

## SALVÖR JÓNSDÓTTIR

### Moving towards sustainable food production - starting with agricultural land classification

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#### *Introduction*

The food system, i.e. production, processing, distribution, consumption and waste disposal, has major impact on land use. Likewise, land use decisions impact where and how the food system functions. Food system planning, entails i.a. clarifying and analyzing decisions which impact the system and connections of its components. Research in the field of food systems encompasses everything related to food production from natural conditions to waste management. This includes i.a. economics, policy making and human behavior (Ericksen, 2008; Neff & Lawrence, 2014). The food system was not noticeable in the planning field until late last century (Pothukuchi & Kaufman, 1999, 2000) but is now a recognized part of the planning both in academia and amongst practitioners. Food system planning, is a process that aims at improving the food system. It entails clarifying and analyzing the decisions that impact the system, and the connection of its individual components. In 2007 the American Planning Association adopted a policy guide on food system planning (American Planning Association, 2007) and in 2011 the Commonwealth Association of Planners released a discussion paper on food systems and sustainable farming (Caldwell, Collett, Ludlow, Sinclair, & Whitehead, 2011). Since then many municipalities and regions have moved towards the integration of land use planning and food system planning.

Agricultural (ag) production is the foundation of the food system. It is multifunctional and can both impact and be impacted by all three pillars of sustainability, economic, environmental, and social. This multifunctionality has been largely neglected by policymakers and often the farmers themselves since the main focus has been on economic efficiency, (IAASTD, 2016). Agroecology, a concept often used for sustainable ag., has been defined as, the integrative study of the entire food system comprising ecological, economic and social aspects (Francis et al., 2003). According to experts on sustainable food systems it is necessary to shift from industrial food systems to a diversified agroecological systems (IPES-Food, 2016). Iceland adopted UN's 17 SDGs in 2015, where sustainable ag. for food security is included (United Nations).

Accordingly, the Government of Iceland asserts that sustainable development (SD) must be their guiding principle. Regarding ag. the aim is set for Iceland as *"a leader in production of wholesome agricultural products... with sustainability and quality as guiding principles"* (Government of Iceland, 2017, pp. 16-17). Moreover, the Icelandic Planning Act has included SD as one of its objectives since 1997.

Ag. in Iceland has been characterized by family farming and only recently have industrial size farms and agribusiness been established. According to international studies, changes towards large scale farming, have had negative impact on rural communities (McIntyre, 2009). The fact that industrial ag. is not yet the dominant form, provides Icelanders with an opportunity to maintain the small scale of rural communities. Where large scale agro-industry has impacted rural livelihood and landscape, some communities are looking for a way to turn the tide. Smaller scale ag. may again become a viable livelihood where a new economic approach is focused on sustainable ag. and natural resource management, such as wetland restoration and reforestation (Hibbard & Lurie, 2013). Iceland may have the opportunity to move towards sustainable rural development through such approaches, but necessary groundwork for further policy decisions is important.

Food system planning is currently unexplored in Iceland, and the research thus is a pioneering work in the Icelandic context yet it will also add international literature since literature in food system planning theories is limited (Brinkley, 2013). With increased concern over ag.'s impact on the environment the concept of "sustainable food and nutrition" has evolved, a term that refers to the link between environmental sustainability and the food itself (Zurek et al., 2017). Several models are being made to assess the impact of food production on the environment, (see e.g. Gustafson et al., 2016; Lukas, Rohn, Lettenmeier, Liedtke, & Wiesen, 2016; Zurek et al., 2017), that may help make informed decision for ag. land use.

Sustainable food system planning may also be suffering from a disjoint approach, where planning for farmland may not have connections to planning for food consumption. Linking those two may be necessary to improve the sustainability of the current food system (Ajates Gonzalez, 2017). The objective of this study is to look at if and how land use planning can be applied to support sustainable agricultural food production.

#### *Methods.*

This study is a qualitative case study where Icelandic agricultural land use planning and policy are analyzed. An international literature and document review on food system planning and agricultural land use planning was conducted to establish the background for the Icelandic case. The land use and ag. polices are studies using the lens of food system planning. In the research both direct and indirect political forces on ag. are analyzed; direct political influences impact farming through regulations and policies, whereas indirect political influences exert their effect through the market, which is in turn impacted by subsidies among other things (Archer, Dawson, Kreuter, Hendrickson, & Halloran, 2008). Planning is an applied field concerned with both making and applying policies that involve spaces and places. Theories in planning are concerned with either existing practices or its transformation, and must thus be both explanatory and normative (Fainstein & DeFilippis, 2016; Friedmann, 2011; Parker & Doak, 2012). The policy analysis was conducted on Icelandic legislation, regulations, policies and programs with regard to:

- 1) Rural development and land use (local plans);
- 2) Agricultural policy/legislation (provisions and incentives);
- 3) Agricultural subsidy contracts (provisions and incentives);
- 4) Rural and agricultural land use policies (national policies); and
- 5) Agricultural food production policy (provisions, incentives, guidelines).

All topics were reviewed and evaluated with regards to SD's three pillars, environmental, economic and social, and the food system's main components.

#### *Results*

The findings suggest land use planning methods can be applied to move agricultural food production towards sustainability. Moreover, planning for healthy food production should start with agricultural land classification that reflects the goals for sustainable land use and sustainable food production.

#### *Discussion and Conclusions*

Sustainable food production is one of current times biggest challenges. Every step and loop in the food system must be planned and executed according to the leading goal of sustainable development if achievements are to be expected. Agricultural land is a limited resource and must be carefully planned for according to space and place based scientific knowledge as well as desired outcome for its product. It must therefore be evaluated and classified not only for highest potential yield but for sustainability and resilience. This case study adds to the toolbox of environmental management and planning for sustainable food production.

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