National Ground Water Association

Comments on

U.S. Department of Agriculture

Notice of Request for Public Comment on the Executive Order on Tackling the Climate Crisis at Home and Abroad

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SUMMARY: On January 27, 2021, President Biden issued an Executive Order on Tackling the Climate Crisis at Home and Abroad. This Executive Order laid out a series of actions for Federal Agencies to take regarding climate change mitigation and resilience, including directing the Secretary of Agriculture to collect stakeholder input on a climate-smart agriculture and forestry strategy. As part of this process, the U.S. Department of Agriculture (USDA) is seeking input from the public to ensure that relevant information is considered.

Electronic Link: https://www.federalregister.gov/documents/2021/03/16/2021-05287/notice-of-request-for-public-comment-on-the-executive-order-on-tackling-the-climate-crisis-at-home

Comments of the National Ground Water Association

The National Ground Water Association, the largest trade association and professional society of groundwater professionals in the world, represents over 10,000 groundwater professionals within the United States and internationally. NGWA represents four key sectors: scientists and engineers, employed in the private and public sectors, water well contractors who install and maintain wells and provide water services; and the manufacturers and the suppliers who manufacture and provide the needed equipment. NGWA's mission is to advocate for and support the responsible development, management, and use of groundwater.

Over 34 million people in the United States rely on private wells and 87 million are served by groundwater from public community water systems.

NGWA views groundwater and the subsurface as natural infrastructure that should be sustainably managed for current and future use. The subsurface environment should be considered from an

integrated resource perspective. The natural infrastructure of the subsurface environment with proper management can provide fresh groundwater for drinking, industrial and manufacturing applications, food production, and ecosystem support. In many areas, groundwater is the only reliable water supply source. NGWA recognizes that changing climate necessitates response for our nation's public health, wellbeing and economy.[1]

NGWA responses to the USDA questions are presented below:

1. Climate-Smart Agriculture and Forestry Questions

A. How should USDA utilize programs, funding and financing capacities, and other authorities, to encourage the voluntary adoption of climate-smart agricultural and forestry practices on working farms, ranches, and forest lands?

From a groundwater perspective, the focus of agricultural programs, funding and financing capacities and other authorities should be on sustainability of the resource through efficient use of water for irrigation and on effective chemical practices that minimize groundwater quality impacts. These steps can minimize greenhouse gas emissions and facilitate the resilience and availability of the resource as the world relies on irrigation to feed itself, requiring ever increasing demand for groundwater.[2] This expanding demand for groundwater points to a need to have programs and actions to mitigate the negative effects of the demand. The effectiveness of an "all-volunteer" approach should be evaluated, particularly where information to potential implementers is limited or less accessible. Establishing clear objectives and proactively providing information leading to the accomplishment of those objectives to all potential implementers may be more productive.

The USDA should establish a groundwater monitoring network for forest lands and work with the National Ground-Water Monitoring Network to report data on groundwater levels and quality. The USDA should establish a rural groundwater monitoring network and critical aquifer recharge area (CARA) protection through incentives and ask states and owners of working farms and ranches to monitor wells and report data on a voluntary basis to the NGWMN using scientifically accepted monitoring techniques. USDA should engage with USGS to determine how the data from the NGWMN can be used by USDA and potential implementers.

The contact for the NGWMN is Daryll Pope, U.S. Geological Survey at dpope@usgs.gov. Many states have joined the NGWMN and regularly share their groundwater data. More information is available at: https://acwi.gov/sogw/index.html.

USDA should also provide financial and policy support for innovation and technologies that use renewable energy (natural gas from livestock, biomass power, wind and solar) to power small scale groundwater supply and wastewater treatment for rural businesses so as to provide adequate water supply and reduce surface and groundwater contamination. Because sanitary sewers and municipal wastewater treatment facilities are often not readily available for rural businesses to utilize, rural businesses face great challenges to discharge their wastewater responsibly while maintaining viable commercial operation.

1. How can USDA leverage existing policies and programs to encourage voluntary adoption of agricultural practices that sequester carbon, reduce greenhouse gas emissions, and ensure resiliency to climate change?

USDA can identify agricultural practices drawing on groundwater that would minimize greenhouse gas emissions, publish on these peer-reviewed practices, and broadly circulate and demonstrate these practices and incorporate them in extension service educational programs. These practices may include the integration of perennial bioenergy crops into the agricultural landscape, especially in economically marginal or environmentally susceptible subfields. Perennial bioenergy crops with minimal management requirements would reduce greenhouse gas emissions because they would not generate the nitrous oxide from typical fertilizer application on commodity crops and because of less intensive use of farm machinery over the annual cycle. Rain-fed perennials would also eliminate the power needs and associated emissions from the pumping of irrigation wells. Native grasses that are resilient to annual weather variations and changes in climate would provide a long-term means of sequestering carbon in the root zone, while continuing to provide a crop for farmers.

USDA has a number of agencies with programs for the agricultural community including subsidies, crop insurance, and other risk-based programs. Perhaps providing subsidies for the initial implementation of innovative cropping practices (climate-resilient, rain-fed crops such as switchgrass) might encourage risk-averse farmers to attempt climate-smart methods. The agricultural community is usually receptive to programs that reduce the cost of farming and/or increase production. Assurance of income is a strong incentive.

Additionally, USDA should develop training that can be delivered via NRCS or state agricultural agencies that provides accurate information on climate change, including the holistic, integrated nature of the impacts and solutions.

2. What new strategies should USDA explore to encourage voluntary adoption of climate-smart agriculture and forestry practices?

USDA should set up a process for educating people at all levels (K-12, extension, public service announcements) about these practices. USDA can partner with the Groundwater Foundation to educate groundwater communities about climate-smart agricultural and forestry practices and their effects on water supply and quality. More information on training opportunities through the Groundwater Foundation is available at: https://www.groundwater.org. In addition, USDA should explore the concept of payments for the ecosystem services provided by perennial bioenergy crops. These payments may range from water quality (e.g., nitrate reduction) trading schemes between groundwater polluted by nonpoint sources with surface water treatment facilities to those associated with carbon sequestration, biodiversity (pollinators, hunting), soil health, and reduced greenhouse gas emissions, all of which may be realized through the use of perennials. USDA support for biorefineries relying on lignocellulosic biomass conversion, together with ecosystem services payments, could provide a strong incentive for producers to convert to this form of climate-smart agriculture. A wholistic approach should be the starting point.

B. How can partners and stakeholders, including State, local and Tribal governments and the private sector, work with USDA in advancing climate-smart agricultural and forestry practices?

USDA should view stakeholders broadly, recognize the challenge of and embrace change management and work with farming organizations, the research community as well as dedicated training organizations using a range of media approaches, such as through the Groundwater Foundation, to identify the practices, test their climate-smartness and engage in wide distribution of information on the practices. Education and training is just a starting step Stakeholders should also include water resource managers, environmental groups, non-governmental organizations with related climate objectives, farm equipment manufacturers, retail food distributors and sellers. Many states have a nutrient taskforce focused on reducing agricultural nutrient loss to surface water and groundwater. USDA should work with these groups to reduce impacts to water quality through unified approaches and goals.

C. How can USDA help support emerging markets for carbon and greenhouse gases where agriculture and forestry can supply carbon benefits?

As noted above, USDA could promote markets for ecosystem services, including carbon sequestration and reduced greenhouse gas emissions, through payments to farmers growing perennial bioenergy crops. Research to support this effort would include developing means of measuring relevant parameters to certify the efforts of producers. These efforts should recognize the role of agricultural and forestry carbon sequestration benefits relative to the universe of sequestration approaches and work to balance carbon and food objectives.

In supporting carbon and GHG markets, care should be taken to ensure that agricultural carbon markets are not dominated by large corporations. Such markets should not drive food production. Food production should be viewed wholistically, considering an ecosystem approach, rather than a single factor, such as carbon markets. Also, the approach should recognize that without agricultural irrigation, vast populations would have no food and in many locations, groundwater may be the only source of reliable water supply for irrigation, particularly in locations of drought. Thus, pumping groundwater that requires energy and produces greenhouse gas may be a necessity for survival locally.

D. What data, tools, and research are needed for USDA to effectively carry out climate-smart agriculture and forestry strategies?

Clearly, modeling groundwater impacts associated with all the major aspects of agricultural production, food distribution, meteorology, nutrition-health-disease, energy and water use and community/social stability will be essential. Highly downscaled climate models at the local and regional scale should be used to gain a better insight on the impacts future climate will have on specific parts of the U.S. and on specific crops. These models could inform concerns about groundwater recharge as well as flooding, drought, altered seasonal onsets of frost and defrost, catastrophic fire, and the potential dynamics of pests and implications for seasonal agricultural operations. GHG outputs of key inputs will need research under a range of scenarios. Furthermore, research should be devoted to determining the optimally resilient food, fiber, feed, and fuel crops - in various geographic settings and soil types - in order to withstand anticipated climate change and reduce dependency on water resources for irrigation.

Additionally, USDA should focus on watershed, ecosystem-scale monitoring of water resources and air emissions - USDA is organized to implement regional monitoring and should work with NGWMN to receive and contribute monitoring data.

In terms of data, completion of gSSURGO (the 10-m gridded/raster version of the SSURGO database) and updates on the National Commodity Crop Productivity Index to be applicable to irrigated systems should be fast-tracked to allow land use and climate scenario analyses to be conducted at finer resolution and at any location in the country. Additionally, GIS-based datasets of the actual fields under tile drainage in the U.S. Midwest is critical, because the drain tiles rapidly convey field-applied fertilizer to surface water bodies. Altogether this information is critical in implementing strategies that would protect water quality from agricultural activities, which may be exacerbated by changing climate. In terms of tools, we need remote sensing-based technology that utilizes publicly available satellite imagery with ground-based measurements for a non-invasive, cost-effective means of estimating soil carbon accruals over space and time at finer resolution. Utilization of remote sensing of groundwater will also need to be correlated with these other activities.

E. How can USDA encourage the voluntary adoption of climate-smart agricultural and forestry practices in an efficient way, where the benefits accrue to producers?

Benefits should not accrue in ways that result in them primarily being received by large corporate farming to the disbenefit of small producers. USDA should develop information that clearly explains benefits to climate-smart agriculture from local, regional and national perspectives.

Adoption of climate-smart practices would grow organically if ecosystem services payments are made to producers and they are thus encouraged to become environmental entrepreneurs.

2. Biofuels, Wood and Other Bioproducts, and Renewable Energy Questions

A. How should USDA utilize programs, funding and financing capacities, and other authorities to encourage greater use of biofuels for transportation, sustainable bioproducts (including wood products), and renewable energy?

The effect on groundwater availability should be an aspect of this analysis, including GHG-effects from a range of pumping-agricultural production scenarios. Consideration should be given to renewable energy sources for pumping groundwater where it is plentiful, and transitioning to perennial rain-fed bioenergy crops where pumping is unsustainable (e.g. Ogallala aquifer region). USDA could also partially subsidize biofuel production or work to provide tax incentives for it.

On a related topic, USDA should utilize programs, funding and financing capacities that direct more effective use of manure from CAFOs to curb risks that contaminate surface water and groundwater resources because CAFOs are often operated on large areas of land and groundwater contamination often proceeds unnoticed with inadequate monitoring. Effective reuse of manure may effectively remove contaminant sources.

Forest thinning may reduce wildfire potential, increase groundwater recharge and lock up carbon in wood products from forest thinning.

B. How can incorporating climate-smart agriculture and forestry into biofuel and bioproducts feedstock production systems support rural economies and green jobs?

Climate-smart agriculture can preserve the rural economy by conserving soil, conserving groundwater, and providing incentives to producers similar to the Conservation Reserve Program. These incentives could be expanded through payment systems for the ecosystem services provided by a range of perennial bioenergy crops, in addition to payment for lignocellulosic biomass.

Programs directed at renewable energy sources for pumping groundwater where needed for irrigation could support rural economies and green jobs. Managing and maintaining renewable energy sources could be a source of continued employment in rural areas.

C. How can USDA support adoption and production of other renewable energy technologies in rural America, such as renewable natural gas from livestock, biomass power, solar, and wind?

USDA can support use of solar and wind power to pump groundwater on farms and ranches through its grant and loan programs. USDA should develop information and education on use of these alternative energy technologies applied to agriculture.

USDA could provide financial and policy support for innovation and technologies in using renewable natural gas from livestock and biomass power and make such renewal energy options more affordable and readily available in rural America, reducing needs for disposal of "produced water" in oil and gas operations.

USDA could collaborate with the Department of Energy to research solar and wind energy storage to power irrigation when plant water consumption is low (low evapotranspiration) and reduce demand for pumping.

3. Addressing Catastrophic Wildfire Questions

A. How should USDA utilize programs, funding and financing capacities, and other authorities to decrease wildfire risk fueled by climate change?

USDA can set up priority-setting processes addressing wildfire risk for funding and financing based in part on flammable biomass on the ground and long-term weather expectations. Wildfires affect infiltration potential and consequent groundwater recharge depending on landscape conditions[3] as well as influencing groundwater quality.[4] USDA could also address the issue of the risk to domestic housing in areas of high fire risk and discourage future housing adjacent to National Forests that have high fire risk.

Forest thinning may reduce wildfire potential, increase groundwater recharge and lock up carbon in wood products from forest thinning.

B. How can the various USDA agencies work more cohesively across programs to advance climate-smart forestry practices and reduce the risk of wildfire on all lands?

USDA should coordinate across its programs and those of other federal, state and local agencies to identify intersections of programs to determine the potential for practices to have a positive effect, considering forest biomass production, wildlife and water supply, at minimum. Other end points may also be important. USFS should also work with local communities that approve housing developments adjacent to National (and State) Forests to make sure the risks are known and zoning is appropriate for the risk.

C. What additional data, tools and research are needed for USDA to effectively reduce wildfire risk and manage Federal lands for carbon?

USDA should work with the National Ground-Water Monitoring Network to share and obtain groundwater data from and partner with federal, state and local agencies with jurisdiction adjacent to or overlapping USDA forest lands to evaluate effects of forest practices on groundwater recharge and quality so as to identify strategies for maintaining healthy forests and reduce fire risks.

D. What role should partners and stakeholders play, including State, local and Tribal governments, related to addressing wildfires?

Partners and stakeholders should be involved at the outset and help design responses to mitigate wildfire damage, particularly as it relates to water supply and quality.

4. Environmental Justice and Disadvantaged Communities Questions

A. How can USDA ensure that programs, funding and financing capacities, and other authorities used to advance climate-smart agriculture and forestry practices are available to all landowners, producers, and communities?

USDA should work with US EPA and US Department of Interior in collaboratively addressing opportunities to facilitate climate-smart agriculture and forestry practices available to all landowners, producers and communities. USDA and EPA both have financial assistance programs that potentially could advance this potential.

Ninety-nine percent of rural homeowners are groundwater-supplied by private wells. Two-thirds of all public community water systems are small groundwater systems serving 3,300 or fewer people, often in rural areas and having fewer fiscal, managerial and technical capabilities. The extent to which USDA programs can assist these homeowners and communities in maintaining safe groundwater supply is significant. Continued protection of recharge zones supplying wells to enable these areas' capacities to infiltrate precipitation and prevent contamination of groundwater is essential. This action can be facilitated through USDA/EQIP (Environmental Quality Incentives Program) and the conservation reserve programs. Also continued support through the Rural Development Water and Waste Disposal Loan and Grant program will be important for water supply and quality treatment. Supporting certification programs for pesticide applicators and for nutrient management through Agricultural Extension will continue to protect groundwater.

Payment for ecosystem services (carbon, water quality and water quantity, biodiversity) could be structured so that disadvantaged communities would be prioritized and develop

environmental entrepreneurship capabilities that are recognized by the Nation and serve as a source of income.

B. How can USDA provide technical assistance, outreach, and other assistance necessary to ensure that all producers, landowners, and communities can participate in USDA programs, funding, and other authorities related to climate-smart agriculture and forestry practices?

Please see response to 4.A. above.

C. How can USDA ensure that programs, funding and financing capabilities, and other authorities related to climate-smart agriculture and forestry practices are implemented equitably?

Placing a priority on groundwater protection for water supply can be part of a process toward equitable distribution of program, funding and financing capabilities and authorities.

Thank you for the opportunity to review and comment on this important agricultural policy matter.

If any questions or need for additional information arise regarding these comments, please contact:

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