

## ***Interactive comment on “Policy support, economic incentives and the adoption of irrigation technology in China” by R. Cremades et al.***

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### **General comments**

Global change, such as climate change and population growth, threatens the Chinese agriculture and rural welfare. Providing robust scientific evidence on feasible solutions to global problems at a farm-level, such as introduction of technological innovation, is of great importance. The study entitled “Policy support, economic incentives and the adoption of irrigation technology in China” analyses the effect of a set of policies (subsidies, extension services and irrigation fees) on the adoption of household- and community-based irrigation technologies. The scope and objectives of the manuscript address scientific issues relevant to the ESD journal’s research field. Methodologically, the study is built upon a survey data and the analysis relies on descriptive statistics

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and econometric modelling (logit and tobit models). The introduction highlights the significance of the study. The methods and results are well-presented and easy to follow. The conclusions provide explicit information to the reader.

### **Specific comments**

The quality of the paper could benefit from re-organization of the sections in the following standard format: 1. Introduction; 2. Materials and methods; 3. Analysis and results; 4. Discussion and conclusions. Furthermore, some additional clarifications in the text could be made. Below are provided specific suggestions:

The Abstract is well-structured with one point to be highlighted – P. 1544/L. 6: make “incentives on the adoption of irrigation technology” more specific like “incentives on the adoption of household- and community-based irrigation technology”.

In Section 1 Introduction, on P. 1547/L. 8 add sub-section 1.1. Scope and objectives. Start this sub-section with the scope of the paper – after L. 8 add (move) part of the text included in sections 3 and 4 as follows: paste the text from P.1549/L.12-1550/L.11 and add information as regards the policies which fall within the scope of your study. Justify the choice of irrigation technologies and assessed policies. This information, once placed in the introductory part, would frame the analysis and the reader will have clearer idea for the specific focus of the study. Afterwards, specify the objectives and the structure.

Section 2 “Data” could be renamed as “Materials and methods” with sub-sections: 2.1. Sampling procedures (keep the text from P.1547/L.22 to P.1548/L.19); 2.2. Study sites (it would be good if more information on agriculture in the selected case study sites is provided, such as main cropping patterns and share of production dependent on irrigation); 2.3. Survey design and data collection (here place the text from P.1548/L.20 to P.1549/L.10); 2.3. Method for measuring the adoption of irrigation technology (here paste/move the text from section 3 P.1550/L. 12-24); 2.4. Specification of econometric methods for modeling adoption of irrigation technology (i.e. paste/move here the whole

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text from section 5; remove section 5 from the paper afterwards).

Remove the current sections 3 and 4, and Create new Section 3 entitled “Analysis and results” with sub-sections: 3.1. Adoption of advanced irrigation technology (here paste/move the text from P.1550/L.20 to P.1551/L.18); 3.2. Policy support, economic incentives and the adoption of irrigation technology in China (i.e. move here the relevant text from section 4; delete section 4 after); 3.3. Econometric results (here move part of the text from section 6 which outlines the results; the text which contains discussion on the findings to be moved in the next section 4; delete section 6 after).

Create new section 4 entitled “Discussion and conclusions” (place the discussion part from section 6 and the whole text of section 7). Enrich the discussion by referring to the findings not only from the econometric analysis, but also from the descriptive statistics. Add a paragraph highlighting (i.e. acknowledging) the limitations and uncertainties of the analysis and the obtained results (assumptions, models used, etc.). The findings suggest that subsidies, extension services and irrigation fees are important policy instruments to incentivize the adoption of advanced irrigation technologies, particularly at a household level. Therefore, the authors might add few lines on the prospects of and barriers to the use of these instruments within the current policy regime in China.

#### Technical corrections

Suggested technical corrections: Page 1544/line 4: remove “China”; P. 1544/L. 5: replace “to understand” with “to explore”; P. 1544/L. 6: replace “in China” with “in the country”; P. 1544/L. 7: add “the” in front of “results”; P. 1544/L. 11: replace “household-based irrigation technology at the village level” with “irrigation technology at a household level”; P. 1544/L.13: replace “policy supports via” with “policy support instruments such as”; P. 1544/L.19-21: rewrite “possibly related to their substitution relationship, because having higher adoption of household-based irrigation technology reduce the incentives to invest in community-based irrigation technology” in the following way “possibly related to the substitution effect, i.e. the higher rate of adoption of household-based

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irrigation technology leads to lower incentives for investment in community-based irrigation technology”; P. 1544/L. 24: replace “Water is scarce in China.” with “The water resources in the country are scarce and ...”; P. 1545/L. 21: replace “technology is low in China” with “technology in the country is low”; P. 1545/L. 24: replace “Issued in March 2011, the rural and agricultural parts of the 12th 5 year Plan” with “The rural and agriculture sections of the China’s 12th Five-Year Plan, issued in March 2011, ...”; P. 1546/L. 26-27: modify “expenditures of four trillion RMB (over USD 600 billion)” as “expenditures of over 600 billion USD” (move “USD” after the values in all places in the text); P. 1546/L. 4-3: to “policy support” add example (e.g. ....) and provide few references at the end of the sentence; P. 1546/L. 21: rewrite “that the “price” of water in terms of actual water charges is low in China’s agricultural” as “that in China’s agricultural sector, the “price” of water in terms of actual water charges is low”; P. 1547/L. 8-14: replace “overall goal” with “overall objective” and remove “With this goal in mind, the following objectives have been specified.”. Start in the following way “More specifically, we first examine. ...”; remove “we will” in this paragraph and keep present tense (e.g. we examine); P.1550/L.16: “at the village level” should be “at a village level” P.1554/L.3: “To determine the effects of the explanatory variables” clarify by listing these variables in () or add new sentence.

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Interactive comment on Earth Syst. Dynam. Discuss., 5, 1543, 2014.

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