Annex A

Summary of TempAg Documents by Actor and Category

Important Note:

- Though 86 documents were found, not all were included in this literature review
- The criteria for inclusion in this literature review is the following:
    - It is written in English, or had sufficient translation from English
    - It was rated 2 or 3 stars
- Total number of articles included in the literature review =74
- Number of excluded articles =12
- The 'Ref' number included with each paper's notes indicates the position in the reference list
- All material presented for a given source is drawn directly from the source in question either as a direct quotation or paraphrased for clarity.
- Complete list of documents evaluated is at the end of this Annex. The reference list for the main report only contains those reports cited within the main text.

General Food System

Belgium

Country: Belgium
Title: Covid-19 and food security in Belgium
Author(s): Carta Academica
Year of Publication: 2020
Rating: 2*
Ref#1
Abstract: N/A

Notes

- Food security in Belgium is a vital issue in the short, medium and long term.
- Dependent on imports: vulnerable
    - "Dependence on foreign countries coupled with the absence of economic and ecological diversity and of actors in the agricultural world leads to a

significant loss of resilience capacity at the heart and at the end of the crisis."

- Covid threatens food security by:
  - Restricting exports, closure of borders, speculation
  - Difficulties in selling agriculture products and associated losses
  - Lack of seasonal workers, difficult harvests in the months to come

Recommendation(s):

1. Create a "territorial food resilience policy" that can be applied at both the national and European scale, which prioritised solidarity-based food security, taking into account the situation of the most vulnerable populations, farmers and the environment
2. Increase number of seed companies, farmers and entrepreneurs in the processing and marketing segments
3. Invest inn territorialized food systems to meet two major challenges:
   a. Ensure access to quality and diversified food for all
   b. Support the production and processing sectors for a more resilient Belgian agriculture
4. Create an inclusive group of experts for a territorial food resilience policy in order to implement short-term proposals linked to a medium and long-term vision
   a. Create a group of inclusive experts from each category of actors in the agricultural world, including vulnerable groups, to
      i. make a quantitative and qualitative inventory of food needs at different territorial scales, production capacities and current food production in the region. national territory as well as
      ii. articulate short-term Recommendation(s) with a medium and long-term vision
   b. Set up rigorous and independent monitoring of the arrangements made for the deployment of an emergency food security plan and publish this information in full transparency: prices, stocks, supply flows, cultivated and cultivable areas, food demand and supply intra-Belgian
5. Put in place support measures for the necessary conversions of existing agricultural activities
   a. Ensure supply management in the dairy sector, oriented towards local consumption, with guaranteed income for producers.
   b. Reorient field crops towards production intended for the national market and for a good nutritional balance for the population (starches and vegetable proteins: bread grains, legumes);
   c. Support the sectors: invest in means allowing the transformation of productions (e.g. mills and / or tools for bread grains).
6. Stabilize and strengthen the agricultural workforce to ensure Belgian production
   a. Facilitate access to seasonal agricultural work for the economically and temporarily unemployed, but also for students, job seekers, pensioners or others; accelerate measures for agricultural employment intended for farmers, market gardeners and seed artisans or unemployment supplements for seasonal workers during harvests.

    b. Support the creation of a supply and demand platform for assistance (professional and voluntary labour) for production (with priority to market gardening);
    c. Priority re-Author(s)ize the continuation of practical training and training in the agricultural field.
7. Ensure decent income for actors in the agricultural sectors
    a. Reorient or set up regional subsidies for the agricultural sector
    b. Ensure a transitional income for those who embark on sustainable agriculture
8. Support the sale of local productions in short circuits and the multiplication of initiatives to cover the whole of the territory, with particular attention to their access for vulnerable audiences
    a. Re-open farmers' markets by distributing health instructions (the spread of the virus is not less in supermarkets than in markets).
    b. Offer exceptional investment aid and / or tax exemptions to support the sudden transition / reconversion to short circuits and material expenditure to cope with the increased demand for local products.
    c. Provide long-term and financial support for the logistical organization of short circuits, including the many initiatives taken by players in the field to sell their products in complete safety (pop-up stores for sale at the farm, delivery of baskets, etc.);
    d. Ask the federated entities to regularly update their platforms for promoting local producers
9. Create an inventory of the number of unemployed people with a heavy vehicle license (including the resources available to the army in terms of heavy truck drivers and rolling stock to help the current carriers, if necessary).
10. Market the seeds
    a. Gain recognition by the National Security Council of the essential character of seeds and seedlings for marketing by nurserymen
11. Maintain agricultural tools
    a. Facilitate access to spare parts for tools to ensure the continuity of agricultural production, by re-opening as a priority the stores selling agricultural and horticultural equipment.

12. Encourage food production by individuals
    a. Provide starter kits to citizens wishing to start a vegetable garden and provide resource persons and educational tools.

Country: Belgium
Title: Food and Nutrition Security in Belgium
Author(s): SCAR Food Systems
Year of Publication: 2017
Scale: National
Rating: 2*
Abstract: N/A
Ref#2

Notes:

- Food safety and security focus
- Gaps identified:
    - Considering food and nutrition security (federal vs. regional etc.)
    - Environmental and climate impact of agriculture and food production + climate change impact on agriculture: plant resilience/adaptation, long term effects on soil is… becoming increasingly important.

Recommendation(s):

1. Maintain a holistic approach in achieving food security
2. Provide a greater focus on soil resilience and health

Country: Belgium
Title: Four Perspectives of Sustainability Applied to the Local Food Strategy of Ghent (Belgium): Need for a Cycle of Democratic Participation?
Author(s): Crivits, Prove, Block and Dessein
Year of Publication: 2016
Scale: City
Rating: 2*
Ref#3

Abstract:
As part of cities 'increasing commitment to sustainable development, local food systems are becoming a policy priority. In this article we focus on the case of a local food system in Ghent, Belgium. We adopt the notion of Hajer et al. (2015) that top-down steering of environmental issues (so-called "cockpit-ism") is insufficient, incomplete and in need of revision. Using their four perspectives on sustainable development (Hajer et al., 2015), we explore, analyze, and valorize the potential of the actors, motives and logics for change within the agriculture and food system in the Ghent region. Applying these four perspectives, we have mapped the current positive developments as well as identified the weaknesses, pitfalls, and opportunities of a local food strategy. The discussion section contains two important strategies for good governance of sustainable urban development: first, a governance approach to stimulate participation and representation in a complex, unequal and rapidly changing context; and second, a reflection on how local food strategies can drive global sustainability. In conclusion, we argue for the integration of a global sustainability approach within sustainable urban development.

Notes:

- Discussion of a local food strategy, adopting four perspectives of sustainability
- Identified the weaknesses, pitfalls, and opportunities of a local food strategy.
- They argue for the integration of a global sustainability approach within sustainable urban development

Recommendation(s):

1. Create a strong governance approach to stimulate participation and representation in a complex, unequal and rapidly changing context across the food system
2. Reflect on how local food strategies can drive global sustainability

France

No web-based documents found.

Germany

Country: Germany
Title: Operationalizing Urban Resilience—Learning from the Past while Preparing for the Future. The Case of Dresden, Germany
Year of Publication: 2018
Author(s): Schiappacasse
Scale: City
Rating: 3*
Ref#4

Abstract:
Alongside inclusive prosperity and social inclusion, urban resilience is one of the key transformative commitments for promoting and ensuring environmental sustainability in the Quito Implementation Plan. Urban resilience emphasizes the importance of learning and being proactive, in creating responses that prepare cities and communities for unexpected events. However, there still exists a considerable gap between ideas of resilience and their implementation, especially regarding how resilience can be measured and how it can be rendered observable. The article discusses how the notion of resilience can be applied to cities to identify principles for the replication or scaling up of urban reaction and/or adaptation responses. During the 20th century the city of Dresden was frequently affected by dramatic events (wartime bombing and firestorms, political upheaval, and flooding) and thus seems a suitable laboratory to understand the methodological difficulties in identifying sources of urban resilience. Findings may have repercussions for the Quito Implementation Plan in helping to operationalize the concept of resilience.

Notes:

- Alongside inclusive prosperity and social inclusion, urban resilience is one of the key transformative commitments for promoting and ensuring environmental sustainability in the Quito Implementation Plan.
- However, there still exists a considerable gap between ideas of resilience and their implementation, especially regarding how resilience can be measured and how it can be rendered observable. The article discusses how the notion of resilience can be applied to cities to identify principles for the replication or scaling up of urban reaction and/or adaptation responses.

- During the 20th century the city of Dresden was frequently affected by dramatic events (wartime bombing and firestorms, political upheaval, and flooding) and thus seems a suitable laboratory to understand the methodological difficulties in identifying sources of urban resilience.
- Findings may have repercussions for the Quito Implementation Plan in helping to operationalize the concept of resilience.
- Different iterations of resilience exist across different cities in Germany

Recommendation(s): nothing obvious

Country: Germany
Title: Resilient urban food systems: opportunities, challenges, and solutions – outcomes of the resilient urban food systems forum
Author(s):
Year of Publication: 2013
Scale: City
Rating: 3*
Ref#5

Abstract:
This report summarizes the discussions from the Resilient Urban Food Systems Forum at the 4th Global Forum on Urban Resilience and Adaptation to Climate Change that was held on June 1, 2013 in Bonn, Germany. The report presents opportunities and challenges for the creation of resilient city region food systems, on the basis of discussions, case studies, workshops, and dialogues with over 70 interdisciplinary actors that participated in the forum. What participants considered to be key elements in a food system and a city region is outlined first, followed by the noted challenges and opportunities for making city region food systems. Case studies highlight, in brief, progressive city examples from Canada, Sweden, Brazil, the Philippines, Sri Lanka, and others. Suggestions for those working in the field of city region food system, particularly local governments, and provided throughout.

Notes:

- Key forum messages:
  - Leadership and champions: Must think long term
    - Action: Mayors and city leaders supporting the development and implementation of city region food systems
  - Bottom up and community-based approaches
  - Action: See what is already happening in your community and work together to enhance your food system.
  - Planning: Link food to several policy goals - integrate!
  - Use food as a vehicle into established policy pathways such as health, education, procurement, and disaster management
- Food systems – urban lens
- Global city examples

- City regional food systems will play an important role in balancing and linking urban and rural food supply. Taking a city region approach means looking beyond traditional jurisdictional borders, sectors, and scales.
- Offers some grounded solutions to these issues

Recommendation(s):

- Long-term thinking is required
- Recognise the value and contribution of grass/roots and community-based approaches
- Collaborated, not duplicate, with other partners who are working towards food system resilience
    a. Team up with other actors: NGOs and international organizations where available.
    b. Make resource centres or hubs: e.g. create an introductory curriculum with buddy or mentoring schemes (e.g. London had free “experts” such as planners, designers, architects working pro bono).
- Integrate positive actions to enhance resilience with multiple goals – such as health, employment, food security etc.
- Be creative and involve youth and elders
    c. Educate school children on gardens and healthy eating.
    d. Go to farmers directly and enlist them to run training and adapt the programs to the students.
    e. Consider elderly care and intergenerational vocational training to teach, but also learn from traditional gardening practices and knowledge.
- Recognize that food practitioners involved in the food value chain (e.g. producers, processors, and transporters) can be first responders in disaster situations and can be incorporated in programs for preparedness and training.
- Link gardeners with entrepreneurs:
    f. Create multifunctional usages of urban farms can make them competitive (e.g. solar harvesting, social initiatives, food supply etc.).
- Create discussions and continue the debate:
    g. Private sector inputs: Retailers, suppliers, distributors, and transport operators are an important perspective missing from discussions
    h. Distant worlds: Consumers are unaware of the impact of climate change on places that affect food supply – they need to be engaged
    i. Scale: Combine regional and rural perspectives be with city perspectives

Country: Germany
Title: Urban food production: A contribution to urban resilience in Berlin?
Author(s): Baumbach
Year of Publication: 2012
Scale: City
Rating: 3*
Ref#6
Abstract: N/A

Notes:
- Building resilient cities and urban food systems
- Berlin

Recommendation(s):
- Promote urban food production systems in enhancing overall urban resilience
    - Community gardens should be supported

Netherlands

Country: Netherlands
Title: A framework to assess the resilience of farming systems
Author(s): Meuwissen et al.,
Year of Publication: 2019
Scale: National
Rating: 3*
Ref#7

Abstract:
Agricultural systems in Europe face accumulating economic, ecological and societal challenges, raising concerns about their resilience to shocks and stresses. These resilience issues need to be addressed with a focus on the regional context in which farming systems operate because farms, farmers' organizations, service suppliers and supply chain actors are embedded in local environments and functions of agriculture. We define resilience of a farming system as its ability to ensure the provision of the system functions in the face of increasingly complex and accumulating economic, social, environmental, and institutional shocks and stresses, through capacities of robustness, adaptability and transformability. We (i) develop a framework to assess the resilience of farming systems, and (ii) present a methodology to operationalize the framework with a view to Europe's diverse farming systems. The framework is designed to assess resilience to specific challenges (specified resilience) as well as a farming system's capacity to deal with the unknown, uncertainty and surprise (general resilience). The framework provides a heuristic to analyze system properties, challenges (shocks, long-term stresses), indicators to measure the performance of system functions, resilience capacities and resilience-enhancing attributes. Capacities and attributes refer to adaptive cycle processes of agricultural practices, farm demographics, governance, and risk management. The novelty of the framework pertains to the focal scale of analysis, i.e. the farming system level, the consideration of accumulating challenges and various

agricultural processes, and the consideration that farming systems provide multiple functions that can change over time. Furthermore, the distinction between three resilience capacities (robustness, adaptability, transformability) ensures that the framework goes beyond narrow definitions that limit resilience to robustness. The methodology deploys a mixed-methods approach: quantitative methods, such as statistics, econometrics and modelling, are used to identify underlying patterns, causal explanations and likely contributing factors; while qualitative methods, such as interviews, participatory approaches and stakeholder workshops, access experiential and contextual knowledge and provide more nuanced insights. More specifically, analysis along the framework explores multiple nested levels of farming systems (e.g. farm, farm household, supply chain, farming system) over a time horizon of 1–2 generations, thereby enabling reflection on potential temporal and scalar trade-offs across resilience attributes. The richness of the framework is illustrated for the arable farming system in Veenkoloniën, the Netherlands. The analysis reveals a relatively low capacity of this farming system to transform and farmers feeling distressed about transformation, while other members of their households have experienced many examples of transformation.

Notes:

- Europe in concept, Netherlands as key case study
- Discussion of resilience farm systems
    - Definitions and in practice
- The richness of the framework is illustrated for the arable farming system in Veenkoloniën, the Netherlands. The analysis reveals a relatively low capacity of this farming system to transform and farmers feeling distressed about transformation, while other members of their households have experienced many examples of transformation.

Recommendation(s):

1. Create and maintain better communication of transformation trajectories
2. Build better support for those that experience transformation and change

Country: Netherlands
Title: The environmental sustainability of the Dutch diet
Author(s): Hollander, Temme and Zijp – the National Institute of Public Health and the Environment
Year of Publication:2017
Scale: National
Rating: 3*
Ref#8

Abstract:
The environmental sustainability of the Dutch diet Background report to ‘What is on our plate? Safe, healthy and sustainable diets in the Netherlands. A sustainable food system is a system that provides sufficient food and nutrition for all people, considering current as well as future generations. Moreover, in a sustainable food system the ecological system is protected. The current global food system is not sustainable. Worldwide, food

production and consumption are responsible for around 25% of the total emission of greenhouse gases and for 60% of the terrestrial loss of variation in plant and animal species (biodiversity). In this report, the Dutch National Institute for Public Health and the Environment (RIVM) describes in what ways and to what extent the production of foods as consumed in the Netherlands has an impact on the environment. Meat and dairy (including cheese) contribute most environmental impact, followed by drinks. For many foods, the production phase (agricultural phase) causes the largest environmental burden. Production of meat and dairy requires a large area of land and high inputs of water. These foods also have the highest impact on acidification and eutrophication. The production of fruit requires a relatively high amount of water. Although the primary production phase is most important for the total environmental impact of most foods, the use of fossil fuels and raw materials for packaging, transport, conservation and preparation of food products are also relevant. This report provides an overview of the current knowledge on the environmental sustainability of foods and diets eaten in the Netherlands. (Technological) innovation can help to reduce unwanted emissions and reduce the need for input of natural resources of all types of foods. Avoiding food waste and avoiding overconsumption of food and drinks induces a lower demand for food production and this will benefit the environment. The type of food and drinks chosen will affect environmental impacts of daily diets, like less meat consumption and more tap water instead of soft drinks and alcoholic drinks. This report is one of four background reports that form the basis of a knowledge synthesis on healthy, safe and sustainable food. This knowledge synthesis is published on the 24th of January 2017.

Notes:

- Netherland government talking about the Dutch diet
- Discussing the environmental impact of the Dutch diet- e.g. meat/dairy/ etc.
- (Technological) innovation can help to reduce unwanted emissions and reduce the need for input of natural resources of all types of foods. Avoiding food waste and avoiding overconsumption of food and drinks induces a lower demand for food production and this will benefit the environment.
- Discusses the policies and private sector initiatives influences the sustainability of the Dutch food system
- Discusses management perspectives for a more sustainable food system
- Specifically looks at Dutch daily diets
- It has a global perspective at times – embedding Dutch food production/Dutch food consumption but mostly focuses on the Netherlands
- Really great figures/graphs/illustrations

Recommendation(s):

2. Embrace technological innovation in improving food systems
3. Reduce food waste and unwanted emissions/inputs/outputs

Country: Netherlands
Title: Towards a resilient food network for the Rotterdam – The Hague Metropolitan Region (MRDH)

Author(s): Spoelman and Nefs
Year of Publication: 2015
Scale: City
Rating: 3*
Ref#9

Abstract:
New trends and techniques for producing food will bring major changes to the food networks of the Netherlands in the coming decades. This research visualizes the food network of the Rotterdam – The Hague Metropolitan Region (MRDH) by mapping current food hubs. The resulting overview is compared with the current food strategies proposed by both cities. We conclude with several important issues that these strategies fail to address and by highlighting potential opportunities in the MRDH. With this research and our recommendations, we aim to urge and inspire the recently founded MRDH authority to set an agenda for a regional food strategy in this metropolitan region.

Notes
- Tech, trends and innovation will produce major changes in the Dutch food network in the next decade
- Agenda for producing a regional food strategy
- Looks at:
    - What are the current policies regarding food supply?
    - How is the current food network structured?
    - What major trends in the food network can be distinguished?
- Maps the food network in the MRDH region

Recommendation(s) include:
- Establish a food region
- Instead of competing with supermarkets and fast-food chain, use them as a distribution channel and work with them to establish change from within
- Resilient food system – work with retailers of all scales

Country: Netherlands
Title: Glasshouse horticulture in the Netherlands: governance for resilient and sustainable economies
Author(s): Gerritsen, Groot and Nieuwenhuizen
Scale: National
Year of Publication: 2014
Rating: 3*
Ref#10

Abstract:

The Netherlands have a strong and competitive horticulture sector, with regional clusters of glasshouse horticulture companies, of which the 'Greenports 'of Westland – Oostland (near The Hague), Aalsmeer (near Amsterdam) and Venlo (near the German Ruhr Area) are the most important ones. The sector makes a strong contribution to the export position of the Netherlands. Since the 1990s, stimulated by changing societal expectations growers and surrounding actors engaged in improving the sustainability of the glasshouse horticulture sector, especially focussing on reducing energy usage, greenhouse gas emissions, water usage and land use. The glasshouse horticulture sector in the Netherland is often perpetrated as a successful example of a sustainability transition and is therefore interesting to derive lessons for sustainable regional economic development. This paper studies how the glasshouse horticulture sector in the Netherlands did developed, became more sustainable and what modes of governance contributed to this process? To answer this question, an evolutionary transition perspective and mode of governance theory were used. Our expectation was that knowledge governance (Gerritsen et al., 2013) interventions were important for the sustainability transition and would be needed because of the high complexity of transitions. Dutch agriculture as a whole and specially the horticulture sector traditionally has a strong focus on innovation. Over the years, many innovation projects and programs have been executed, and sustainability innovations have been central to it. These seemed examples of knowledge governance interventions; in our study other modes of governance were taken into account as well. The study entailed interviews with stakeholders involved in glasshouse horticulture in the Netherlands and a document analysis.

Notes:

- Discussion of the most important glasshouse horticulture companies in the Netherlands
- Since the 1990s, stimulated by changing societal expectations growers and surrounding actors engaged in improving the sustainability of the glasshouse horticulture sector, especially focusing on reducing energy usage, greenhouse gas emissions, water usage and land use. The glasshouse horticulture sector in the Netherland is often perpetrated as a successful example of a sustainability transition and is therefore interesting to derive lessons for sustainable regional economic development.
- Looks at the history of the industry

Recommendation(s): Build and promote greenhouse gases as an efficient way of growing crops. The Netherlands model should be replicated elsewhere

Country: Netherlands
Title: Resilience of food companies to calamities - perceptions in the Netherlands
Author(s): Meuwissen, Burger and Oude Lansink
Year of Publication: 2010
Scale: National
Rating: 3*
Ref#11

Abstract:
Calamities such as extreme droughts and trade or infrastructure breakdowns potentially hamper the continuity of individual food companies, as well as the continuity of food supply in Europe at large. There is a lack of insight into food companies 'resilience in case of cumulative calamities or calamities that did not happen before in recent history. In this context, an expert elicitation study among feed and food companies in the Netherlands was undertaken. Results show that lengthy or structural unavailability of electricity and a lengthy crisis of road transport are perceived as the most threatening calamities. Outcomes also show a relatively limited implementation of BCM (business continuity management) at company level. Complete BCM programs for top-3 calamities perceived to threaten the continuity of food supply in Europe are reported by 0% to 30% of the companies. For calamities perceived to be important for business continuity this is between 20% and 40%. In the field of risk management a leading role is attributed to the public sector for improving international governance and setting up a so-called masterplan with measures such as larger raw-materials stocks and broad sourcing. Findings suggest that further actions are needed, starting with prioritised calamities and the design of a masterplan. Yet, stakeholders are also urged to pro-actively "think the unthinkable".

Notes:

- Discusses various calamities sand their associated impact and the necessary risk management that should take place to overcome them
- Calamities included physical (drought, cold weather), biological (pandemic), social (loss of key suppliers), political (terrorism) and economic (low stocks)
- Questionnaire was distributed to food companies and other stakeholders.
- The topic of resilience to calamities seems to be of high interest to food companies and related stakeholders, given the high response rate to the questionnaire, the direct involvement of senior management and staff, and a large commitment to participate in follow-up analyse
- The calamities perceived to be the most threatening included:
    - Length of structural unavailability of electricity
    - Lengthy crisis in road transport

Recommendation(s):

- For food companies
- Improve risk management solutions for calamities which ranked highest, i.e. electricity and road transport crises and loss of key supplier
- Dear to "think the unthinkable". Answers reveal that companies focus risk analyses on known hazards. Some calamities may even not have been scored at all for this reason. The high importance of the masterplan strategy of keeping larger raw-materials stocks suggests this might be the case, as raw materials stocks have little to do with electricity and road transport crises, but much more with shortage of commodities caused by e.g. droughts.
- For governments:
- Design an efficient, ethical and feasible mix of masterplan strategies. For instance, what is a proper mix of larger raw-materials stocks, additional financial reserves

and broad sourcing? Is it more efficient to foster such strategies at national or at EU level? Is it always ethical to rely on financial reserves to source commodities during a calamity?

- Ensure a proper balance between government and business responsibilities. Although the majority see an important role for governments, BCM scores also show that (some) risk management solutions are feasible at company level. Proper balancing is needed to ensure efficient solutions, including incentives for companies to maintain proper risk and business continuity management.
- Issues for further research include:
- Incorporating so-called “food supply continuity standards” in company-level CSR schemes might enhance awareness and BCM implementation. Similarly, such standards may apply for newly issued government policies and e.g. competition authorities ’assessments in case of mergers and acquisitions. Impact studies would have to reveal feasibility and benefit
- Knock-on effects. Unavailability of electricity and a road transport crisis were regarded as important threats for both business and food supply continuity. This likely relates to both types of calamities being systemic, i.e. affecting many companies at the same time. If non-systemic risks exist that are also perceived as threatening at both levels, this may be due to so-called knock-on effects. We cannot deduce any from our study. Further research will have to reveal if such calamities exist, including implications for company-level and masterplan strategies.
- Consumers ’interpretation of food supply continuity. Food companies and related stakeholders mostly interpreted food supply continuity as fulfilling consumers ’ minimum nutritional needs, preferably with a package of more sustainable products. But what is consumers ’interpretation of food supply continuity, e.g. what is their (minimum) demand in terms of choice, availability, price, and products once facing a calamity? Consumer studies might be able to elicit consumers ’ perceptions on food supply continuity, therewith benefitting decision makers in the resilience arena—and contributing to the already well-developed literature in the field of food safety

Country: Netherlands
Title: Transition to sustainable food systems: the Dutch circular approach providing solutions to global challenges
Author(s): Berkum and Dengerink
Year of Publication: 2019
Scale: National/ Global
Rating: 2*
Ref#12

Abstract:

This report evaluates how the Dutch Ministry's focus on circular agriculture can support the SDG impact of Dutch international aid and investment programmes in less developed countries. Using examples of recently applied and planned interventions in a range of developing countries, the report illustrates the value of adopting a food system approach to find sustainable solutions to achieve a sufficient, healthy and resource-efficient food supply. The report concludes by listing characteristics of circular agriculture that promote interventions to support improved food system outcomes.
Notes:

- Global case studies – circular agriculture and food systems approaches in global challenges
- Dutch circular agriculture approach
    - Applies this to different countries

Recommendation(s): Build a circular agriculture approach for future food systems

Country: Netherlands
Title: Urban planning, water management and climate change strategies: adaptation, mitigation and resilience narratives in the Netherlands
Author(s): Stead
Year of Publication: 2013
Scale: City
Rating: 2*
Ref#13

Abstract:
There are few countries in the world where the importance of addressing climate change in urban policy is as acutely felt as in the Netherlands. As a low-lying country located on a large river delta, it is highly vulnerable to the impacts of climate change. Its vulnerable position is one of the reasons why the country (and several of its cities) is a leading player in climate change-related initiatives. Although some of the policy responses to climate change are based on water management tasks that predate all climate change debates, a range of new responses involving both adaptation and mitigation have been developed at the national and local levels in the Netherlands. Recent shifts in policy have been accompanied by the emergence of a new underlying concept – the concept of resilience. This paper has two main areas of investigation. First, it examines the shifts in emphasis on climate change adaptation and mitigation in urban planning, water management and climate change strategies. Second, it studies the origins and nature of the concept of urban resilience and the way in which the notion has permeated national and local policy in the Netherlands. The city of Rotterdam is used to illustrate the situation at the local level. The paper reveals shifting emphases on adaptation and mitigation over time and across different policy documents as well as a range of interpretations of the concept of resilience.

Notes:

- Recent shifts in policy have been accompanied by the emergence of a new underlying concept – the concept of resilience.

- This paper has two main areas of investigation.
    - First, it examines the shifts in emphasis on climate change adaptation and mitigation in urban planning, water management and climate change strategies.
    - Second, it studies the origins and nature of the concept of urban resilience and the way in which the notion has permeated national and local policy in the Netherlands.
- The city of Rotterdam is used to illustrate the situation at the local level.
- The paper reveals shifting emphases on adaptation and mitigation over time and across different policy documents as well as a range of interpretations of the concept of resilience.
- Focus on water, rather than food

Recommendation(s): nothing obvious

New Zealand

Country: New Zealand
Title: Sustainability assessment to future-proof New Zealand's agriculture
Author(s): Whitehead J., Manhire J., Moller H., Barber A., Reid J., Benge J., MacLeod C., Collins K., Neumann M..
Year of Publication: 2019
Scale: National
Rating: 3*
Ref#14

Abstract:
[From the Exec Summary]

- **Sustainability assessment to future-proof New Zealand's agriculture**
- Sustainability assessment of New Zealand's agriculture at first glance has one simple goal - to keep our farmers farming. However, confronting how to achieve this quickly gets complicated. Efficient, prosperous and environmentally friendly farming demands knowledge and skill, and application of new tools, that must be constantly updated and enhanced. Securing market access depends increasingly on showing faraway customers that the food we produce is safe and nutritious and has been produced in an ethical and sustainable way.
- **The New Zealand Sustainability Dashboard (NZSD) project** has created and tested a variety of tools to make sustainability assessment more efficient and effective. In the past six years (2012-2018) it deployed prototype tools in five sector case studies (wine, kiwifruit, irrigated mixed agriculture, Ngāi Tahu farms and wild food harvests, Māori forestry) and helped other organisations plan their own process including HortNZ, Beef and Lamb New Zealand and Aquaculture New Zealand.
- **Sustainability assessment requires seven recurring steps** to make it efficient, effective, and adaptive. Description of a seven-step process breaks a potentially

bewildering concept into more manageable components to avoid “paralysis by analysis”. This report is structured using this seven-step model.

- **Sustainability is more like a journey than a destination.** It is helpful to focus on the process of improving sustainability and resilience (a journey) rather than becoming fixated on whether we have arrived yet (the destination). Attention to journeying builds confidence and avoids risk of becoming overwhelmed and dispirited by uncertainty and multitude of potential threats ahead.
- **Demonstrating rewards keeps people committed to improving sustainability.** A sustainability journey is more likely to be maintained if it delivers immediate and tangible rewards for the main actors i.e. the growers, producers, at one end of the supply chain, marketers and strategists in the middle, and consumers at the end. Sustainability is not just about securing ‘good ’to be collected later by unknown others - it is also about capturing rewards for producers, right now. We recommend early investment in demonstrating the economic benefits of sustainability so that actors are encouraged to participate.
- **Sustainability assessment is improving** steadily. Methods are becoming more standardised, comprehensive and trusted and increasingly demanded of producers by markets, regulators, and local communities.
- **Tools to help are available**. More powerful, flexible, and less expensive monitoring tools for assessment and reporting across multiple scales have emerged within just the six years of the NZSD project. Sustainability assessment requires selective application of a whole suite of tools at different stages and according to what is discovered as the journey unfolds. An indicator framework provides a broad terrain map to make sure all threats and opportunities are considered; prioritisation and decision support tools ensure the measurement of the most important things in the most cost-effective way; benchmarking and target setting protocols to measure progress and incentivise learning. Communication tools encourage all actors to be kept moving collaboratively in the same direction.
- **Co-design of locally relevant assessment criteria builds relevance and participation**. The international and NZSD research is clear: importing a single or universal recipe for sustainable practice and assessment into a community of producers and processors is unlikely by itself to trigger long-term change for sustainability. The NZSD project findings urge instead a slower and more inclusive process from within the community, to build ownership in the initiative so that all actors see it as their own journey, initiated and navigated by them, and moving in a direction that suits their collective needs. Design of the programme must be informed by the producers ’own knowledge and skill and be put into action by them. This reflects a fundamental respect of the producers, their needs, their identity, and their contribution to a prosperous New Zealand.

Notes:

- In the past six years (2012-2018) it deployed prototype tools in five sector case studies (wine, kiwifruit, irrigated mixed agriculture, Ngāi Tahu farms and wild food

harvests, Māori forestry) and helped other organisations plan their own process including HortNZ, Beef and Lamb New Zealand and Aquaculture New Zealand.
- Creating a bundle of tools to encourage such incremental improvements by individual farmers became the main goal of the NZSD project described in this report.
- Provides 7 steps to sustainability

Recommendation(s): nothing obvious

Country: New Zealand
Title: Transformations for Resilient Rural Futures: The Case of Kaikoura, Aotearoa-New Zealand
Author(s): Cradock-Henry, Fountain and Buelow
Year of Publication: 2018
Scale: Regional
Rating: 3*
Ref#15

Abstract:
On 14 November 2016, a magnitude (Mw) 7.8 earthquake struck the small coastal settlement of Kaikōura, Aotearoa-New Zealand. With an economy based on tourism, agriculture, and fishing, Kaikōura was immediately faced with significant logistical, economic, and social challenges caused by damage to critical infrastructure and lifelines, essential to its main industries. Massive landslips cut off road and rail access, stranding hundreds of tourists, and halting the collection, processing, and distribution of agricultural products. At the coast, the seabed rose two metres, limiting harbour-access to high tide, with implications for whale watching tours and commercial fisheries. Throughout the region there was significant damage to homes, businesses, and farmland, leaving owners and residents facing an uncertain future. This paper uses qualitative case study analysis to explore post-quake transformations in a rural context. The aim is to gain insight into the distinctive dynamics of disaster response mechanisms, focusing on two initiatives that have emerged in direct response to the disaster. The first examines the ways in which agriculture, food harvesting, production and distribution are being reimagined with the potential to enhance regional food security. The second examines the rescaling of power in decision-making processes following the disaster, specifically examining the ways in which rural actors are leveraging networks to meet their needs and the consequences of that repositioning on rural (and national) governance arrangements. In these and other ways, the local economy is being revitalised, and regional resilience enhanced through diversification, capitalising not on the disaster but the region's natural, social, and cultural capital. Drawing on insights and experience of local stakeholders, policy- and decision-makers, and community representatives we highlight the diverse ways in which these endeavours are an attempt to create something new, revealing also the barriers which needed to be overcome to reshape local livelihoods. Results reveal that the process of transformation as part of rural recovery must be grounded in the lived reality of local

residents and their understanding of place, incorporating and building on regional social, environmental, and economic characteristics. In this, the need to respond rapidly to realise opportunities must be balanced with the community-centric approach, with greater recognition given to the contested nature of the decisions to be made. Insights from the case examples can inform preparedness and recovery planning elsewhere, and provide a rich, real-time example of the ways in which disasters can create opportunities for reimagining resilient futures.

Notes:

- This paper uses qualitative case study analysis to explore post-quake transformations in a rural context.
- The aim is to gain insight into the distinctive dynamics of disaster response mechanisms, focusing on two initiatives that have emerged indirect response to the disaster.
    - The first examines the ways in which agriculture, food harvesting, production and distribution are being reimagined with the potential to enhance regional food security.
    - The second examines the rescaling of power in decision-making processes following the disaster, specifically examining the ways in which rural actors are leveraging networks to meet their needs and the consequences of that repositioning on rural (and national) governance arrangements.
- In these and other ways, the local economy is being revitalised, and regional resilience enhanced through diversification, capitalising not on the disaster but the region's natural, social, and cultural capital.
- Drawing on insights and experience of local stakeholders, policy- and decision-makers, and community representatives we highlight the diverse ways in which these endeavours are an attempt to create something new, revealing also the barriers which needed to be overcome to reshape local livelihoods.
- Results reveal that the process of transformation as part of rural recovery must be grounded in the lived reality of local residents and their understanding of place, incorporating and building on regional social, environmental, and economic characteristics.
    - In this, the need to respond rapidly to realise opportunities must be balanced with the community-centric approach, with greater recognition given to the contested nature of the decisions to be made.
- Insights from the case examples can inform preparedness and recovery planning elsewhere, and provide a rich, real-time example of the ways in which disasters can create opportunities for reimagining resilient futures.
- Resilience framing and discussing – definitions
- Case study of the South Island
- Results reveal that the process of transformation as part of rural recovery must be grounded in the lived reality of residents and their understanding of place, incorporating and building on regional social, environmental, and economic characteristics. In this, the need to respond rapidly to realise opportunities must be balanced with the community-centric approach, with greater recognition given to the contested nature of the decisions to be made.

Recommendation(s):

1. Ground rural recovery in the lived realities of local residents and their understanding of place, incorporating and building on regional social, environmental, and economic characteristics
2. Integrate community-centric approaches within decision making of building better food systems

Country: New Zealand
Title: Building urban resilience in New Zealand: lessons from our major cities
Author(s): Centre for Disaster Resilience, Recovery and Reconstruction
Year of Publication: 2017
Scale: City
Rating: 3*
Ref#16
Abstract: N/A

Notes:

- Food is under a lot of shocks, stresses and strains
- Community resilience is tied to sharing food – earthquakes etc
- Sustainable food networks are an essential part of community resilience
    - Food banks as well

Recommendation(s): nothing obvious

Country: New Zealand
Title: Identifying opportunities to improve food resilience in Spreydon-Heathcote - An analysis of edible initiatives in the community
Author(s): Baptiste, Hamilton, McLintock and Slaughter
Year of Publication: 2016
Scale: Regional
Rating: 3*
Ref#17

Abstract:
Due to the issues faced following the Christchurch earthquake sequence, food security and resilience is becoming increasingly important. Edible initiatives can foster food resilience; this study seeks to identify opportunities to improve edible initiatives, and food resilience in Spreydon-Heathcote, Christchurch. Edible initiatives identified included; edible community gardens, community kitchens, food foraging, farmer's markets and orchards. The results indicated that edible initiatives in Spreydon-Heathcote could be improved through; improving knowledge, community consultation, accessibility, and increased support for existing initiatives. Improving these aspects would have a positive

effect on the overall food resilience in the area. However, the scope, timeframe, and technology-based methodology limited these results. Further research should build on this work, considering community consultation in the methodology.

Notes:

- Post Christchurch earthquake
- Edible initiatives can foster food resilience; this study seeks to identify opportunities to improve edible initiatives, and food resilience in Spreydon-Heathcote, Christchurch. Edible initiatives identified included edible community gardens, community kitchens, food foraging, farmer's markets, and orchards. The results indicated that edible initiatives in Spreydon-Heathcote could be improved through, improving knowledge, community consultation, accessibility, and increased support for existing initiatives. Improving these aspects would have a positive effect on the overall food resilience in the area. However
- Discusses a variety of edible initiatives, e.g. Community gardens and how these helps tie in with broader understandings of resilience
- Mapping edible initiatives around the areas

Recommendation(s): Encourage and support a range of edible initiatives at the community-level

Country: New Zealand
Title: Resilient food systems: a qualitative tool for measuring food resilience
Author(s): Toth, Rendall and Reitsma
Year of Publication: 2015
Scale: Urban
Rating: 3*
Ref#18

Abstract:
This paper is dedicated to the topic of food resilience in the context of urban environments and aims at developing a qualitative tool for measuring it. The emphasis is laid on urban food security with a significant global relevance due to the interconnectedness of our urban and global food systems. We argue that food and agriculture must be understood as integral components of contemporary urban and peri-urban landscapes as urban agriculture supports in many cases also ecosystems, biodiversity, urban ecology and urban landscape architecture. The topic is introduced through contemporary urban food system models and definitions followed by characteristics of a resilient urban food system, including consumer, producer, food processing, distribution, and market resilience. Based on the review of food system models and assessment tools, a new food system model for resilience analysis has been developed. This is then applied to worked examples and further developed on the Christchurch case study, where the tool is applied to existing intra-urban and peri-urban landscape components of Christchurch, New Zealand.

Notes:

- This paper is dedicated to the topic of food resilience in the context of urban environments and aims at developing a qualitative tool for measuring it
- The emphasis is laid on urban food security with a significant global relevance due to the interconnectedness of our urban and global food systems.
- Argue that food and agriculture have to be understood as integral components of contemporary urban and peri-urban landscapes as urban agriculture supports in many cases also ecosystems, biodiversity, urban ecology and urban landscape architecture.
    - The topic is introduced through contemporary urban food system models and definitions followed by characteristics of a resilient urban food system, including consumer, producer, food processing, distribution and market resilience.
- Based on the review of food system models and assessment tools, a new food system model for resilience analysis has been developed.
    - This is then applied to worked examples and further developed on the Christchurch case study, where the tool is applied to existing intra-urban and peri-urban landscape components of Christchurch, New Zealand.
- New model of resilient urban food system was created

Recommendation(s): Adopt a holistic/all-encompassing view of the food system

Country: New Zealand
Title: Food security – the FRN story
Author(s): Morris
Year of Publication: 2010
Scale: City
Rating: 3*
Ref#19
Abstract: N/A

Notes:
- Food resilience in Christchurch and Canterbury
- Defines food resilience
- Discussion of the multiple ways in which communities in the cities have tried to improve food resilience
- 27 community gardens in Christchurch
- Maps out all the various programmes
- Discussion of the council's food resilience policy
- Food resilience action plan
    - Cultivate relationships
    - Grow understanding, skills and celebrate local food
    - Propagate and support edible gardens
    - Strengthen our local food economy
    - Grow supportive policies
- Discussion of the ways in which the action plan is suitable to the needs of the urban communities

Recommendation(s): nothing obvious

Country: New Zealand
Title: Food security and the justification of productivism in New Zealand
Author(s): Rosin
Year of Publication: 2013
Scale: National
Rating: 2*
Ref#20

Abstract:
The spike in food commodity prices in 2007–2008 is frequently represented as a crisis for the global food system. Interpreted as a failure to achieve the utopian imperative to feed the world, the crisis can potentially expose the distortions inherent to the productivist ideology framing the existing system. As a result, it can act as a shock that promotes alternative—and more sustainable—conceptualisations of best practice. This article utilises Paul Ricoeur's (1986) examination of ideology and utopia to demonstrate the likely limited impact of the commodity price shock on existing production practises in the New Zealand pastoral farming sectors. Specific focus is placed on the integrative function of ideology, which contributes to the capacity for ideologies to maintain a social order despite the persistence of malicious aspects. The New Zealand case demonstrates both the negotiated functioning of a productivist ideology as well as the tendency for farmers to reference the logics of that ideology to contest policies designed to regulate agricultural greenhouse gas emissions. Rather than encouraging a reassessment of productivist ideologies, the food crisis appears to reinforce defence of more intensive agriculture despite growing concerns over environmental degradation. This suggests that any dismantling of the distortions in the productivist ideology initiated by the food crisis will not necessarily impact the integrative functions of that ideology. The article concludes that, rather than a shock, the achievement of a more sustainable and just global food system is dependent on a food utopia that promotes qualities as well as quantity.

Notes:

- This article utilises Paul Ricoeur's (1986) examination of ideology and utopia to demonstrate the likely limited impact of the commodity price shock on existing production practises in the New Zealand pastoral farming sectors.
- Specific focus is placed on the integrative function of ideology, which contributes to the capacity for ideologies to maintain a social order despite the persistence of malicious aspects.
- The New Zealand case demonstrates both the negotiated functioning of a productivist ideology as well as the tendency for farmers to reference the logics of that ideology to contest policies designed to regulate agricultural greenhouse gas emissions.

- Rather than encouraging a reassessment of productivist ideologies, the food crisis appears to reinforce defence of more intensive agriculture despite growing concerns over environmental degradation. This suggests that any dismantling of the distortions in the productivist ideology initiated by the food crisis will not necessarily impact the integrative functions of that ideology.
- The article concludes that, rather than a shock, the achievement of a more sustainable and just global food system is dependent on a food utopia that promotes qualities as well as quantity

Recommendation(s): Recognise and promote that a just global food system is dependent on a food utopia that promotes qualities as well as quantity

Norway

Country: Norway
Title: What can the COVID-19 pandemic teach us about resilient Nordic food systems?
Year of Publication: 2020
Author(s): Halloran, Wood and Selberg
Scale: Regional
Rating: 3*
Ref#21
Abstract: N/A

Notes:

- The pandemic has revealed significant vulnerabilities on global, regional, national and sub-national scales and has posed new questions about the future of food and agriculture.
- There are, however, many other areas of vulnerability that have not been directly exposed under the current crisis
- Resilience reflects the capacity of such a system to maintain human well-being in the face of change by buffering shocks, but also through adaptation and even transformation of parts of the system. In other words, resilience is the capacity to deal with change and continue to develop.
- The Nordic Region has strong foundations of resilience. That said, building and maintaining resilience is an ongoing effort
- Understanding the different types of vulnerabilities is an important step in preparing the food system's ability to cope with future events.
- Planning will require a comprehensive assessment of the vulnerabilities of Nordic food systems and an understanding of what the magnitude and breadth of impact would be if the vulnerabilities were exposed. A comprehensive assessment of this scale has never been carried out in the history of Nordic co-operation.
- In a globalised food system, it is easy to dismiss our collective ownership of these negative spill-over effects.
- Discussion of the key factors in creating uncertainty in the food system: climate change, globalisation, financial crash, etc.

- Vulnerability is the state of being susceptible to harm from exposure to some stressor
- Vulnerability in the food system:
    - Social = such as the reduced capacity of low-income families and individuals to feed themselves in the face of food price spikes.
    - Structural = “just in time” food retailing = rise to an inability to cope with sudden increases in demand
    - Political = low levels of trust or high levels of corruption that risk an inability to deal with social unrest
    - Environment = depleting soil nutrients unable to generate conditions for growing food
- In depth look at the various types of vulnerabilities within the Nordic food system and their impact
- Resilience reflects the capacity of such a system to maintain human well-being in the face of change by buffering shocks, but also through adaptation and even transformation of parts of the system. In other words, resilience is the capacity to deal with change and continue to develop.
- Seven principles important for building and strengthening resilience
    - Maintain diversity and redundancy
    - Manage connectivity
    - Manage slow changes and feedback
    - Foster complexity and systems thinking
    - Encourage learning
    - Broaden participation
    - Promote polycentric governance

Recommendation(s): it is imperative to take a systems-based approach

Country: Norway
Title: Nordic Food Systems for improved health and sustainability: baseline assessment to inform transformation
Year of Publication: 2019
Author(s): SRC
Scale: Regional
Rating: 2*
Ref#22
Abstract: N/A

Notes:

- Focus on health and sustainability
- Nordic primary food production
- Food loss and waste in Nordic countries
- Nordic food systems impact on people
- Nordic food system impacts on the planet

- In the Nordic countries, populations benefit from a safe and plentiful food supply, but unhealthy diets are a leading risk factor for poor health across the region, and these diets are a key driver of environmental damage, contributing to high overall environmental impact.
- Baseline current assessment of current Nordic food consumption, primary food production and waste
- Key messages
    - Food systems should be a critical lever of change in the Nordics to reach global health and environmental sustainability commitments.
    - The gap between current and desired food systems is substantial enough to require transformative change.
    - An integrated food systems approach aligning agricultural, production, trade, manufacturing, retailing and consumption priorities must be taken.
    - There is enough evidence on necessary food system changes to begin action in setting current food systems on a trajectory towards healthy and sustainable development.
    - Sustained, multi-sectoral forums are needed to steer Nordic food system transformation.
- For the Nordics to realize the 2030 Agenda, substantial change is needed to improve the links between people, planet, and food. This would be aided by adopting a systems-based, resilience approach to understand the linkages between and feedbacks among food system components, and how they relate to health and environmental outcomes. Such an approach would enable action by people, businesses, and policy

Recommendation(s):

1. Adopt a systems-based, resilience approach to understand the linkages between and feedbacks among food system components, and how they relate to health and environmental outcomes. Such an approach would enable action by people, businesses and policy
2. Begin immediate action to transform Nordic food systems
    a. Initiate a multi-stakeholder scenario development process to define a common vision for Nordic food systems
    b. Develop strategies to handle the trade-offs of change
    c. Evaluate Nordic food systems in the global context

Sweden

Country: Sweden
Title: Using local initiatives to envision sustainable and resilient food systems in the Stockholm city-region
Author(s): Sellberg, Norstrom, Peterson and Gordon
Year of Publication: 2020
Rating: 3*
Ref#23

Abstract:
Globally, food systems face multifaceted sustainability challenges and the need for food system transformation is increasingly acknowledged. However, there is still a lack of knowledge on the pathways for transformation and how they will play out in diverse regional social-ecological contexts. We explored transformation towards more sustainable and resilient food systems in a specific regional context – the Stockholm city-region in Sweden. The approach we used is based on a new methodology for bottom-up, participatory narrative scenarios that has been developed in the international sustainability science project “Bright Spots: Seeds of the Good Anthropocene”. Through a workshop and a survey with a diverse set of regional actors, we developed a vision of a positive food future and identified conflicts and opportunities for moving towards it. The vision highlights four components from across different sectors and represents a significant change from the current situation. The direction of change aligns with global goals of sustainable and healthy diets and promotes increased diversity in crops and landscapes that could strengthen the resilience of regional food systems. However, potential trade-offs between local diversity and global resource efficiency need to be better understood. While the approach revealed barriers in existing economic and socio-cultural mechanisms of global food systems, it also allowed us to identify several opportunities for local initiatives to expand the regional niche, for example by using the leverage of actors situated between producers and consumers. The Seeds of Good Anthropocene scenario methodology helped to understand more of the cross-scale dynamics in a transformation process in a specific social-ecological context and can be useful to navigate food system change in other places as well.

Notes:

- Local initiatives play an important role for improving resilience of food systems.
- We explored transformation towards more sustainable and resilient food systems in a specific regional context – the Stockholm city-region in Sweden.
    - The approach we used is based on a new methodology for bottom-up, participatory narrative scenarios that has been developed in the international sustainability science project “Bright Spots: Seeds of the Good Anthropocene”.
- Through a workshop and a survey with a diverse set of regional actors, we developed a vision of a positive food future and identified conflicts and opportunities for moving towards it. The vision highlights four components from across different sectors and represents a significant change from the current situation.
- While the approach revealed barriers in existing economic and socio-cultural mechanisms of global food systems, it also allowed us to identify several opportunities for local initiatives to expand the regional niche, for example by using the leverage of actors situated between producers and consumers.
- The Seeds of Good Anthropocene scenario methodology helped to understand more of the cross-scale dynamics in a transformation process in a specific social-ecological context and can be useful to navigate food system change in other places as well.

Recommendation(s):

1. Build and promote local initiatives to improve the food system
2. Orient the direction of change to align with global goals of sustainable and healthy diets and promote increased diversity in crops and landscapes that could strengthen the resilience of regional food systems.
3. Better understand the potential trade-offs between local diversity and global resource efficiency

Country: Sweden
Title: Transformations towards resilience within the food system: scaling up two organic food value chains in Sweden
Author(s): von Oelreich and Milestad
Year of Publication: 2015
Rating: 3*
Ref#24

Abstract:
One way to build resilience of the food system may be to scale up organic food initiatives. This paper discusses two organic food initiatives in Sweden, exploring challenges and opportunities for a double scaling up of volumes and values. Two different approaches, "reformist" and "progressive", are explored. The paper concludes that the two approaches demand sustaining and building resilience in different ways and at multiple scales.

Notes:

- One way to build resilience of the food system may be to scale up organic food initiatives.
- This paper discusses two organic food initiatives in Sweden, exploring challenges and opportunities for a double scaling up of volumes and values.
- Two different approaches, "reformist" and "progressive", are explored.
- The paper concludes that the two approaches demand sustaining and building resilience in different ways and at multiple scales.

Recommendation(s): Scale up organic food initiatives

Country: Sweden
Title: Towards a Sustainable Food System: Entrepreneurship, Resilience and Agriculture in the Baltic Sea Region
Author(s): Larsson
Date of publication: 2016
Scale: Europe
Rating: 2*
Ref#25

Abstract:
This thesis compares conventional agriculture and Ecological Recycling Agriculture (ERA) in terms of their environmental and socio-economic effects. Environmental effects include greenhouse gas emissions and energy use, but this analysis focuses on nutrient losses. Socio-economic effects include production, costs and benefits at macro, firm and household level. Comparisons were made at regional (Baltic Sea), national (Swedish) and local (community/municipality) level. At regional level, the main challenge is to make agriculture more environmentally friendly and reduce nutrient losses, while maintaining food production. At national level, the challenges are to shift the product mix towards more vegetables and less meat and to address the geographical division between animal and crop production. At local level, the challenge is to achieve sustainable environmental, economic and social rural development. At regional level, the empirical findings were scaled up to create three scenarios. In one scenario, agriculture in Poland and the Baltic States was transformed to resemble the Swedish average structure and resource use, which gave increased nitrogen and phosphorus surplus and substantially increased food production. Two other scenarios in which agriculture in the entire Baltic Sea area converted to ERA gave reductions in nitrogen surplus and eliminated the phosphorus surplus, while food production decreased or remained stable, depending on the strategy chosen. At national level, the environmental effects of different production methods, transport and different food baskets were compared. A household survey was performed to construct an alternative food basket, which was high in vegetables, low in meat and high in locally produced organic food compared with the average Swedish food profile. It was also 24% more expensive. Food basket content was found to be as important as production method in reducing environmental effects. Local production and processing was less important. At local level, an importer and wholesaler of organic fruit and vegetables and a group of environmentally concerned consumers were studied. The business was found to be resilient, i.e. well-suited to adapt to turbulence, and with a history of being innovative.

Notes:

- Eutrophication may be the most severe problem for the Baltic Sea.

Recommendation(s): Overfishing and pollution must be addressed by policy makers if the present unsustainable development is to be changed (MVB, 2005).

Country: Sweden
Title: The Resilience of a Sustainability Entrepreneur in the Swedish Food System
Author: Larsson, Milestad, Hahn and Von Oelreich
Date of publication: 2016
Scale: National
Rating: 2*
Ref#26

Abstract:

Organizational resilience emphasizes the adaptive capacity for renewal after crisis. This paper explores the sustainability and resilience of a not-for-profit firm that claims to contribute to sustainable development of the food system. We used semi-structured interviews and Holling's adaptive cycle as a heuristic device to assess what constitutes social and sustainable entrepreneurship in this case, and we discuss the determinants of organizational resilience. The business, Biodynamiska Produkter (BP), has experienced periods of growth, conservation and rapid decline in demand, followed by periods of re-organization. Our results suggest that BP, with its social mission and focus on organic food, meets the criteria of both a social and sustainability entrepreneurial organization. BP also exhibits criteria for organizational resilience: two major crises in the 1970s and late 1990s were met by re-organization (transformation) and novel market innovations (adaptations). BP has promoted the organic food sector in Sweden, but not profited from this. In this case study, resilience has enhanced sustainability in general, but trade-offs were also identified. The emphasis on trust, local identity, social objectives and slow decisions may have impeded both economic performance and new adaptations. Since the successful innovation Ekolådan in 2003, crises have been met by consolidation rather than new innovations.

Notes:

- Discussion of what resilience is
- Sustainable principles in business can enhance performance and resilience
- Business resilience is different to environmental resilience
- Entrepreneurship has an important role in achieving sustainable development and resilience
    - Community based social entrepreneurs as one category
- Case study of Biodynamiska Produkter (BP) -a not-for-profit foundation
    - Providing consumers with organic and biodynamic food
    - Fruit and veg box scheme
    - Wholesaler
    - Trading company
    - Two production units

Recommendation(s): nothing obvious

Switzerland

Country: Switzerland
Title: Renforcer la resilience de l'agriculture suisse
Author(s): Agridea
Date of publication: 2020
Scale: National
Rating: 3*
Ref#27
Abstract: N/A

Notes:

- Discussion of the Resilience concept
  - Resist
  - Adapt
  - Transform
- Anticipation and preparation are really important to absorb shocks and how collective efforts between different actors can lead to solutions
- Really helpful graphics/illustrations of the resilience concept
- Discussion of the positives and negatives of fragile systems:
  - E.g. A field on a river can be exposed to flooding, and depending on the crop, flooding can be positive (e.g. rice) or negative (e.g. corn).
- Breaks down resilience into durability/ food security

Recommendation(s): nothing obvious

Country: Switzerland
Title: Foresight Study: Research for a Sustainable Swiss Food System
Author(s): ETH Zurich- Last, Buchmann, Gilgen, Grant and Shreck
Date of publication: 2015
Scale: National
Rating: 3*
Ref#28
Abstract: N/A

Notes:

- Food security
- Comprehensive research study on Swiss food system – challenges and foresight
- the most critical challenges were identified across the entire SFS, ranging from scarce resources and climate change to demographic changes and food quality to the overall competitiveness of the SFS.
- Literature review on food system in the world and in Switzerland
- Identified trends in global food system

Recommendation(s):

1. Create a coordinated, multi-stakeholder strategy to address these system challenges at the national level (it is currently lacking, partly due to sectorial policy priorities, partly due to the lack of political and societal pressure and urgency)

Country: Switzerland
Title: Sustainable Food Systems: Theory of Change for three Alternative Food Networks in the Swiss cities Zurich and Basel
Author(s): Vrdoljak, de Alencar, Tesic
Year of Publication: 2020
Scale: City
Rating: 2*

Ref#29
Abstract: N/A

Notes:

- Discussion of Alternative Food Networks
- Theory of change
- Too Good to Go, Urban Agriculture Basel and Bachsemart- 3 AFNS operating in Zurich and/or Basel
    - Urban Agriculture Basel = non-profit association- developing network of over 70 urban agriculture projects
    - Too Good to Go = mobile app that reduces food waste in businesses
- Bachsemart
    - AFN and independent limited company – offering food supply built on participation, transparency, and small structures
    - Group of producers – farmers, bakers, cheesemakers etc.
- we could provide compelling evidence that alternative food system initiatives work with a long-term goal model, even though they don't clearly communicate it to the public. Their transparency about their business and long-term goal models can help to make their steps visible. This approach has the potential to help emerging AFN's to learn from existing ones and to establish a bigger network and best practices.

Recommendation(s):

1. Create a concept-oriented, transparent strategy to match AFNs to the political frameworks and existing policies and develop common indicators for monitoring impact of AFNs for local food systems based on the SDGs.

UK

Country: UK
Title: UK food system resilience tested by Covid-19
Author(s): Global Academy of Agriculture and Food Security, University of Edinburgh – Morgan, Cossar, Merkle and Alexander
Year of Publication: 2020
Scale: National
Rating: 3*
Ref#30
Abstract: N/A

Notes:

- Shows the ways in which Covid-19 has illuminated the resilience-capacity of the UK food system
- It argues that the food system has been able to withstand the pressures of a global pandemic, implying that it is resilient enough to handle other shocks/stresses
- If demand for some products continues to exceed supply, consumers will likely adjust product choice, food preparation and diets

- While localizing our food systems may be desirable to minimize some external costs, it is unclear whether shorter supply chains align realistically with consumer preferences, and whether they truly mitigate vulnerability or potentially bring non-resilience and abuse of market power closer to home.

Recommendation(s): nothing obvious

Country: UK
Title: Resilience and social justice as the basis for urban food system reform-a-case study of Bristol, UK
Author(s): Uppsala University - Wilson
Year: 2014
Scale: City
Rating: 3*
Ref#31

Abstract:
- This paper considers the contribution of urban agriculture to the local food system and the role of the city council in this system. Using an interdisciplinary mixed method approach, the study explores local stakeholders 'perspectives of these aspects in the city of Bristol, UK. The findings were viewed through the lenses of two conceptual frameworks, resilience and social justice. The results reveal that urban agriculture increases resilience through building community, maintaining a diverse food supply network, and strengthening adaptability by retaining the knowledge and skills to produce food. Urban agriculture also supports social justice, by providing access to healthy food, promoting equality and inclusion, and encouraging healthier living through education. Furthermore, the results indicate that the city council can increase resilience and support social justice in the local food system through four key interventions; their procurement policy, urban planning, assisting urban agriculture initiatives, and developing a holistic urban food policy. In conclusion, urban agriculture is regarded as more than a form of food production because local stakeholders use it to support a broad range of social objectives. Developing an urban food policy is the shared responsibility of the city council as well as private and voluntary sector actors. Resilience and social justice are advocated as normative goals of the food system, and can be used as frameworks to guide the complex
  process of urban food system reform.

Notes:
- Resilience and social justice were the two-lens used in analysis
- Urban agriculture also supports social justice, by providing access to healthy food, promoting equality and inclusion, and encouraging healthier living through education

- Furthermore, the results indicate that the city council can increase resilience and support social justice in the local food system through four key interventions; their procurement policy, urban planning, assisting urban agriculture initiatives, and developing a holistic urban food policy. In conclusion, urban agriculture is regarded as more than a form of food production because local stakeholders use it to support a broad range of social objectives.
- Resilience and social justice are advocated as normative goals of the food system and can be used as frameworks to guide the complex process of urban food system reform.
- Food system focus
- Discussed specified resilience: of what, to what,

Recommendation(s): Building community, maintaining a diverse food supply network, and strengthening adaptability by retaining the knowledge and skills to produce food will increase urban agriculture increases resilience

Country: UK
Title: Severe Weather and UK Food Resilience
Author(s): GFS – Benton, Gallani, Jones, Lewis, Tiffin and Donohoe
Year: 2012
Scale: National
Rating: 3*
Ref#32
Abstract: N/A

Notes:

- Discussion of high impact and extreme weather events and how it affects the whole food system
- Severe weather is becoming more frequent and this has real impacts on food system resilience
- Changes in weather can impact food production
- Discusses impact of severe weather on worldwide production
- Mentions the non-food-production impact on the food system: e.g. retail, logistics, storage, etc.
- Concludes that the vulnerability is increasing, and resilience is decreasing
- Provides Recommendation(s) for further research
- Hansen et al 22 show, in their Fig 4, that the right-hand tail of the distribution of temperature anomalies is changing 2 to 2.5x faster than the mean is moving. This further implies that the average of any given period will be less important than the shorter term variation: in 2012 the annual rainfall may be close to average, but the average comprises both the driest period and the wettest periods in many years, and it is this variability that has had the impact, not the average.

Recommendation(s):

1. Prioritise further research on forecasting extremes, especially on a decadal scale; and with a greater emphasis on understanding how the shape of the weather distribution changes, and less emphasis solely on how the mean changes.
2. Use climate projections in the near term to assess the potential impacts, and use this information to develop adaptation strategies
3. Build scenario planning for
    a. managing simultaneous impacts (e.g. concurrent drought and excess rainfall in UK production),
    b. informing farmer adaptation strategies,
    c. challenging the food industry with how to manage the widespread impacts to global production from a year like 2012 but worse,
    d. modelling the economic impacts of widespread disruption to a range of commodities simultaneously, to generate adaptation strategies.
4. Develop an adaptation in agriculture strategy using the "potential pathways-based approaches" to adaptation.
    a. This approach is a process which fully articulates the context, risks, objectives, constraints and options for decisions on adaptation.
    b. By this, decision makers can identify appropriate adaptation strategies.
    c. This approach is a conceptual framework for adaptation planning, developed for, and contributing to, the theoretical framework of the UK's Committee on Climate Change Adaptation Sub-Committee's work on assessing the preparedness of the UK to meet the risks and opportunities arising from climate change.

Country: United Kingdom
Title: Exploring the resilience of the UK food system in a global context
Author(s): Ingram and Zurek
Year of Publication:
Scale: National
Rating: 3
Ref#33
Abstract: N/A

Notes:

- Focus on the UK
- Research policy brief
- Asks "why does the UK food system need to be resilient?"
- Asks "Why do we need to enhance food system resilience?"
- Applies resilience thinking to the UK food system:
    - Food system activities and outcomes
    - Shocks and stresses
    - Food system actors
    - Short and long term
- Discussion of what a food system is

- Summary of the concept of resilience
    - Robustness
    - Recovery
    - Re-orientation
- Three main approaches to enhancing food system resilience: adapting food system activities, adapting food system drivers, and adapting our world views on what we want from food systems.

Recommendations:

1. Adapting food system activities
    i. For example, farming in new ways, processing food differently and changing patterns of consumptions
2. Adapting food system drivers
    i. Another possibility is changing the various drivers that influence and shape the decisions and behaviours of the actors in the food system. This can be done by for example changing food production policies, initiating policy discussion about agri-environment schemes, introducing new trade regulations, or building consumer awareness on healthy eating patterns
3. Adapting our 'worldviews 'of what we want from food systems
    i. Trade-offs
    ii. For instance, we can aim for a different balance between profit for food sector enterprises that exploit natural resources and environmental outcomes by strengthening policies which protect natural habitats.

Country: United Kingdom
Title: A Welsh Food System Fit For Future Generations Executive summary of a report by Sustainable Places Research Institute at Cardiff University, commissioned by WWF Cymru
Author(s): Bellamy and Marsden
Year of Publication: 2020
Scale: National
Rating: 2*
Ref#34
Abstract: N/A

Notes:

- Manifesto of change in the food system in Wales
- The Well-being of Future Generations (Wales) Act provides the vision and levers needed to achieve this transformation. It can facilitate a more joined-up approach cross the food system, for example by linking agricultural policy with health policy, and connecting the food we produce in Wales with the food we consume.
- Short summary doc outlining the changes needed in the food system and some action points moving forwards

Recommendation(s): Build more robust links between food policy and health initiatives, etc.

Country: United Kingdom
Title: Sustainable Food Systems for a Healthier UK: A discussion paper
Author(s): Bash and Donnelly
Year of Publication: 2019
Scale: National
Rating: 2*
Ref#35
Abstract: N/A

Notes: Health focus

Recommendation(s):

To make the food system healthier and more sustainable in the UK, we need to:

1. Promote diets that prioritise plant-based proteins and a 'less and better 'approach to animal-based foods.
2. Advocate for British agriculture policy that accounts for human health.
3. Advocate for all agricultural trade agreements to support public health and environmental sustainability, particularly in the post-Brexit environment.
4. Advocate for reduction in antibiotic use in the livestock sector.
5. Take a global view on food systems and align public health policies with key international agreements.
6. Support regulation for labelling related to food production methods.
7. Stimulate demand for sustainable food including British and local vegetables, pulses and fruits through public procurement, for example, implement DEFRA's Balanced Scorecard across public health sector catering and procurement and support the re-specification of the School Fruit and Veg Scheme to support sustainability.
8. Commission food programmes that support sustainable food systems.
9. Promote and support community-based agriculture schemes that bring farming and green spaces into the urban and peri-urban environments and provide open access and exposure to these green spaces for members of the local community.
10. Develop and support local policies and contracts that aim to reduce wasted food within public sector food provision and wider large-scale catering

Country: United Kingdom
Title: Measuring and comparing economic resilience within the UK agri-food and drink industry
Author(s): Jones, Koch and Schroder
Year of Publication: 2019
Scale: National
Rating: 2*

Ref#36
Abstract: N/A

Notes:

- From key findings:
  - This study provides evidence on how the agri-food and drink industry responds across the supply chain to a broad set of economic risks and challenges.
  - How well each sub-sector in the industry is able to respond to these challenges – which we call ‘shocks – ’reflects how ‘resilient ’the sub-sector is.
  - The study produces two complimentary measures of resilience for each sub-sector of the agri-food and drinks industry, based on data from 2000 to 2017.
  - These measures show how well each sub-sector can limit the size of any impact that a shock has; and how quickly each sub-sector is able to recover from any shock.
  - The most resilient sub-sectors include animal production; growing of crops; the food wholesale sector; processing and preserving of meat and production of meat products; and manufacture of other food products.
  - The least resilient sub-sectors include the oils and fats sector, which performs poorly mainly because it is less able to limit the impact of any shocks.
  - This is an initial piece of research that shows how resilience varies across sub-sectors of the industry but does not explain why it might vary.
  - The results are very sensitive to the choice of output measure, though not to the statistical methods that we have tested.
  - Further research is required to corroborate these findings and to gain a fuller understanding of resilience in this industry, including why it varies across sub-sectors.
- The present study supports this overarching goal by providing evidence on how the agri-food and drink industry responds across the food chain to a broad set of economic risks and challenges. These risks and challenges – which we call ‘shocks – ’could be of many kinds, including changes in regulation and, changes in consumer tastes, animal and crop diseases and problems in the wider economy. How well the industry is able to respond to these shocks reflects how resilient it is.
- Discusses shocks in the UK agri-food and drink sector
- Focuses mainly on economic resilience
  - Shock counteraction
  - Shock absorption
  - Shock avoidance
- No single way of measuring resilience
- Indicators of resilience include
  - Macro-economic stability
    - Fiscal deficit relative to GDP, employment rates and inflation rates

    - Micro-economic market efficiency
        - Wage rigidity, freedom to trade internationally and the size of the government in the economy
    - Governance indicators
        - Property rights, political integrity, impartiality of the judiciary
    - Social development indicators:
        - Education, health, social cohesion
- Discussion of different methods of measuring resilience

Recommendation(s):

- Further research is required to corroborate these findings and to gain a fuller understanding of resilience in this industry, including why it varies across sub-sectors.
- Questions to focus on:
    - why resilience varies across sub-sectors of the industry.
    - the types of shock to which the industry is most vulnerable; and
    - whether and how resilience could be improved

Country: United Kingdom
Title: The London Food Strategy: healthy and sustainable food for London
Author(s): Greater London Author(s)ity
Year of Publication: 2018
Scale: City
Rating: 2*
Ref#37
Abstract: N/A

Notes:

- Focus on having good food at home
- Need to improve the food economy
- Identifies the different social areas – e.g. communities, children, pregnancy, etc. where food security, safety and sustainability need to be revised
- Snapshot of the current urban food system in London
- Policy document style
    - Mayor perspective

Recommendation(s): Promote the London living wage

Country: United Kingdom
Title: Our food future
Author(s): Food Standards Agency
Year of Publication: 2016
Scale: National

Rating: 2*
Ref#38
Abstract: N/A

Notes:

- Consumer-focus
- Though there was a wide range of engagement and knowledge levels about the global food system, in general, ‘thinking globally ’about food was new and challenging.
- Food is a personal and emotive issue – consumer lens is political
- Convenience vs connection
- Health and quality vs price
- Information, education and transparency
- Power, trust and empowerment
- Food security

Recommendation(s): nothing obvious

Country: United Kingdom
Title: Food futures: from business as usual to business unusual
Author(s): WRAP
Year of Publication: 2017
Scale: National
Rating: 2*
Ref#39
Abstract: N/A
Notes:

- Three cross-cutting trends also emerge as priorities for attention: the increasing challenges to food system resilience; the explosion in data-enabled technology and the alignment of health and sustainability agendas.
- the ‘Green Data Revolution ’will create a smarter, more flexible, and resilient food system, as more data is created and shared between supply chain partners and consumers.

Recommendation(s):

1. Create supply chains fit for the future
2. Invest in food chain data capabilities
3. Promote innovation and consumer engagement on health and sustainability
4. Businesses should:
    a. Show leadership on climate change
    b. Drive product innovation through harnessing diversity
    c. Drive down farm-to-fork food waste
    d. Unlock the value of landscape partnerships
    e. Drive product innovation through clear data strategy and through use of health and sustainability agenda

    f. Increase consumer engagement on health and sustainability
5. Policy makers should:
    a. Support the creation of business tools for food system resilience
    b. Create a regulatory environment that fosters partnerships and diversity
    c. Develop an open spatial data infrastructure
    d. Create a food and drink sector strategy
    e. Fund training and skills development in the food chain data
    f. Pursue joined up policies on health and sustainability
    g. Extend food enterprise zones to support health outcomes
    h. Champion international agreement on dietary advice
    i. Use public procurement to drive health and sustainability agenda

National Government

Belgium

No web-based documents found for this actor category

France

No web-based documents found for this actor category

Germany

No web-based documents found for this actor category

Netherlands

Country: Netherlands
Title: Towards a Food Policy
Author(s): de Vries, de Hoog, Stellinga and Dijstelbloem - The Netherlands Scientific Council for Government Policy (wrr)
Year of Publication: 2014
Scale: National
Rating: 3*
Ref#40
Abstract: N/A

Notes:

- Key trends in the global food supply system outlined
- Problems in the global food supply system outlined
- Dutch food system discussed in detail – vulnerabilities, opportunities etc.

- Discussion of Dutch food policy, and a variety of actors promoting societal interests within the ‘food net’
- Netherlands has a prominent position in the world food system – production, research, consumption etc.
- Breaking it down into ecological sustainability, public health, and robustness
- Concept of the food net from the report: The food net transcends national borders and hence jurisdictions, and it involves many interdependent actors. No single player has a complete overview; none has the capacity to determine the functioning of the network. However, the food net does comprise hubs that have a major influence on what goes on elsewhere within the net. Seed companies and procurement organisations of supermarkets are examples of such hubs. Both vertical integration and industry standards introduced by cooperating businesses have led to increasing standardisation of products and processes that substantially affect the power relations within the food net. Increasingly, market competition is no longer between individual firms, but between chains of firms.

Recommendation(s):

1. Stimulate variety
    a. Variety of products, etc.
    b. Increasing competition leads to resilience
2. Organise sustainable management of resources
    a. There is more to managing resources than choosing between government regulation and the invisible hand of the market.
    b. Successful examples involve various kinds of institutions for the sustainable management of ‘common pool resources’.
    c. Food policy should encourage and facilitate such initiatives.
3. Develop learning capacity
    a. Learning to deal with changing circumstances requires room for experimentation and selection based on results.

Country: Netherlands
Title: Outline for an EU Green Recovery The Netherlands ’priorities for a green recovery
Author(s): EurActiv
Year of Publication: 2020
Scale: National
Rating: 2*
Ref#41
Abstract: N/A

Notes:

- In the context of the pandemic: looking for a green recovery
- Integration of the Green Deal ambitions in the economic recovery plans that will be shaped in response to COVID-19 is imperative to achieve a climate neutral and resource efficient economy and increase sustainable employment opportunities. Any recovery and reconstruction package should kick-start the economy, improve

its resilience and create jobs while at the same time provide long-term clarity to investors that the EU will transition to a climate neutral society
- Discussing social and environmental resilience
- Has several bullet points about policy suggestions in the green recovery – e.g. Green recovery investments should contribute to the realization of the National Energy and Climate plans (NECPs) of the EU member States (and in the future also to the proposed Just Transition Plans).
- Splits it up into energy, climate-neutral and circular industries, mobility, agriculture ecosystems and biodiversity, and the built environment

Recommendation(s): Promote a Green Deal

New Zealand

Country: New Zealand
Title: Resilience and Future Wellbeing: The start of a conversation on improving the risk management and resilience of the Living Standards Capitals
Author(s): Frieling and Warren
Date of publication: 2018
Scale: National
Rating: 3*
Ref#42

Abstract:
This paper describes a conceptual framework for the key components of social capital, as a first step towards its measurement as part of the Treasury's Living Standards Framework. It proposes a definition of social capital as the social connections, attitudes and norms that contribute to societal wellbeing by promoting coordination and collaboration between people and groups in society.

Notes:
- The decentralised and siloed nature of much of New Zealand's risk management means that insufficient attention is paid to the interconnectedness and cascading nature of risk factors. A more proactive, coordinated and evidence-based approach to risk management and resilience building is required to maintain societal resilience and sustainability in the face of the complex risks we are facing domestically and globally.
- The Department of the Prime Minister and Cabinet (DPMC) has started work in this direction and is developing a National Risk Register for New Zealand. DPMC has identified at least four categories of long-term trends (environmental, societal, economic and technological) that influence the risk landscape for future wellbeing. This paper provides a first exploration of how these four overarching trends influence the risk landscapes for the four capitals in the Treasury's Living Standards Framework (LSF): natural; economic; human; and social capital

Recommendation(s): nothing obvious

Country: New Zealand
Title: Food Resilience Policy
Author(s): Christchurch City Council
Year of Publication: 2014
Scale: Urban
Rating: 3*
Ref#43
Abstract: N/A

Notes:

- Defines food resilience
- Discusses key food resilience policy outcomes
    - Health and wellbeing
    - Close knit and self-reliant communities
    - Lifelong learning
    - Thriving local food economy
    - Resilient and sustainable food systems
    - Stewardship of public spaces
    - Celebrating garden city heritage
    - Growing a beautiful and bio-diverse garden city
- Sets out priorities to achieve the above

Recommendation(s):
The Council will:

1. Collaborate with the community to achieve the food resilience vision, objective and outcomes, for example by being a participant in the creation and implementation of a Food Resilience Action Plan for the city and by being an active member of the Food Resilience Network.
2. Identify and make available suitable Council land for food production, community gardens and related activities, and establish supportive frameworks that enable community use of these spaces.
3. Encourage the establishment of productive gardens on suitable land around the city that is not in Council ownership, for example homes, schools, church land, institutions and market gardens.
4. Protect locally productive soils surrounding the city from inappropriate development that undermines the lands productive capacity.
5. Commit to increasing the nutritional quality of food in Council facilities, events, and food stalls on public land (for example ensure that low sugar, fat and salt options are provided).

6. Advocate on behalf of the community on issues that affect the city's food resilience, for example advocacy to central government about healthy food choices in schools.
7. Support initiatives that increase the availability, distribution, and affordability of fresh, healthy food in our communities, for example farmers markets, green grocers, local food cooperatives and community kitchens.
8. Work with food producers, distributors, retailers, other agencies, and the community to encourage the availability, affordability and uptake of healthy food in our community.
9. Support community education through community gardens and other local initiatives that increase knowledge of how to grow, harvest, prepare and consume healthy locally grown food to support edible gardens and a thriving local food economy.
10. Support competitions, awards or harvest festivals that celebrate our garden city identity, encourage edible gardens, community gardens, and educate the community about the benefits of our food resilient edible garden city.

Country: New Zealand
Title: A strategy for New Zealand Food Safety 2019-2024
Author(s): Ministry of Primary Industries
Year of Publication: 2019
Scale: National
Rating: 2*
Ref#44
Abstract: N/A

Notes:

- Guiding principles:
  - Caring for others
  - Collaboration and relationships
  - Visible leadership
  - Integrity/Author(s)ity
  - Guardianship of the food system
- Priorities:
  - New Zealand's world class food safety system remains robust
  - Proactively support consumers to make informed food choices
  - Actively contribute to new thinking in international forums
  - We will work in genuine partnership with Maori
  - Innovative and forward-looking in meeting new challenges
- Discussion of what a food safety system is
- Identifies the challenges ahead
- Identified the changes needed and the changes that are being put in place to make the food system sustainable

Recommendation(s):

1. To better target our regulatory activities so that the food safety system is fit-for-purpose, resilient and proactively encompasses new technology and innovation.
2. Increase engagement with businesses and stakeholders to make sure regulatory controls are understand and improve compliance
3. To make Author(s)itative information about food safety issues more accessible to consumers, in ways that suit their communication preferences
4. To foster stronger partnerships between central government agencies, local government, academia and industry which raise consumer awareness and help inform their choices
5. To enhance our understanding of Māori rights and interests in relation to the food safety system, and the Crown's Treaty of Waitangi obligations
6. To seek out and include consideration of Māori mātauranga (knowledge), values and perspectives in New Zealand Food Safety/Haumaru Kai Aotearoa's decision-making
7. To further invest in an emerging risks system and a horizon-scanning system that systematically identifies emerging threats and opportunities, and tackles those which are most significant

Norway

No web-based documents found for this actor category

Sweden

No web-based documents found for this actor category

Switzerland

No web-based documents found for this actor category

UK

Country: UK
Title of Paper: A Resilient UK Food System
Author(s): UK Parliament
Year of Publication: 2020
Scale: National

Rating: 3*
Ref#45
Abstract: N/A

Notes:

- Paper focuses on resilience of the whole UK Food system
- Identifies different shocks and stresses that threaten the food system
- There are many possible ways to achieve a more 'ideal 'food system that is , sustainable and benefits society.
- Defines what a resilient food system would look like: a more secure food supply, lower environmental impacts, transparent supply chains, healthier diets and improved social outcomes.

Recommendation(s): Increase the diversity of approaches and actions taken within the food system may be important for building resilience (such as taking actions to boost both local food production and international trade)

Country: UK
Title: Understanding UK grocery supply chain resilience
Author(s): ARUP - Han
Year of Publication: 2019
Scale: National
Rating: 3*
Ref#46

Abstract:

- The UK imports more groceries than it exports, through a network of global and complex supply chains. As national politics and trade become increasingly turbulent, and extreme weather events and rapid climate change become the norm, it is important to test and identify improvements to the grocery supply chains that will ensure the resilience of a country's food sources.
- In the face of growing risk and context of preparing to leave the European Union, can Britain improve its ability to reduce the impact of potential disruption? Through an industry survey and supply chain mapping, we look at both the resilience of the food supply chains, worth £185bn in 2017, and the critical infrastructure they rely upon heavily.
- The report also includes practical advice on some of the tools and techniques used by Arup that can be used to assess supply chain resilience and provides a practical example of analysing national and industry infrastructure.

Notes:

- Global and complex supply chains are at greater risk of potential disruptions
- Report written in 2018, 6 months before UK was due to leave EU in March 2019
- Surveyed 40 companies in UK food supply sector, including producers, logistics firms, distributers, retailers, and asset owners.

- Focus on potential impacts of political, technological, and environmental factors on supply chains
- Key findings
    - 91% expected some level of disruption from Brexit but only 50% had contingency plans
    - 58% of firms in discussion with suppliers about mitigating Brexit impacts
    - 37% firms surveyed have sight of their supplier's contingency plans
    - 70% expected disruptions from adverse weather
    - 68% had contingency plans for mitigating environmental disruptions in supply chain
    - 46% had sight of their supplier's contingency plans for environmental disruptions
    - 8% believe they operate truly agile supply chains that can quickly respond to a disruption
    - 51% firms do not assess the firm's competitiveness based on tech and R&D innovation
    - 30% anticipate drones will improve operations
    - 100% agreed tech would help reduce supply chain risk
    - 63% believe that an autonomous robotic force will improve resilience of supply chains
    - There is little understanding of the infrastructure that supply chains rely upon
    - 27% said big data analytics are a priority to improve resilience, followed by advanced automation in manufacturing and more hybrid/electrical vehicle infrastructure
    - Leaner and just in time supply chains are vulnerable
    - Key drivers/metrics for measuring and assessing a firm's supply chain resilience (APICS, 2016):
        - Visibility
        - Resilience
        - Value segmentation and product rationalization
        - Risk management

Recommendation(s): nothing obvious

Country: UK
Title: Who Feeds Bristol? A baseline study of the food system that serves Bristol and the Bristol city region
Author(s): Carey
Year: 2011
Rating: 3*
Ref#47
Scale: City
Abstract: N/A

Notes:

- Funded by NHS
- South West of England is a major producer of livestock, accounting for 23% of England's cattle and sheep, with 90% sold to the supermarket trade
- 37% of England's milk is from 3 national dairy processers.
- Discussion of food growing in city, wholesale and distribution, processing, catering, retail, waste
    - An estimated 2,000 hectares of land in Bristol could be used for food growing
- Inefficiency in the food system and use of energy

Recommendation(s):

1. Build stronger links to public sector catering establishments, transport infrastructure services, and markets would strengthen the wholesale and distribution sector
2. Invest in training and education to improve the processing industry – making a more resilient food system

Country: UK
Title: Feeding the Nation: Creating a resilient, growing food industry
Author(s): The Labour Party
Year: N/A
Rating: 3*
Ref#48
Scale: National
Abstract: N/A

Notes:

- General discussion about resilience in the UK food system
- Transparency and trust are key issues in the supply chain
- Local food systems need to be celebrated and supported
- Tech and innovation are vital to building resilience
    - Biotechnology cannot, by itself, increase the UK's domestic food supply, but it can be one of the tools used to ensure better resilience in the UK food chain, and to reduce environmental damage
- GM Foods also need further investigating

Recommendation(s):

1. Improve transparency and trust in the supply chain
2. Invest in training the workforce and the promotion of jobs within the supply chain as a whole
3. Investment in tech

Civil Society

Belgium

No web-based documents found for this actor category

France

No web-based documents found for this actor category

Germany

No web-based documents found for this actor category

Netherlands

No web-based documents found for this actor category

New Zealand

Country: New Zealand
Title: Integrated planning guide: for a healthy, sustainable and resilient future
Author(s): Health in all policies team, community and public health
Year of Publication: 2019
Scale: City
Rating: 2*
Ref#49
Abstract: N/A

Notes

- Focus on wellbeing and integrated systems approach to build sustainable and resilient futures
- Linking community and individual health
- Structured around the building blocks of health
- Integrated planning supports a collaborative approach and encourages different stakeholders to work together to consider the health impacts of projects, plans, policies, and development proposal

Recommendation(s): Integrate multiple understandings of health

Country: New Zealand
Title: Deprived yet healthy: Neighbourhood-level resilience in New Zealand
Author(s): Pearson, Pearce and Kingham
Year of Publication: 2013
Scale: National
Rating: 2*
Ref#50

Abstract:
Geographical inequalities in health are omnipresent with health and related behaviours typically worse in socioeconomically deprived places. However, this is not always true.

Deprived places with unexpectedly good health outcomes, or what might be considered ‘resilient ’places, have been noted. Few studies have quantitatively examined resilience in neighbourhoods or investigated potential explanations for this resilience. This paper examines the paradox of low mortality despite high social deprivation in New Zealand neighbourhoods and considers possible neighbourhood characteristics that contribute to unanticipated positive health outcomes. Using area-level mortality (2005–2007) and socioeconomic data, we developed the Resilience Index New Zealand to quantify neighbourhood levels of resilience across the country. We then examined relationships between this measure and a suite of built, physical and social characteristics. We found that resilient places tended to be densely populated, urban areas. We observed gradients and increases/decreases in the most resilient groups in access to or levels of physical environment factors (environmental deprivation, safe drinking water, air quality) and unhealthy living infrastructure (alcohol and gambling outlets). Since these factors are amenable to change, these findings are the strongest evidence that such improvements may lower mortality in similarly deprived places. The social environment of resilient areas was characterised by high levels of incoming residents. We also found some surprising associations and observed U-shaped relationships for a number of the neighbourhood factors. Such findings suggest the need to develop a better proxy of community cohesion and a better understanding of the interactions between people and their neighbourhoods, rather than simply the presence of certain factors. We argue that this study has identified amenable neighbourhood characteristics and highlighted the importance of ‘place-specific ’resilience factors that may be effective in reducing mortality in some neighbourhoods, but be less effective in others.

Notes:

- Deprived places with unexpectedly good health outcomes, or what might be considered ‘resilient ’places, have been noted
- Using area-level mortality (2005–2007) and socioeconomic data, we developed the Resilience Index New Zealand to quantify neighbourhood levels of resilience across the country.
- We then examined relationships between this measure and a suite of built, physical and social characteristics.
- We found that resilient places tended to be densely populated, urban areas. We observed gradients and increases/decreases in the most resilient groups in access to or levels of physical environment factors (environmental deprivation, safe drinking water, air quality) and unhealthy living infrastructure (alcohol and gambling outlets).

Recommendation(s): nothing obvious

Norway

No web-based documents found for this actor category

Sweden
No web-based documents found for this actor category

Switzerland
No web-based documents found for this actor category

UK
No web-based documents found for this actor category

Producing

Belgium
No web-based documents found for this actor category

France
Country: France
Title: Sustainable and Resilient Farming – Inspiration from agro-ecology
Author(s): Eip-Agri Agriculture and Innovation
Year of Publication: 2020
Scale: European
Rating: 3*
Ref#51

Abstract:
European farmers are faced with increasing challenges, including climate change. Agro-ecological practices can help them develop more sustainable and resilient farming systems that combine stable yields with enhanced biodiversity and ecosystem services. This new EIP-AGRI brochure on agro-ecology offers inspiration from Operational Groups and other innovative projects that create solutions adapted to local needs and adjusted to on-farm conditions.

Notes:
- Agro-ecological focus on creating a resilient European agriculture system
- Better soil health = better resilient systems
- Agro-ecological approaches are inspired by natural ecosystems. They focus on the interactions between plants, animals, soil organisms, people and the environment. This means that they optimize the use of natural resources, enhance biological processes in the soil, and improve biomass, nutrient, carbon and water cycles. This allows producers to reduce external inputs and costs, while improving the health and resilience of plants and animals.

Recommendation(s): Diversify agriculture, including agro-forestry, mixed-crop livestock systems, crop rotation and diversification to increase productivity and resource efficiency and create new market opportunities

Country: France
Title: Overview of French climate actions for agriculture, agri-food, forestry and the bioeconomy
Author(s): Ministry of Agriculture and Food
Year of Publication: 2018
Scale: National
Rating: 3*
Ref#52
Abstract: N/A

Notes:

- Insights into agricultural and forestry levers to address climate change issues
  - 6 Areas to focus on: nitrogen management, livestock, soil and water, forestry and bioeconomy, energy and food supply
  - Crop yields will feel the effects while livestock will be impacted by heat waves and droughts that will lower production and cause disease and even death. Extreme weather events will be more frequent, with decreased surface water and rain in summer and higher winter precipitation levels.

Recommendation(s): nothing obvious

Country: France
Title: A dynamic perspective to farming system resilience and its trade-offs
Author(s): Herrera and Kopainsky
Year of Publication: 2019
Scale: National
Rating: 2*
Ref#53
Abstract: N/A

Notes:

- Beef production systems in France
- Resilience management of farming systems in Europe requires building understanding of the underlying drivers of systems 'adaptive capacity.
- We characterize a dynamic perspective through three elements:
  - 1) the notion that the relationships between the different components of a system (that is, the structure of a system) affect its behaviour over time.
  - 2) an assessment of system performance (robustness, adaptation, transformation) based on the behaviour of system outcomes over time; and
  - 3) the explicit representation of control variables that shape how other variables, particularly outcomes, respond to shocks and stressors
- Discussion of systems resilience
  - Discussion of different perspectives – e.g. Walker et al., 2002

        - a resilience management process is not a normative process but a structured and systematic framework that allows stakeholders to adapt to challenges in the environment
    - robustness, adaptive capacity, managing transformation
- Trade-offs always occur when discussing resilience

Recommendation(s): nothing obvious

Germany

Country: Germany
Title: Assessing Resilience and Sustainability in German large-scale corporate arable farms
Author(s): Kampermann
Year of Publication: 2019
Scale: National
Rating: 3*
Ref#54
Abstract:

- European agriculture is facing multiple economic, environmental, institutional and social challenges which are threatening the stability of production. This also applies for the case study (CS) in the Altmark region, which is located in the North of the federal state “Sachsen-Anhalt” in the East of Germany. The farming system of this case study is characterized by large-scale corporate arable farms. The occurring shocks and long-term pressures are, for instance, emigration due to little social infrastructure, low yields due to dry summers and non-availability of qualified work force.
- This thesis is part of the Towards SUstainable and REsilient EU FARMing systems” (SURE-Farm) project. In the first part of the thesis the Framework for Participatory Impact Assessment adapted for SURE-farm (FoPIA-Surefarm) was used as an integrated assessment (IA) tool to assess current sustainability and resilience of farming systems in the Altmark. In the second part of the thesis a scenario development for the Altmark region was conducted to identified trends of the demographic dynamics and their impact for the case study’s ’resilience.
- FoPIA-Surefarm was conducted in a workshop with twelve participants from different stakeholder groups of the farming system. The participants defined the importance and performance of functions and indicators of the farming system. Secondly, strategies of the last 18 years to improve the resilience were identified. Those strategies and the so-called resilience attributes were assessed for their contribution to the resilience capacities: robustness, adaptability and transformability.
- The most important function of the farming system is the “provision of food” and “economic viability”. The function “economic viability” scored lower in performance compared to “food production”. Overall “natural resources” is the third most

important function and scores the best performance. The indicator wages is perceived low performing by the participants and determined as main challenge. Strategies in the past to increase the farming system resilience were grouped into “cost saving measures”, “adding value to the production” and “government regulations”. The strategies contributed mostly to the robustness and adaptability of the farming system. The resilience attributes contribute to the robustness of the system but also indicate the spatial heterogeneity and the extensive farming management of the farming system, which makes it adaptable. However, the financial and human capital is limited because the farming system is not sustainable in terms of profitability and consequently cannot pay decent wages. The highest scored resilience attribute is “socially-self organized” and contains a chance for the resilience, through networks between the farming system actors in the Altmark. Conclusions from the stakeholder workshop are that the farming system is mainly adaptable and also robust in particular processes but experiences a lock-in due to low profitability. Consequently, transformability of the farming system is considered to be low.

- The scenario development to identify trends of the demographic dynamics highlights that the business as usual scenario will lead to low availability of labour in agriculture due to rural exodus, which challenges the resilience of the farming system. This is because of slow economic growth and a low infrastructure development. The scenario development indicates that medium economic growth is needed to increase the resilience. Direct marketing is one future strategy to increase profitability. However, only the future scenarios which invest into infrastructure development, are resilient pathways in the long-term. Infrastructure development depends on the predominated support scheme of the government. This means that the resilience of the farming system also relies on the national and European government.

Notes:

- Case study in the Altmark region, East of Germany
- The farming system of this case study is characterized by large-scale corporate arable farms. The occurring shocks and long-term pressures are, for instance, emigration due to little social infrastructure, low yields due to dry summers and non-availability of qualified work force.
- The most important function of the farming system is the “provision of food” and “economic viability”.
    - The function “economic viability” scored lower in performance compared to “food production”.
    - Overall “natural resources” is the third most important function and scores the best performance. The indicator wages is perceived low performing by the participants and determined as main challenge.
- The resilience attributes contribute to the robustness of the system but also indicate the spatial heterogeneity and the extensive farming management of the farming system, which makes it adaptable.

- However, the financial and human capital is limited because the farming system is not sustainable in terms of profitability and consequently cannot pay decent wages.
- The highest scored resilience attribute is “socially-self organized” and contains a chance for the resilience, through networks between the farming system actors in the Altmark.
- Conclusions from the stakeholder workshop are that the farming system is mainly adaptable and also robust in particular processes but experiences a lock-in due to low profitability.
    - Consequently, transformability of the farming system is considered to be low.
- Strategies in the past to increase the farming system resilience were grouped into “cost saving measures”, “adding value to the production” and “government regulations”. The strategies contributed mostly to the robustness and adaptability of the farming system.

Recommendation(s): nothing obvious

Country: Germany
Title: Resilience through the Financialisaton of Risks? The Case of a Dairy System in Northwest Germany
Author(s): Popp and Nowack
Year of Publication: 2020
Scale: Regional
Rating: 2*
Ref#55

Abstract:
State support for financial risk management schemes has been introduced in numerous agricultural policies to enhance farming system resilience in response to increased income fluctuations and partially reduced producer support levels in the agricultural sector. In order to better understand how financialisation of risks can contribute to an actual improvement of specific farming systems ’resilience, this study investigates its effects with regards to dairy farming. Based on an in-depth case study of a dairy system in Northwest Germany, multi-layered challenges faced by the farm system are identified, resilience strategies investigated and the role of financial risk management evaluated. In doing so, the resilience assessment framework developed by Meuwissen et al. (2019) is applied in order to analyse the systems ’capacity to resist, adapt or transform in response to external challenges threatening the provision of system ’functions. The results indicate a high relevance of insurances and savings with regards to the system’s robustness against short-term shocks. However, to address the various long-term pressures, resilience-enhancing attributes that increase the system’s capacity to adapt and transform would need to be strengthened. In particular, more cooperation and knowledge transfer beyond system boundaries could contribute to a holistic risk management allowing for improved farming system resilience.

Notes:

- State support for financial risk management schemes has been introduced in numerous agricultural policies to enhance farming system resilience in response to increased income fluctuations and partially reduced producer support levels in the agricultural sector.
- Dairy farm focus
- Northwest Germany – multiple problems in the farm system
- The results indicate a high relevance of insurances and savings with regards to the system's robustness against short-term shocks. However, to address the various long-term pressures, resilience-enhancing attributes that increase the system's capacity to adapt and transform would need to be strengthened

Recommendation(s):

1. Increase cooperation and knowledge transfer beyond system boundaries which would contribute to a holistic risk management allowing for improved farming system resilience

Netherlands

Country: Netherlands
Author(s): Croque
Title: Towards climate-resilient agriculture: the Dutch touch
Year of Publication: ?
Scale: National
Rating: 3*
Ref#56
Abstract: N/A

Notes:

- The Dutch approach is based on intensive cooperation between the private sector, scientific institutes, and the government: the golden triangle
- Asks three questions
    - What are the threats and impacts on arable farming in the region?
    - What are the impacts of extreme events and how to identify adaptation measures?
    - How to identify regional and farm level adaption action plans?

Recommendation(s): nothing obvious

New Zealand

Country: New Zealand
Title: COP24 Act!on Agriculture

Author(s): New Zealand Foreign Affairs & Trade
Year of Publication: 2018
Scale: National
Rating: 3
Ref#57

Abstract:

- New Zealand (with partner countries Ireland, France, Australia and the Netherlands) held a speaker series, 'Act!on Agriculture', from 10-12 December 2018 at COP24.
- The event aimed to bring about action on sustainable agriculture to achieve a 'triple win' – increasing agricultural productivity, reducing emissions, and building resilience to climate change impacts. These outcomes are critical to improving food security for the world's vulnerable communities, producing more food for a growing world population, and achieving the Paris Agreement's climate change goals.

Recommendation(s): Nothing obvious

Country: New Zealand
Title: Conversion of family farms and resilience in Southland, New Zealand
Author(s): Forney and Stock
Year of Publication: 2014
Scale: Regional
Rating: 3*
Ref#58

Abstract:
The well-known deregulation of New Zealand agriculture prompted the growth of dairy farming, particularly in the region of Southland. The formation of the giant cooperative Fonterra only exacerbated the conversion of sheep farms into dairy farms that challenged both farmers' and the region's traditional identity as a sheep country. Interviews with converted farmers show that farming families convert to dairy primarily in an attempt to preserve what is important for them: farm succession and a professional identity. At the community level, conversions to dairy prompted economic revival and a reversal of population loss. This article engages the literature on resilience and rural communities to explore Southland's adaptation to new economic and farming realities while exploring potential shocks in the future around financialization and environmental well-being.

Notes:

- The well-known deregulation of New Zealand agriculture prompted the growth of dairy farming, particularly in the region of Southland.
- The formation of the giant cooperative Fonterra only exacerbated the conversion of sheep farms into dairy farms that challenged both farmers' and the region's traditional identity as a sheep country.

- Interviews with converted farmers show that farming families convert to dairy primarily to preserve what is important for them: farm succession and a professional identity. At the community level, conversions to dairy prompted economic revival and a reversal of population loss.
- This article engages the literature on resilience and rural communities to explore Southland's adaptation to new economic and farming realities while exploring potential shocks in the future around financialization and environmental well-being.

Recommendation(s): nothing obvious

Country: New Zealand
Title: Adaptation in agriculture: lessons for resilience from eastern regions of New Zealand
Author(s): 2011
Year of Publication: Kenny
Scale: Regional
Rating: 3*
Ref#59
Abstract:

Notes:

- Proactive farmers are already reading multiple signals, including changes in climate, and are responding. The farm resilience picture provides a foundation for exploring alternative adaptation options and pathways for agriculture.
- These are presented and discussed in response to two proposed climate change scenarios, a high carbon world scenario and a rapidly decarbonising world scenario.
- Knowledge intensive, low input systems are consistent with the resilience picture drawn from farmers. Such systems are also consistent with a rapidly decarbonising world scenario and, it is argued, are likely to become increasingly attractive under a high carbon world scenario.
- A smart farming approach, focused on resilience, provides the basis for development of a response capacity, with potentially significant co-benefits in terms of adaptation and mitigation to climate change.
- Wider issues and needs to support the further development of farm resilience, and more widely landscape or regional resilience, are identified and discussed.
- It is apparent from this work that ongoing engagement with smart farmers, focused on resilience, can contribute significantly to development of a coordinated 'bottom up' and 'top down' response capacity. Addressing the psychology of change is a fundamental need to ensure wider engagement.

Recommendation(s):

1. Boost knowledge intensive and low input systems as they are consistent with the resilience picture drawn from farmers

2. Maintain ongoing engagement with smart farmers, focused on resilience, as this contributes significantly to the development of a coordinated ‘bottom up ’and ‘top down ’response capacity

Country: New Zealand
Title: Dairy Farm owners, their resilience attributes, and how they relate to their perception and management of risk
Author(s): Duranovich, Shadbolt, Dooley, Gray
Year of Publication: N/A
Scale: National
Rating: 3*
Ref#60

Abstract:
Coping with risk will be a major challenge for farmers in the years to come. In this context, farmers must develop resilience. Resilience requires the ability to mitigate threats, capture opportunities, and adapt to change as required. However, little is known about what is required to become resilient, or if resilience is associated with different perceptions of risks or risk management behaviours. This research was set up to answer two questions. First, what are the attributes that define a resilient farmer and second, do different resilient farmer types differ in their perceptions of the farm business environment and their strategic risk management behaviour? Firstly, a literature review on resilience was used to identify the attributes that could be used to define a resilient farmer, risks and risk strategies. Secondly, a survey was designed and sent out to a random sample of New Zealand dairy farmers in order to measure the attributes of resilience identified in the literature and farmer perceptions of risks and risk management behaviour. Thirdly, principal components analysis and cluster analysis was performed in order to typify farmers according to their resilience attributes. Finally, differences between farmer types were linked to their perceptions of risk and their risk management behaviour. Five attributes of resilience (general self-efficacy, willingness to change, locus of control, social sense-making, and strategic thinking focus) differentiated two resilient farmer groups: high resilient and low resilient farmers. High resilient farmers perceived more opportunities in risk than low resilient farmers. They also made greater use of, and gave more importance to, strategies that were associated with visualising and positioning their business in the future, and with strategies associated with the prevention, mitigation, flexibility and diversity to risks, compared to low resilient farmers. These findings were consistent with resilience theory. The resilience profile and management strategies used by high resilient farmers identified in this research can be used by those in the industry to 47 support farmers in building resilience and encouraging the use of management strategies associated with resilience.

Notes:
- From the abstract: This research was set up to answer two questions.

    - First, what are the attributes that define a resilient farmer and second, do different resilient farmer types differ in their perceptions of the farm business environment and their strategic risk management behaviour?
- Firstly, a literature review on resilience was used to identify the attributes that could be used to define a resilient farmer, risks, and risk strategies.
- Secondly, a survey was designed and sent out to a random sample of New Zealand dairy farmers to measure the attributes of resilience identified in the literature and farmer perceptions of risks and risk management behaviour.
- Thirdly, principal components analysis and cluster analysis was performed to typify farmers according to their resilience attributes.
- Finally, differences between farmer types were linked to their perceptions of risk and their risk management behaviour.
- Five attributes of resilience
    - (general self-efficacy,
    - willingness to change,
    - locus of control,
    - social sense-making,
    - and strategic thinking focus)
- Differentiated two resilient farmer groups: high resilient and low resilient farmers.
    - High resilient farmers perceived more opportunities in risk than low resilient farmers. They also made greater use of, and gave more importance to, strategies that were associated with visualizing and positioning their business in the future, and with strategies associated with the prevention, mitigation, flexibility and diversity to risks, compared to low resilient farmers. These findings were consistent with resilience theory. The resilience profile and management strategies used by high resilient farmers identified in this research can be used by those in the industry to support farmers in building resilience and encouraging the use of management strategies associated with resilience.
- Resilience is not only adapting to change in the environment, but also take advantage of opportunities created by the disturbance
- Identifies the difficulty of measuring food resilience

Recommendation(s):

1. Boost these six attributes that are relevant for individual resilience:
    a. self-efficacy
    b. locus of control
    c. willingness to accept uncertainty and change
    d. open-mindedness
    e. sense-making
    f. strategic management.

Norway

Country: Norway
Title: Resilience in Mountain Farming in Norway

Author(s): Daugstad
Year of Publication: 2019
Rating: 3*
Ref#61
Scale: Regional
Abstract:
The concept of socio-ecological farm resilience is used to understand how farmers manoeuvre in a context of change, what choices and priorities they make, and how that subsequently influences the development of the farming landscape. The author uses farm resilience, the capabilities of buffering, adaptation and transformation, and the response of bouncing back or forward as a conceptual frame in a study of farmers in a mountain community in Norway. Interviews were held with selected farmers. The results indicated that the resilience framework is useful in order to understand farmers 'priorities and situations. The author finds that the responses and decisions are in line with all three capabilities as well as with bouncing back and forward. However, most responses were categorized as bouncing back (i.e. adjustments and changes) but the logic of the farm system remained the same.

Notes:

- The Author(s) uses farm resilience, the capabilities of buffering, adaptation and transformation, and the response of bouncing back or forward as a conceptual frame in a study of farmers in a mountain community in Norway.
- The Author(s) finds that the responses and decisions are in line with all three capabilities as well as with bouncing back and forward. However, most responses were categorized as bouncing back (i.e. adjustments and changes) but the logic of the farm system remained the same

Recommendation(s): nothing obvious

Country: Norway
Title: Alternative Food Networks : a question about farmers 'resilience
Author(s): Berg
Year of Publication: 2016
Scale: National
Rating: 3*
Ref#62

Abstract:

- The aim of this study is to explore how different AFNs contribute to Norwegian organic farmers resilience. This is done by looking into the various food networks a handful of farmers are engaged in. The value-chains are studied to see how the farmers are situated in the value-chains and who controls the different activities. The resource use and economic return is studied and also the potential for growth.
- AFN stability is discussed using Actor Network Theory.

- The assertion that AFN value-chains are short is not always true. As this study documents, they may also be long and include intermediaries.
- For the four farmers in the study, it is clear that the AFNs are contributing to the resilience, giving economic gain and social embeddedness in the form of appreciation and identity.
- Use of translation mechanism may strengthen the farmer's position in the networks. For one of the networks, a self-growing community, the translation failed and the community was ended.
- The work is based on interviews during the late summer and autumn of 2015 with six producers/farmers representing different types of AFNs; Self-growing community, Organic mill, Buyers cooperation, Farm restaurant, CSA and Direct sales in farmers Market and in-farm.

Notes:

- Alternative food networks
- The aim of this study is to explore how different AFNs contribute to Norwegian organic farmers resilience.
- The value-chains are studied to see how the farmers are situated in the value-chains and who controls the different activities. The resource use and economic return is studied and also the potential for growth.
- AFN stability is discussed using Actor Network Theory.
- For the four farmers in the study, it is clear that the AFNs are contributing to the resilience, giving economic gain and social embeddedness in the form of appreciation and identity.

Recommendation(s): Boost AFNs as they contribute to resilience, giving economic gain and social embeddedness in the form of appreciation and identity

Sweden

Country: Sweden
Title: Enhancing Adaptive Capacity in Food Systems: Learning at Farmers' Markets in Sweden
Author(s): Milestad, Westberg, Geber and Bjorklund
Year of Publication: 2010
Scale: National
Rating: 2
Ref#63

Abstract:
This article examines how local food systems in the form of farmers' markets can enhance adaptive capacity and build social-ecological resilience. It does this by exploring the learning potential among farmers and customers. Learning can enable actors to adapt successfully and thus build adaptive capacity. Three forms of learning are investigated: instrumental, communicative, and emancipatory. These forms of learning constitute the foundation for lasting changes of behaviours. Local food systems are characterized by close links and opportunities for face-to-face interactions between consumers and

producers of food, and are also institutions where farmers and customers can express and act upon their ethical values concerning food. However, local food systems are still a marginal phenomenon and cannot be accessed by all consumers. Interviews were held with customers and farmers, and the interactions between farmers and customers were observed at two farmers' markets in Sweden. Customers and farmers were found to learn and adapt to each other due to the opportunities offered by the farmers' markets. We found that farmers and customers learned in the instrumental and communicative domains, but could not confirm emancipatory learning. We concluded that the feedback between customers and farmers offers the potential for learning, which in turn contributes to adaptive capacity. This can be a driving force for building resilience in the food system.

Notes:

- Local food system focus – farmers 'markets
- Resilience = is the capacity of a system to absorb disturbance: to undergo change and still retain essentially the same function and structure (Carpenter et al. 2001).
- Adaptive capacity = is the ability of actors to cope with change and dynamics (Gunderson and Holling 2002)
- Farmers markets are a place of learning, which in turn, help bolster adaptive capacity
- An in-depth analysis of the benefits of farmers markets in helping to improve resilience

Recommendation(s): Learning is a significant factor when building adaptive capacity and social-ecological resilience (Berkes and Folke 1998, Berkes et al. 2003, Gunderson et al. 2006, Fazey et al. 2007).

Switzerland

Country: Switzerland
Title: Resilience Assessment of Swiss Farming Systems: Piloting the SHARP-Tool in Vaud
Author(s): Diserens, Chopitany, Barjolle, Graeub, Durand and Six
Year of Publication: 2018
Rating: 3*
Ref#64
Scale: National

Abstract:
Farm systems are exposed to predictable and unpredictable shocks and stresses. Such events may affect the functioning of farm systems and threaten their capacity to provide food in adequate quantities and sufficient quality. The capacity of farm systems to recover, reorganize, and evolve following external shocks and stresses is analysed within the framework of resilience theory. The SHARP (self-evaluation and holistic assessment of climate resilience of farmers and pastoralists) tool was developed to assess the resilience of farm systems to climate change in a participatory way. The SHARP was originally designed for developing countries. This paper outlines the process and changes

made to adapt the tool for use in the Swiss farming context, including the challenges and trade-offs of the adaptation. Its first application in the Canton of Vaud provides insights on the levels of resilience to climate change for farmers in Switzerland. The results showed that of twenty-five farmers, “environment” and “market” are two groups of farm-system components where the farm systems are least resilient. The paper provides preliminary comments on agricultural systems in the west of Switzerland that could be explored further

Notes:

- Shocks and stresses
- The capacity of farm systems to recover, reorganize, and evolve
- following external shocks and stresses is analysed within the framework of resilience theory. The SHARP (self-evaluation and holistic assessment of climate resilience of farmers and pastoralists) tool was developed to assess the resilience of farm systems to climate change in a participatory way.
    - SHARP was originally designed for developing countries, but it was adopted in the Swiss farming context
- resilience is difficult to operationalize because its nature is abstract and multi-dimensional [28], as well as being very context specific.
- Thirteen behaviour-based indicators of resilience for agroecosystems:
    - Socially self-organized
    - Ecologically self-regulated
    - Appropriately connected
    - Functional and response diversity
    - Optimally redundant
    - Spatial and temporal heterogeneity
    - Exposed to disturbance
    - Coupled with local natural capital
    - Reflective and shared learning
    - Globally autonomous and locally interdependent
    - Honours legacy
    - Builds human capacity
    - Reasonably profitable

Recommendation(s): nothing obvious

Country: Switzerland
Title: An evaluation of Swiss agriculture’s contribution to food security with decision support system for food security strategy
Author: Ferjani, Mann and Zimermann
Year of Publication: 2018
Scale: National
Rating: 2
Ref#65

Abstract:

- **Purpose** – The purpose of this paper is to estimate the domestic agriculture's contribution to food security in the case of missing imports of food and feed to the food supplies of the country.
- **Design/methodology/approach** – This paper uses the Decision Support System for food Security Strategy and Supply Management (DSS-ESSA) to simulate whether a country with as low a level of self-sufficiency (around 60 per cent) as Switzerland would theoretically be capable of supplying its own population with a sufficient quantity of domestically produced food. The authors try to estimate the short-term and long-term impacts of the missing imports of food and feed on the energy supply in Switzerland.
- **Findings** – Findings are summarised as follows. Starting with the long-term impact, the results show that in the long-term an energy supply of 2,340 kcal/person/day would be possible if the appropriate available cultivated area and optimised production existed. However, in the short-time, the potential and the time required to adapt and expand agricultural production depends primarily on the crop-rotation land available and on the existing infrastructure.
- **Research limitations/implications** – In the present version of DSS-ESSA no economic and environmental module has been integrated.
- **Originality/value** – The current model version has been funded by the Swiss Federal Office for Agriculture and aims at supporting Swiss policy-makers to guide changes. Numerous additional data such as technical production contexts are regularly checked by experts.

Notes:
- Food security focus
- Discussion of the agriculture production system in Switzerland and the extent to which it is unsustainable. Evaluating the extent to which Swiss food production is secure

Recommendations: nothing obvious

Country: Switzerland
Title: Organizing for socio-ecological resilience: The roles of the mountain farmer cooperative Genossenschaft Gran Alpin in Graubünden, Switzerland
Author(s): Bardsley and Bardsley
Year of Publication: 2014
Scale: Regional
Rating: 3*
Ref#66

Abstract:
Risks are increasing for agriculture, particularly for marginal systems like the cereal production systems of the Swiss Alps. The article critically examines the outcomes of innovative governance responses to socio-ecological risk through an analysis of the roles of the cooperative organisation Genossenschaft Gran Alpin, according to the perceptions

of its farmer members. Gran Alpin provides a secure premium price for cereal producers in Graubünden linked to the uniqueness of local organic mountain cropping systems, and all the values of local identity, landscape stewardship, biodiversity conservation and regional development that such systems represent. Gran Alpin is enabling an alternative approach for rural development to evolve around key elements, including: high quality breads, pastas, flours and beer; the mountains; the extreme production system; organic production and animal welfare; landscapes aesthetics in a core tourism region; and the cooperation of like-minded farmers. Resilience within the socio-ecological system is enhanced as the cooperative exploits evolving forms of collaboration, market niches, and private and public governance relationships to respond implicitly and explicitly to agro-ecological, economic and political risks.

Notes:

- Cereal production system in the Swiss alps
- Risks are reduced implicitly via cooperation and diversification.
- A lack of agricultural productivity growth does not infer a lack of innovation.
- The rural cooperative is evolving successfully to take on more complex roles.

Recommendation(s): nothing obvious

UK

Country: UK
Title: Resilience of Fresh Fruit and Vegetables supply chains in the face of Brexit.
Author(s): I Know Food and N8 AgriFood- Doherty et al.,
Year of Publication: 2020
Scale: National
Rating: 3*
Ref#67
Abstract: N/A

Notes:

- Policy brief
- Identifies several supply chain risks association with Brexit:
    - Just-in-time supply logistics
    - EU Labour in the UK food system
    - Exchange rate fluctuations
    - Imposition of MFN tariffs in the event of a “no deal” Brexit
    - Loss of EU27 – important source for a range of enabling services in the food system
- Fresh fruit and veg will be badly hit by those things

Recommendation(s):

1. Reduce reliance on EU imports
2. Currency hedging

3. Retain EU migrant employees
4. Forward buying logistics capacity

Processing

Belgium
No web-based documents found for this actor category

France
No web-based documents found for this actor category

Germany
No web-based documents found for this actor category

Netherlands
No web-based documents found for this actor category

New Zealand
No web-based documents found for this actor category

Norway
No web-based documents found for this actor category

Sweden
No web-based documents found for this actor category

Switzerland
No web-based documents found for this actor category

UK
Country: UK
Title: A review of resilience within the UK food manufacturing sector
Author(s): Loughborough University - Colwill, Despoudi and Bhambra
Year: 2016
Scale: National
Rating: 3*
Ref#68

Abstract:
Research on food security and resilience has focused primarily on improving production of traditional crops and livestock (agriculture, crop science, genetics etc.). However significant losses occur after this initial production phase during storage, transportation, processing and preparation. Whilst increased competition and margin pressures within

this sector are constant drivers for efficiency improvements and waste reduction, they can also have unintended consequences on the resilience of food manufacturers and their supply chains. This paper examines how current trends and initiatives could impact the resilience of the UK food manufacturing sector and their wider impacts on UK food security.

Notes:

- Resilience concept can be traced back to Holling 1973
- Resilience in supply chains was associated first by Christopher and Peck (2004) and Naylor (2009)
- To be sustainable in the long term, the food supply chain must also be resilient in the short-term
- A big focus on food security as well as resilience

Recommendation(s): nothing obvious

Retailing

No web-based documents were found for this actor category for the TempAg countries.

Catering

Belgium

No web-based documents found for this actor category

France

No web-based documents found for this actor category

Germany

No web-based documents found for this actor category

Netherlands

No web-based documents found for this actor category

New Zealand

No web-based documents found for this actor category

Norway

No web-based documents found for this actor category

Sweden

No web-based documents found for this actor category

Switzerland

No web-based documents found for this actor category

UK

Country: United Kingdom
Year of Publication: 2019
Title: Future Shock: Issue Four
Author(s): UKHospitality and Consumer Goods Association (CGA)
Scale: National
Rating: 2*
Ref#69
Abstract: N/A

Notes:

- In the 2018 CGA's Business Leaders 'Survey, results showed that more than half (54%) of sector bosses were concerned about market saturation or over-supply of sites
- Brexit: only 36% of business owners feel optimistic about Brexit
- 62% of eating and drinking out consumers proactively try to lead a healthy lifestyle
- 44% of consumers consider the sustainability of ingredients important to them when choosing a meal out of home
- Food delivery is booming
- This sector is not likely to be one that fully embraces automation – personal service is too important – but with the cost and availability of workers rising there will inevitably be a move to tech-based solutions.

Recommendation(s):

1. Promote the experience-economy to help the hospitality sector ("experience is king")
2. Promote careers in the sector and invest in skills and training
3. Have a pre-Brexit tick-list:
    a. Review your supply chain
    b. Assess potential impacts – commercial, service quality
    c. Collaborate with stakeholders

Country: United Kingdom
Year of Publication: 2019
Title: Future Shock: Issue Five
Author(s): UKHospitality and CGA
Scale: National
Rating: 2*
Ref#70
Abstract: NA

Notes:

- Productivity focus
    - Tracking and measuring productivity
    - The role of tech

        - Can boost productivity
    - Regulation/red tape can block productivity

Recommendation(s):
1. Promoting staff wellbeing should be an industry priority
2. Invest in tech
3. Remove red tape

Country: United Kingdom
Year of Publication: 2020
Title: Future Shock: Issue Six
Author(s): UKHospitality and CGA
Scale: National
Rating: 2*
Ref#71
Abstract: N/A

Notes:
- Focus on sustainability – packaging, food waste, zero carbon
- Consumers now expect the brands they use to engage with sustainability in a robust and genuine way
    - 83.1% expect that the brands engage in four aspects of sustainability (ethically sourced food and drink, environmentally friendly packaging, reduce carbon footprint, donate to social/ethical and green causes)
    - But not everyone will pay more for it – only 40.6%
- 3.2 million employed in hospitality industry

Recommendation(s): Review the afore-mentioned concerns

Country: United Kingdom
Year of Publication: 2020
Title: Future Shock: Issue Seven
Author(s): UKHospitality and CGA
Scale: National
Rating: 2*
Ref#72
Abstract: N/A

Notes:
- Consumer behaviours during Covid lockdown:
    - Cautious return
    - Non-negotiable safety and health standards
    - Less disposable income (37% of all consumers anticipate having less)
    - Staying local

    - Consumers avoiding peak time
    - Planning and pre-booking
    - Demand for services like click and collect, at-home meal kits and branded retail products might also endure well beyond the pandemic.
    - Appetite for healthier options
- 85% of the sector has been placed on the furlough scheme
- Eat out to help out

Recommendation(s): nothing obvious

Wholesaling

No web-based documents were found for this actor category for the TempAg countries.

Packaging

Belgium

No web-based documents found for this actor category

France

No web-based documents found for this actor category

Germany

No web-based documents found for this actor category

Netherlands

No web-based documents found for this actor category

New Zealand

No web-based documents found for this actor category

Norway

No web-based documents found for this actor category

Sweden

No web-based documents found for this actor category

Switzerland

Country: Switzerland
Title: Food packaging in the circular economy: Overview of chemical safety aspects for commonly used materials
Author(s): Geueke, Groh and Muncke
Year of Publication: 2018
Scale: National

Rating: 2*
Ref#73

Abstract:
Food packaging facilitates storage, handling, transport, and preservation of food and is essential for preventing food waste. Besides these beneficial properties, food packaging causes rising concern for the environment due to its high production volume, often short usage time, and problems related to waste management and littering. Reduction, reuse, and recycling, but also redesign support the aims of the circular economy. These tools also have the potential to decrease the environmental impact of food packaging.
In this article, we focus on chemical safety aspects of recycled food packaging, as recycling is currently seen as an important measure to manage packaging waste. However, recycling may increase the levels of potentially hazardous chemicals in the packaging and -after migration- in the food. Since exposure to certain chemicals migrating from food packaging has been associated with chronic diseases, it is of high importance to assess the safety of recycled packaging. Therefore, we describe recycling processes of commonly used food packaging materials, including plastics, paper and board, aluminium, steel, and multimaterial multilayers (e.g., beverage cartons). Further, we give an overview of typical migrants from all types of recycled food packaging materials, and summarize approaches to reduce chemical contamination. We discuss the role of food packaging in the circular economy, where recycling is only one of many complementary tools for providing environmentally-friendly and safe food packaging.

Notes:

- Recycling of food packaging is reviewed, with a focus on chemical safety.
- Non-permanent materials pose special challenges during recycling of food packaging.
- Typical chemical migrants and their potential origins are shown for each material.
- Measures for safe food packaging in a circular economy are discussed.
- Recycling may increase the levels of potentially hazardous chemicals in the packaging and -after migration- in the food

Recommendation(s): nothing obvious

UK

No web-based documents found for this actor category

Transporting

Belgium

No web-based documents found for this actor category

France

No web-based documents found for this actor category

Germany
No web-based documents found for this actor category

Netherlands
No web-based documents found for this actor category

New Zealand
No web-based documents found for this actor category

Norway
No web-based documents found for this actor category

Sweden
No web-based documents found for this actor category

Switzerland
No web-based documents found for this actor category

UK
Country: UK
Title: Resilience of the Food Supply to Port Disruption
Author(s): PRB Associates and Global 78 – Defra - Baker and Morgan
Year: 2012
Rating: 3*
Ref#74
Scale: National

Abstract:
More than 90% of the UK's food imports arrive by sea and therefore the security of supply through UK ports is vital in terms of feeding the nation's population. This includes sustaining UK food and drink processors and manufacturers that rely on the import of bulk commodities and food ingredients, as well as supplying the grocery retail and catering sectors with a wide range of agricultural and processed food products. This is in addition to the import of feed and other materials required for support of the UK's agriculture and horticulture sectors. There are critical supplies that the nation relies upon, some of which originate from a single source, while others are channelled through single UK ports. These critical commodities, across the whole range of imports, will be confirmed through reference to trade and port statistics, importers, trade organisations, the Department for Transport and previous research and studies carried out for DEFRA.

A differentiation has to be made between the majority of food supplies that are imported through a range of shipping services and ports and those particular commodity flows that have become concentrated on a single port, or a small number of ports. Of equal importance for the security of continued UK food supply are the ports that handle significantly large volumes of traffic, across a range of food commodities. Dover and the Channel Tunnel, for road trailer traffic and Southampton and Felixstowe for container traffic require particular focus. Once identified, it will be important to understand the full

supply chains for commodities and flows; the flexibility of the transport and shipping routes and modes used, the port infrastructures and capacities and the inland storage, transport and distribution processes. The impact of port disruption on critical flows and key entry points will be assessed in detail by means of a Consultation and Case Study approach, during which the likely causes, extent, speed and duration of transmission of ports disruption into interruption to food imports will be fully assessed, across the container, RoRo and bulk modes. Another bi-product of a Consultation and Case Study approach will be a determination of the specific and general features of the domestic and international transport infrastructure and food supply chains that are likely to ameliorate / exacerbate the impact of UK port disruption on the supply of food imports into the UK (i.e. flexibility in ports and between ports) and the extent to which UK food import security is contingent upon the resilience of overseas port infrastructure.

Notes:

- The aim of the research and consultation undertaken in this project is to address particular "evidence gaps" in trade, port, shipping and supply chain information and practice, relevant to food imports that have been identified in the earlier research
- It is identified that food security is stronger where:
    - There is a range and diversity of entry points
    - Supplies can easily switch between ports in the event of port disruption, and
    - Ports are dispersed geographically
- Questions remained unanswered ("evidence gaps") about the realities of UK port capacity, flexibility, diversity and configuration in the event of possible port disruption scenarios. Furthermore, it was identified that there is a lack of commodity-based information, by port of entry, for EU imports and a lack of understanding of UK food supply chains, particularly import dependencies and risks
- Objectives included:
    - Determine the extent to which particular features of domestic and international transport infrastructure and food supply chains are likely to ameliorate / exacerbate the impact of UK port disruption on the supply of food imports into the UK
    - Determine the extent to which UK food (import) security is contingent upon the resilience of overseas port infrastructure (both within and without EU waters, and now and in the future)
    - Explore the behaviour, over the short to medium run (up to six months), of individual port operators, shipping companies and land-based logistics and food supply chain agents in the event of port disruption.
- Four ports:
    - Dover

    - Felixstowe and Southampton
    - Thames and Medway
    - Humber
- Four commodity groups:
    - Meat and fish
    - Citrus Fruit
    - Sugar
    - Palm Oil
- In summary, for the food commodities under review and the shipping modes most conspicuous in the Case Studies (i.e. trailers and containers), the research indicates that there is a concentration of import flow and shipping capacity on a relatively small number of ports (i.e. a lack of range and diversity of appropriate port capacity).
- Furthermore, due to the dominant size and capacity of some port routes and the specialist import handling facilities at other ports it is not so easy for supplies to switch between ports in the event of port disruption at major entry points.
- Finally, while it is true to say that ports around the UK are dispersed geographically it is also evident that the key ports, serving the busiest international shipping routes and the largest concentration of population are concentrated in the South East of England.

Recommendation(s):

1. While the Dover / Channel Tunnel corridor and the port / rail terminal connections on both sides of the Channel, is considered to be a crucial trade gateway more work is required to more accurately estimate the ability to transfer freight and vessels to other routes should there be any disruption to the UK ports RoRo network (see **Annex 3, 5 and 6** for preliminary analysis)
2. Work should also be commissioned to look into the adaptability of RoRo ferries between Dover operational mode and non-Dover mode. The economic development and installation of dual purpose RoRo ramps could also be investigated, along with the scope to increase potential capacity through the Channel Tunnel
3. A full analysis of UK Deep Sea container service and port capacity (allied to container feeder service capacity and Continental port capacity), along similar lines to the UK Short Sea Freight RoRo and LoLo Capacity Analysis and Report would help to clarify the flexibility and potential transferability of vessels and containers from one port / service to another, should disruption occur. It is currently not clear whether enough container feeder, short sea and Channel Tunnel train capacity is available to „feed" containers back to the UK if a key UK container port is disrupted
4. The potential benefits for UK food supply resilience generated by „added value" service developments around the new London Gateway „hub" terminal should be

assessed along with the potential added resilience that transhipment hub developments at Scapa Flow, Hunterston or other deep water facilities might generate

5. To improve the understanding of potential disruption and planning greater resilience scenario analysis, planning needs to be carried out at an individual flow level, just as it has been for each of the food commodity Case Studies, particularly the sugar and palm oil Case Studies where specialised refining, processing, storage and distribution are integral to the vessel and cargo handling operations, adjacent to the berth
6. Improved resilience planning and business continuity modelling can only benefit from greater openness and transparency among stakeholders (ports, shipping lines, food and drink industry, local and national government, government agencies, port community system providers). Framework discussions centred on information sharing should be arranged for a stakeholder Forum
7. Discussions with the developers and providers of the Port Community Systems in use at the UK"s major container ports; Marine Cargo Processing (MCP) and Community Network Services (CNS) should explore the development of computer system based facilities that could assist the transfer of container and RoRo ferry calls from one port to another in the event of port disruption (see further reference to Port Community Systems in **Annex 4**)
8. The detailed inputs, outputs and scenario assessment capabilities of the DfT"s Deep Port model should be assessed in terms of its ability to model the impact and resolution options (vessel and traffic diversion) in the event of port disruption. If it is not considered „dynamic" enough work should be commissioned to develop and maintain such a live and interactive model
9. Some evidence gaps can be filled by bespoke analysis of the DfT"s Maritime Statistics database, allied with support for Border Agency and Port Health Author(s)ity initiatives to identify food consignments carried in trailers and containers arriving into the UK from EU countries. Provision to identify food grade liquid bulk imports as part of the DfT"s data collection process for the Maritime Statistics would fill another gap
10. The location and volume of stock in the supply chain should be more transparent, to enable more enlightened planning and government intervention, if felt necessary

Disposing

No web-based documents were found for this actor category for the TempAg countries.

Documents Reviewed

1. Cartaacademica.org. 2020. Covid-19 Et Sécurité Alimentaire En Belgique. [online] Available at: https://www.cartaacademica.org/post/covid-19-et-s%C3%A9curit%C3%A9-alimentaire-en-belgique
2. SCAR – Standing Committee on Agricultural Research. 2017. Food and Nutrition Security in Belgium. Available at: https://scar-europe.org/images/FOOD/Deliverables/Qualitative_mapping_RESULTS/BE_Feedback_Dec2017.pdf
3. Crivits, M., Prové, C., Block, T. and Dessein, J., 2016. Four Perspectives of Sustainability Applied to the Local Food Strategy of Ghent (Belgium): Need for a Cycle of Democratic Participation?. Sustainability, 8(1), p.55. Available at: https://www.mdpi.com/2071-1050/8/1/55
4. Schiappacasse P. 2018. Operationalizing Urban Resilience—Learning from the Past while Preparing for the Future. The Case of Dresden, Germany. In: Müller B., Shimizu H. (eds) Towards the Implementation of the New Urban Agenda. Springer, Cham. https://doi.org/10.1007/978-3-319-61376-5_17
5. Nachhaltigkeit Sustainability Durabilite Bonn, World Mayors Council on Climate Change, ICLEI, Resilient Cities 2013. Resilient Urban Food Systems: Opportunities, Challenges, And Solutions – Outcomes of the Resilient Urban Food Systems Forum. Available at: https://sustainabledevelopment.un.org/getWSDoc.php?id=791
6. Baumbach, L., 2013. Urban Food Production: A Contribution To Urban Resilience In Berlin? Available at: https://www.diplom.de/document/229374
7. Meuwissen, M., Feindt, P., Spiegel, A., Termeer, C., Mathijs, E., Mey, Y., Finger, R., Balmann, A., Wauters, E., Urquhart, J., Vigani, M., Zawalińska, K., Herrera, H., Nicholas-Davies, P., Hansson, H., Paas, W., Slijper, T., Coopmans, I., Vroege, W., Ciechomska, A., Accatino, F., Kopainsky, B., Poortvliet, P., Candel, J., Maye, D., Severini, S., Senni, S., Soriano, B., Lagerkvist, C., Peneva, M., Gavrilescu, C. and Reidsma, P., 2019. A framework to assess the resilience of farming systems. Agricultural Systems, 176, p.102656. Available at: https://www.sciencedirect.com/science/article/pii/S0308521X19300046
8. Hollander, A., Temme, E.H.M., Zijp, M.C.., 2017. The environmental sustainability of the Dutch diet. Background report to 'What is on our plate? Safe, healthy and sustainable diets in the Netherlands. Available at: https://rivm.openrepository.com/handle/10029/620807
9. Nefs, M and Spoelman, J., 2015. Towards a resilient food network for the Rotterdam - the Hague Metropolitan Region (MRDH). Available at: https://www.researchgate.net/publication/297715157_Towards_a_Resilient_Food_Network_for_the_Rotterdam_-The_Hague_Metropolitan_Region_MRDH

10. Gerritsen, A., Groot, A.M.E.., Nieuwenhuizen, W., 2014. Glasshouse horticulture in the Netherlands: governance for resilient and sustainable economies. Paper presented at European Conference of the Regional Studies Association, Izmir, Turkey, . https://edepot.wur.nl/334917
11. Meuwissen, Miranda & Burger, Kees & Oude Lansink, Alfons. 2010. Resilience of food companies to calamities - perceptions in the Netherlands. Available at: https://www.researchgate.net/publication/50991739_Resilience_of_food_companies_to_calamities_-_perceptions_in_the_Netherlands
12. Van Berkum, S and Dengerink, J., 2019. Transition to sustainable food systems: the Dutch circular approach providing solutions to global challenges. Available at: https://research.wur.nl/en/publications/transition-to-sustainable-food-systems-the-dutch-circular-approac
13. Stead, D., 2013. Urban planning, water management and climate change strategies: adaptation, mitigation and resilience narratives in the Netherlands. Available at: https://www.tandfonline.com/doi/abs/10.1080/13504509.2013.824928
14. Whitehead J., Manhire J., Moller H., Barber A., Reid J., Benge J., MacLeod C., Collins K., Neumann M.. 2019. The New Zealand Sustainability Dashboard Synthesis Report. Available at: https://www.sustainablewellbeing.nz/nzsd-synthesis
15. Cradock-Henry, N., Fountain, J. and Buelow, F., 2018. Transformations for Resilient Rural Futures: The Case of Kaikōura, Aotearoa-New Zealand. Sustainability, 10(6), p.1952. Available at: https://www.researchgate.net/publication/325683179_Transformations_for_Resilient_Rural_Futures_The_Case_of_Kaikoura_Aotearoa-New_Zealand
16. Mannakkara., S, Wilkinson, S., Milicich, M., 2017. Building Urban Resilience in New Zealand: Lessons from our Major Cities. Available at: https://www.researchgate.net/publication/337099967_Building_Urban_Resilience_in_New_Zealand_Lessons_from_our_Major_Cities
17. Baptiste, O., Hamilton, A., McLintock, R., Slaughter, H., 2016. Identifying opportunities to improve food resilience in Spreydon-Heathcote - An analysis of edible initiatives in the community. Available at: https://www.canterbury.ac.nz/media/documents/oexp-science/geography/community-engagement/geog402/2016/Identifying-opportunities-to-improve-food-resilience-in-Spreydon-Heathcote.pdf
18. Toth, A., Rendall, S. and Reitsma, F., 2015. Resilient food systems: a qualitative tool for measuring food resilience. Urban Ecosystems, 19(1), pp.19-43. Available at: https://www.researchgate.net/publication/280841105_Resilient_food_systems_A_qualitative_tool_for_measuring_food_resilience
19. Morris, M., 2010. Food Security –the FRN Story. Available at: https://ana.org.nz/wp-content/uploads/2016/10/Food-Security-Inspirtation-from-NZs-most-edible-city_0.pdf
20. Rosin, C., 2013. Food security and the justification of productivism in New Zealand. Journal of Rural Studies, 29, pp.50-58. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0743016712000162

21. Halloran, A., Wood, A., Sellberg, My., 2020. What can the COVID-19 pandemic teach us about resilient Nordic food systems? Nordisk Ministerråd, Copenhagen. Available at: http://norden.diva-portal.org/smash/record.jsf?pid=diva2%3A1450471&dswid=-6860
22. Wood A, Gordon LJ, Röös E, Karlsson J, Häyhä T , Bignet V, Rydenstam T, Segerstad LH, et al. 2019. Nordic food systems for improved health and sustainability: Baseline assessment to inform transformation. Stockholm Resilience Centre , Stockholm, Sweden. Available at: http://pure.iiasa.ac.at/id/eprint/16122/
23. Sellberg, M., Norström, A., Peterson, G. and Gordon, L., 2020. Using local initiatives to envision sustainable and resilient food systems in the Stockholm city-region. Global Food Security, 24, p.100334. Available at: https://www.sciencedirect.com/science/article/pii/S2211912419300501
24. von Oelreich, Jacob and Milestad, Rebecka. 2015. Transformations towards resilience within the food system: scaling up two organic food value chains in Sweden. Conference proceeding and presentation at: XXVI European Society for Rural Sociology Congress, Aberdeen, Scotland, 18-21 August 2015. Available at: https://orgprints.org/30863/
25. Larsson, M., 2016. Towards a Sustainable Food System : Entrepreneurship, Resilience and Agriculture in the Baltic Sea Region. Available at: https://www.semanticscholar.org/paper/Towards-a-Sustainable-Food-System-%3A-Resilience-and-Larsson/2ac720ac131b839ecfad52c986e4bd845d7f4959
26. Larsson, M., Milestad, R., Hahn, T., von Oelreich, J. 2016. The resilience of a sustainability entrepreneur in the Swedish food system. Sustainability 8, 550. doi:10.3390/su8060550. Available at: https://www.stockholmresilience.org/publications/artiklar/2017-09-26-the-resilience-of-a-sustainability-entrepreneur-in-the-swedish-food-system.html
27. Agridea., 2020. Renforcer la résilience de l'agriculture Suisse. Available at: https://agridea.abacuscity.ch/fr/A~3686~1/2~530~Shop/Publications/March%C3%A9s-Fili%C3%A8res/Renforcer-la-r%C3%A9silience-de-l%27agriculture-suisse/Fran%C3%A7ais/Print-papier
28. Last, L., Bunchmann, N., Gilgen, A., Grant, M., Shreck, A. 2015. Foresight Study: Research for a Sustainable Swiss Food System. Available at: https://www.blw.admin.ch/dam/blw/de/dokumente/Politik/Nachaltiges%20Ernaehrungssystem%20CH/Foresight/Foresight_Bericht.pdf.download.pdf/Foresight_Bericht.pdf
29. Vrdoljak, D., de Alencar., M.T., Tesic, A. 2020. Sustainable Food Systems: Theory of Change for three Alternative Food Networks in the Swiss cities Zurich and Basel. Zurich-Basel Plant Science Center. Available at: https://blogs.ethz.ch/Science_and_Policy/files/2020/05/Sustainable-food-systems_TOC_ZURICH_01.05.20.pdf
30. Moran, D., 2020. UK food system resilience tested by COVID-19. Nature Food. Available at: https://www.nature.com/articles/s43016-020-0082-1
31. Wilson, M., 2014. Resilience and Social Justice as the Basis for Urban Food System Reform - A Case Study of Bristol, U.K. Uppsala University. Available at: https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A694603&dswid=-7892

32. Benton, T., Gallani, B., Jones, C., Lewis, K., Tiffin, R. 2012. Severe weather and UK food chain resilience. Available at: https://www.foodsecurity.ac.uk/publications/severe-weather-uk-food-chain-resilience-detailed-appendix-synthesis-report.pdf
33. GFS Project., n.d. Exploring the resilience of the UK food system in a global context. Available at: https://www.foodsecurity.ac.uk/publications/exploring-the-resilience-of-the-uk-food-system-in-a-global-context.pdf
34. Bellamy., A.S and Marsden, T., A Welsh Food System Fit For Future Generations - A report by the Sustainable Places Research Institute at Cardiff University, commissioned by WWF Cymru. 2020. Available at: https://www.wwf.org.uk/updates/welsh-food-system-fit-future-generations
35. Bash, K., and Donnelly, A. 2019. Sustainable Food Systems for a Healthier UK: A discussion paper. Faculty of Public Health and The Soil Association. Available at : https://www.fph.org.uk/media/2409/sustainable-food-systems-for-a-healthier-uk-final.pdf
36. Jones, S., Koch, L., Schroder, J. 2019. Measuring and comparing economic resilience within the UK agri-food and drink industry. Available at: https://www.food.gov.uk/research/research-projects/measuring-and-comparing-economic-resilience-within-the-uk-agri-food-and-drink-industry
37. Greater London Authority. 2018. The London Food Strategy. Available at: https://www.london.gov.uk/what-we-do/business-and-economy/food/london-food-strategy-0
38. Food Standards Agency. 2016. Our Food Future. Available at: https://www.food.gov.uk/sites/default/files/media/document/our-food-future-full-report.pdf
39. Wrap. 2017. From business as usual to business unusual. Available at: http://www.wrap.org.uk/foodfuturesfullreport
40. De Vries, G., de Hoog, J., Stellinga, B., Dijstelbloem, H., Towards a Food Policy. Available at: https://english.wrr.nl/binaries/wrr-eng/documents/reports/2016/12/13/towards-a-food-policy/R093-Towards-food-policy.pdf
41. EurActiv. 2020. Outline for an EU Green Recovery: The Netherlands' priorities for a green recovery. Available at: https://www.euractiv.com/wp-content/uploads/sites/2/2020/04/Netherlands-non-paper-on-Green-Recovery-21-April-2020.pdf
42. Freiling, M., Warren, K. 2018. Resilience and future wellbeing: The start of a conversation on improving the risk management and resilience of the Living Standards Capitals. Available at: https://www.econstor.eu/handle/10419/205378
43. Christchurch City Council. 2014. Food Resilience Policy. Available at: https://ccc.govt.nz/the-council/plans-strategies-policies-and-bylaws/policies/sustainability-policies/food-resilience-policy
44. New Zealand Food Safety (Ministry of Primary Industries). 2019. A Strategy for New Zealand Food Safety 2019-2024. Available at: https://www.mpi.govt.nz/dmsdocument/38951/direct
45. Llanos, and Border, 2020. A resilient UK food system. (UK Parliament) Available at: https://post.parliament.uk/research-briefings/post-pn-0626/
46. Han, J. 2019. Understanding UK grocery supply chain resilience. Available at: https://www.arup.com/-/media/arup/files/publications/f/understanding-uk-grocery-supply-chain-resilience.pdf

47. Carey, J. 2011. Who feeds Bristol? Towards a Resilient Food Plan. Available at: https://bristolfoodpolicycouncil.org/wp-content/uploads/2012/10/Who-Feeds-Bristol-report.pdf
48. Labour Party. N.d. Feeding the Nation: creating a resilient, growing food industry Available at: http://www.yourbritain.org.uk/uploads/editor/files/Feeding_the_nation.pdf
49. Health in all Policies Team, Community and Public Health. 2019. Integrated Planning Guide: For a healthy, sustainable and resilient future. Available at: https://www.cph.co.nz/wp-content/uploads/IntegratedPlanningGuideV3.pdf
50. Pearson, A., Pearce, J. and Kingham, S., 2013. Deprived yet healthy: Neighbourhood-level resilience in New Zealand. Social Science & Medicine, 91, pp.238-245. Available at: https://www.sciencedirect.com/science/article/pii/S0277953612007885
51. Eip-agri Agricultur and Innovation. 2020. Sustainable and Resilient Farming - inspiration from agro ecology. Available at: http://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_brochure_agro-ecology_2020_en_web.pdf
52. Ministry of Agriculture and Food. 2018. Overview of French climate actions for agriculture, agrifood, forestry and the bioeconomy. Available at: https://www.gouvernement.fr/sites/default/files/locale/piece-jointe/2018/12/20181130_panorama_de_laction_climatique_pour_lu2019agriculture_lu2019agroalimentaire_la_foret_et_la_bioeconomie_version_anglaise_bd.pdf
53. Herrera, H., Kopainsky, B. 2020. A dynamic perspective to farming system resilience and its trade-offs. 173rd EAAE Seminar, September 26-27, 2019, Bucharest, Romania 302646, European Association of Agricultural Economists. Available at: https://ideas.repec.org/p/ags/eaa173/302646.html
54. Kampermann, I. 2019. Assessing Resilience and Sustainability in German large-scale corporate arable farms. Available at: https://bscmsc.pps.wur.nl/assessing-resilience-and-sustainability-german-large-scale-corporate-arable-farms
55. Popp, T., and Nowack, W. 2020. Resilience through the financialisation of risks? The case of a dairy system in Northwest Germany. Sustainability. Available at: https://www.mdpi.com/2071-1050/12/15/6226#cite
56. Croque, S. n.d Towards climate-resilient agriculture: the Dutch touch. Available at: http://www.fao.org/3/i3084e/i3084e22.pdf
57. Event at COP24. 2018. 'Act!on Agriculture'. Available at: https://www.mfat.govt.nz/en/environment/climate-change/cop24sustag
58. Forney, J., and Stock, P. 2014. Conversion of family farms and resilience in Southland, New Zealand. Available at: http://www.fao.org/family-farming/detail/en/c/1136573/
59. Kenny, G., 2011. Adaptation in agriculture: lessons for resilience from eastern regions of New Zealand. Climatic Change, 106(3), pp.441-462. Available at: https://www.semanticscholar.org/paper/Adaptation-in-agriculture%3A-lessons-for-resilience-Kenny/bb95808fa4885e1d9cb9364b6e975f2bb5730d31
60. Duranovich, F., Shadbolt, N., Dooley, E., Gray, D. N.d. Dairy farm owners, their resilience attributes, and how they relate to their perception and management of risk. Available at: https://www.ifama.org/resources/files/2015-Conference/1363_paper_Shadbolt.pdf

61. Daugstad, K., 2019. Resilience in Mountain Farming in Norway. Sustainability, 11(12), p.3476. Available at: https://www.mdpi.com/2071-1050/11/12/3476
62. Berg, K. Alternative Food Networks: a question about farmers resilience. Available at: https://nmbu.brage.unit.no/nmbu-xmlui/bitstream/handle/11250/2398747/2016%2005%2018%20Master%20thesis%20m%20vedlegg.pdf?sequence=2&isAllowed=y
63. Milestad, R., Westberg, L., Geber, U. and Björklund, J., 2010. Enhancing Adaptive Capacity in Food Systems: Learning at Farmers' Markets in Sweden. Ecology and Society, 15(3). Available at: https://www.ecologyandsociety.org/vol15/iss3/art29/
64. Diserens, F., Choptiany, J., Barjolle, D., Graeub, B., Durand, C. and Six, J., 2018. Resilience Assessment of Swiss Farming Systems: Piloting the SHARP-Tool in Vaud. Sustainability, 10(12), p.4435. Available at: https://www.researchgate.net/publication/329224577_Resilience_Assessment_of_Swiss_Farming_Systems_Piloting_the_SHARP-Tool_in_Vaud
65. Ferjani, A., Mann, S. and Zimmermann, A., 2018. An evaluation of Swiss agriculture's contribution to food security with decision support system for food security strategy. British Food Journal, 120(9), pp.2116-2128. Available at: https://www.researchgate.net/publication/326492832_An_evaluation_of_Swiss_agriculture's_contribution_to_food_security_with_decision_support_system_for_food_security_strategy
66. Bardsley, D. and Bardsley, A., 2014. Organising for socio-ecological resilience: The roles of the mountain farmer cooperative Genossenschaft Gran Alpin in Graubünden, Switzerland. Ecological Economics, 98, pp.11-21. Available at: https://www.researchgate.net/publication/259517515_Organising_for_socio-ecological_resilience_The_roles_of_the_mountain_farmer_cooperative_Genossenschaft_Gran_Alpin_in_Graubunden_Switzerland
67. Doherty, B., Heron, T., West, C.D., Croft, S., Denby, K., Hobbs, E., Hess, T., Gulec, J., Privett, K., and Flint, A., 2020. Resilience of Fresh Fruit and Vegetables supply chains in the face of Brexit. Available at: http://www.n8agrifood.ac.uk/media/dx-tile/FFV-Policy-Brief-1.pdf
68. Colwill, J., Despoudi, S. and Bhamra, R.S., 2016. A review of resilience within the UK food manufacturing sector. IN: Goh, Y.M. and Case, K. (eds.) Advances in Manufacturing Technology XXX: Proceedings of the 14th International Conference on Manufacturing Research, Loughborough University, September 68, pp. 451-456. Available at: https://repository.lboro.ac.uk/articles/A_review_of_resilience_within_the_UK_food_manufacturing_sector/9553682
69. UKHospitality & CGA. 2019. Future Shock: Issue Four. Available at: https://www.ukhospitality.org.uk/page/FutureShock-IssueFour
70. UKHospitality & CGA. 2019. Future Shock: Issue Five. Available at: https://www.ukhospitality.org.uk/page/FutureShock-IssueFive
71. UKHospitality & CGA. 2019. Future Shock: Issue Six. Available at: https://www.ukhospitality.org.uk/page/FutureShock-IssueSix

72. UKHospitality & CGA. 2019. Future Shock: Issue Seven. Available at: https://www.ukhospitality.org.uk/page/FutureShock-IssueSeven
73. Geueke, B., Groh, K. and Muncke, J., 2018. Food packaging in the circular economy: Overview of chemical safety aspects for commonly used materials. Journal of Cleaner Production, 193, pp.491-505. Available at: https://www.sciencedirect.com/science/article/pii/S0959652618313325
74. Baker, P., and Morgan, A. 2012. Resilience of the Food Supply to Port Disruption. Available at: http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=17782