for procurement. The process of co-construction in

developing responses to call should ensure that gaps and duplications are addressed. The call for CREW projects 2012-13 is expected in late autumn 2011, and more information will be provided at that stage about how to develop potential collaborative bids and the criteria for procurement.