Analysis of External Drivers for Agriculture

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Abstract

The initial study of FutureFarm project define list of external drivers, which will influence on knowledge management methods and on farming system as whole in next 25 years. These external drivers are analyzed on the base of analysis of literature, but also on the base of SWOT analysis realised directly on the concrete farms. The comparison of influence of this external drivers together with current knowledge management methods is base for first vision of farm of future and recommendation.

Keywords: Farming, vision, road mapping, external drivers

Introduction

Over the next 20 years rural regions will be radically transformed in terms of the distribution of people and of economic activity within and Gross its regions. These changes are inevitable and many forces conspire to bring them about. The common and future position of each important driver in reality can be different; in many cases can stay two drivers against to each other and their future influence on Agri-production and food market depend on regulations and common policy. For example:

- Food quality and safety ↔ Food requirements for growing population
- Growing requirements for food ↔ Renewable energy production technologies
- Renewable production energy demand ↔ Demand on more environmentally friendly production

To be possible overcome this problems it is necessary to define new methods of farm management, which will look for optimal solutions in changed conditions. There exist four main Drivers with influence on strategies in world wide organizations and market are as follows:

1. WTO negotiations and reform of the Common Agricultural Policy
2. Global competition in production of agricultural commodities and food market with focus on business model and profitability of farmers.
   - Precision Agriculture technologies, adoption of technological-production models by farmers in specific areas in Europe with technological and knowledge support from service organization & Universities and Research organizations
   - Development and Improvements in agricultural productivity from RTD & Innovation in biotechnology and GMO1 crops

1 Genetically modified organisms
- Development and improvements of Robots based technologies
- Development and improvement of New Information and Communication Technologies and their adoption to Agriculture production in rural areas

3. Climate change and its increasing sensitivity to the impact of human activity on the environment as a finite resource
- Influence of climate changes on crop composition
- Influence of climate changes on farm management methods
- Bio fuel and low energy consumption crop production models in Agri business models with focus on IT technologies
- Maximising the potential of the Clean Development Mechanism
- Demographics, low-cost travel and the new life-style aspirations of a mobile citizens

4. Addressing long-term energy security and sustainability challenges
- Energy issues in national development plans and strategies
- Increasing access to sustainable energy sources and infrastructure
- Policy priorities for renewable energy technologies
- Widening Energy Access in Developing Countries
- The adoption of the Acquits Communitarian by 10 new members states, and further imminent – accessions

5. Social and demographical changes
- Growing population and growing demand of food
- Urbanisation
- Aging population and health issue
- Ethnical and cultural changes in society

The methodology task is to define main external drivers and prepare vision for farm of future in the sense of adaption of current farm management method. So the current work is characterised by following scheme.
The current report is solving the first pat of the scheme, but there will be also shortly described methodology for next steps in this report.

**List of external drivers**

Major drivers of future changes includes:

- Climate change – and they influence on crop composition and management methods
- Growing population – will stimulate grooving request on food and on energy
- Energy cost – will generate new requirements for new methods of energy production
- Urbanisation and land abandonment – will lead to changes in society and land use
- Quality of food - requirements of citizens and market on higher quality of food production
- Aging population and health problems – will generate specific requirements on food production and diets
- Ethnical and cultural changes – will generate specific requirements on food composition (growing muslim population in Europe, growing number of vegetarians)
- Knowledge based bio economy – will introduce new products and crops, including GMO
- Regulations and standards – agreed government norms for the production and use of energy and protection of the environment
- Economic instruments – market-based instruments (e.g., taxes, tradeable permits) to internalise externalities and promote the cost-effectiveness of energy and environmental policies and measures
- Subsidies – phase-out of unproductive and distortive government subsidies (e.g. to energy, transport) and provision of transition supports where a need to ease environmental and social costs of change is necessary
- Investments – establishment of undistorted, cost-reflective prices in the energy market and conducive investment conditions to send the right signals to private investors
- Partnerships and voluntary agreements – joint public/private programmes to develop and deploy sustainable energy approaches with industry
- Research and development – government R&D and incentives to private R&D to promote innovation on energy for sustainable development
- Information and communications – campaigns to promote better understanding by the general public of the national and international energy and environment situation and future challenges
- Assessments and scenarios – sustainability assessments which identify synergies and trade-offs across the economic, environmental and social impacts of energy policy options
- Valuation of ecological performances, as long as costs are mainly externalised into the direction of the environment (including agriculture and forestry) and no legal framework exists, necessary changes will be slowly.
- National strategies – good governance approaches based on whole-of-government decision-making, transparency, and understanding of the political economy of promoting change in energy systems
- Politicians including their political awareness of the existing situation and the necessary changes in the future, including impacts and changes due to environment or technology
- Press due to their influence on politicians and their role of being intermediate between public and politics
• Education including training and know-how transfer and the awareness of the necessary speed of future changes
• Cooperation and integration models. The complex chain in agriculture, biomass and environment as well as the complex structure of chain partners, their behaving addressing new targets including control.
• International organisations like Word Bank, FAO, CGIAR, etc. with their power/non power to influence necessary changes.

Roadmapping methodology

The methodology applied of FutureFarm projects is based on AFORO approach and it is summarised in next figure. Here we shall just briefly repeat the main issues to provide a basis to follow the analysis of the results.

FutureFarm methodology
The FutureFarm methodology provides a clear approach on how the needs of the future farm domain can be established in an ordered way. The first step involves establishing a framework in which to gather the data. Then the current and future objectives are ascertained and the reasons why these objectives are key, the drivers, are listed. From this the business needs are established.

The analysis will divide into two sections. Each of the sections listed above has analysis that relates to the following subheadings:

AS-IS: Current state in the test farm
What does the farm do well or badly at the moment?
How does it currently measure success?
TO-BE: Planned objectives
What do you plan to achieve in the next 5, 10, 20 years?

TO-BE: Visionary objectives
If there were no limits to what you could achieve what would you want for farm?

The analysis received from currently realised SWOT analysis will provide the basis for the objectives table. These objectives are specific and measurable and are classified under the headings of AS-IS and TO-BE. The AS-IS and TO-BE scenarios are defined in terms of the business objectives associated with each state. It provides a list of objectives under each of the value chain headings.

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